SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Draft Staff Report for

PROPOSED AMENDED RULE 1168 – ADHESIVE AND SEALANT APPLICATIONS

Dated: October 2022

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EXECUTIVE SUMMARY

Rule 1168 was adopted in April 1989 to control volatile organic compound (VOC) emissions from adhesive and sealant applications. The rule has been amended 14 times; the last rule amendment was in October 2017. Rule 1168 includes 59 categories of adhesives, adhesive primers, sealants, and sealant primers with VOC limits and applies to products used during manufacturing at stationary sources as well as products used by consumers that are not regulated by the California Air Resources Board (CARB) in the Consumer Products Regulation (CPR)[1].

The proposed amendments to Rule 1168 began as a result of the technology assessment that was included in the 2017 amendment for nine adhesive and sealant categories with lower VOC limits that will go into effect on January 1, 2023. The technology assessment serves as a check-in to determine if the technology progressed and the future effective limits will be achieved.

An additional driver for this rule amendment is the proposed change in status of two exempt compounds: tertiary-Butyl Acetate (t-BAc), which is exempt from the definition of a VOC for certain categories of products in a few source specific rules not including Rule 1168, and per-chlorobenzotriflouride (pCBtF), which is considered exempt from the definition of a VOC for all uses within the South Coast Air Quality Management District (South Coast AQMD), including Rule 1168 products. The proposed change to the exempt status was based on the Stationary Source Committee directive to prioritize lowering toxicity over lowering VOC emissions when considering exempting compounds from the definition of a OVC when staff presented the "t-BAc Assessment White Paper" in April 2017.

The technical assessment identified some categories that either needed more time or were not technically feasible to meet the proposed VOC limits by the 2023 effective date. Staff initiated the rule amendment. Due to the t-BAc and pCBtF toxicity concerns and the Stationary Source Committee's direction, staff performed an analysis to reassess the toxicity of t-BAc and pCBtF, including a risk assessment for off-site receptors in roofing applications and a comparison of the toxic endpoints of t-BAc and pCBtF with other compounds that are currently prohibited from use in Rule 1168 products. After careful consideration, staff is proposing to prohibit the use of t-BAc and pCBtF in Rule 1168 products and to adjust VOC limits and allow time for reformulation where needed. Staff also proposes to include a conditional, limited VOC exemption for Opteon 1100 based on an assessment by the Office of Environmental Health Hazard Assessment (OEHHA). The exemption is limited to two-component foam sealants applied in an industrial or professional setting and would not be effective unless the specified conditions are met for the assessment. This rule amendment will result in foregone emission reductions; however, it will result in lowering the potential for toxic chemicals to be used in the regulated products.

The estimated rule inventory is approximately 6.2 tons per day (tpd) of VOC. The projected foregone emission reductions from the proposed amendments are 0.28 tpd of VOC emissions. While this is a significant loss in VOC emission reductions, the 2017 amendment was adopted in part to implement Control Measure CTS-01 - Further Emission Reductions from Coatings, Solvents, Adhesives, and Sealants from the 2016 Air Quality Management Plan (AQMP), which targeted 1 (one) tpd of VOC emission reductions by 2023. The 2017 Rule 1168 amendment

[1] The California Consumer Products Regulations; https://ww2.arb.ca.gov/sites/default/files/2020-08/v3_ADA_Regs-all_8-31-2020.pdf

estimated VOC reductions of 1.38 tpd, so even with the 0.28 tpd foregone emission reductions, the rule amendment exceeded the commitment in the 2016 AQMP.

CHAPTER 1 BACKGROUND

INTRODUCTION
REGULATORY HISTORY
AFFECTED INDUSTRIES
PUBLIC PROCESS
KEY CONCERNS

INTRODUCTION

Rule 1168 was adopted in April 1989 to control VOC emissions from adhesive applications. The rule has been amended 14 times; the last amendment was in October 2017. The rule applies to products that were used during manufacturing at stationary sources and to products used by consumers that were not regulated by the CARB CPR. Currently there are VOC limits established for 59 categories of adhesives, adhesive primers, sealants, and sealant primers.

Rule 1168 requires a technology assessment to be performed in 2020 and 2022 for nine categories subject to Rule 1168 including Foam Sealants, Plastic Welding Cements, Roofing Products, and Top and Trim categories. In April 2017, the Stationary Source Committee recommended a precautionary approach when considering an exemption for any compound with a toxic endpoint and removing the exempt status for any compound that has an established toxic endpoint. Therefore, the current rule development has two primary goals: 1) assessing the feasibility of proposed emission reductions through technology assessments and stakeholder engagement; and 2) evaluating the toxicity of exempt solvents with a focus on t-BAc and pCBtF.

REGULATORY HISTORY

The current rule amendment process began in 2022. Since then, staff has conducted four working group meetings, surveyed the use of exempt solvents in the regulated products and conducted individual meetings with stakeholders and their representatives. As part of the 2017 rule amendment, the South Coast AQMD required manufacturers and private labelers of regulated products to submit Quantity and Emission Reports (QERs) to the South Coast AQMD according to a reporting schedule: every three years until 2025, then every five years, with a sunset date in 2040. The manufacturer and private labelers submitted the first QERs for the 2017 and 2018 period on September 1, 2019. Since all manufacturers that sell products in the South Coast AQMD are required to report their products in QERs, they provide comprehensive data, and during this rule amendment, staff relied on the information provided in QERs to perform technology assessments. Prior to the QER requirements and during the 2017 rule amendment, staff were relying on a voluntary survey of product sales in the South Coast AQMD which was sent out during the 2013/2014 rule amendment. During the 2017 amendment staff applied a growth factor to estimate increased usage (population growth was used as a surrogate for increased usage) from 2013/2014 to 2017, and based on that, staff estimated that the inventory for adhesives and sealants is 10.5 tpd. However, based on QER information that was provided by manufacturers and private labelers in September 2019, staff estimates that the current baseline emissions for Rule 1168 is 6.2 tpd.

During the previous amendment, which was initiated in 2013, staff considered exempting both t-BAc and dimethyl carbonate (DMC) from the definition of a VOC. This proposal would have achieved substantial VOC emission reductions. However, the rule amendment was put on hold in 2014 due to toxicity concerns of t-BAc and DMC, and uncertainty of the on-site exposure modeling methodologies. Staff held a Toxics Symposium in October 2014 and developed the draft "t-BAc Assessment White Paper," which was released in April 2017. As a result of that work, the Stationary Source Committee recommended a precautionary approach such that compounds with a known or suspected toxic endpoint will not be exempted from the definition of the VOC. In addition, the Stationary Source Committee further directed staff to request the Office of Environmental Health Hazard Assessment (OEHHA) to perform an assessment of pCBtF, a compound that is exempted for all uses in Rule 102 – Definition of Terms as a Group I Exempt

Solvent. In May 2017, staff resumed the proposed amendment to Rule 1168, without the proposed exemptions for t-BAc and DMC. In 2020, OEHHA finalized the assessment of pCBtF, and determined it to be a stronger carcinogen than t-BAc.

CARB Consumer Products Regulation and South Coast AQMD Rule 1168

There is sometimes confusion regarding which products and uses are regulated by the CARB CPR and which products and uses are regulated by South Coast AQMD Rule 1168. During the 2017 amendment, staff developed the infographic below to provide clarification.

Rule 1168 exclusively applies to:

- Any adhesive or sealant incorporated into or used to manufacture or construct goods or commodities, regardless of size; and
- All applicable products sold in containers greater than 16 fluid ounces.

The CARB CPR exclusively applies to:

- Aerosol adhesives.

Products sold in container sizes less than or equal to 16 fluid ounces:

- If there is a category and VOC limit for the product in the CARB CPR that existed before a Rule 1168 VOC limit, they are regulated by the CARB CPR;
- If no category or VOC existed before a Rule 1168 VOC limit went into effect, they are regulated by Rule 1168. Figure 1-1 below demonstrates the applicability of the CARB CPR and South Coast AQMD Rule 1168:

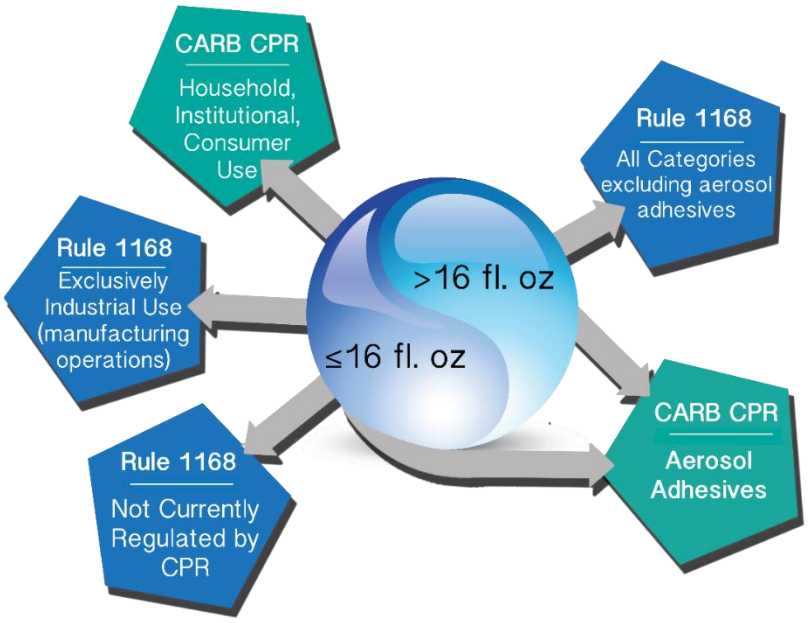

Figure 1-1:Comparison of South Coast AQMD Rule 1168 Applicability to CARB CPR

AFFECTED INDUSTRIES

Adhesive and sealant use subject to the rule spans a wide range of industries that have miscellaneous uses during manufacturing. The industry sectors that make extensive use of products subject to this rule include[2]:

- Adhesive Manufacturing (NAICS 325520)
- Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment Manufacturing (NAICS 333415)
- All Other Rubber Product Manufacturing (NAICS 326299)
- Asphalt Shingle and Coating Materials Manufacturing (NAICS 324122 and 325520)
- Commercial and Institutional Building Construction (NAICS 236220)
- Custom Architectural Woodwork and Millwork Manufacturing (NAICS 337212)
- Drywall and Insulation Contractors (NAICS 238310)
- Flooring Contractors (NAICS 238330)
- Footwear Manufacturing (NAICS 316210)
- Glass and Glazing Contractors (NAICS 238150)
- Hardwood Veneer and Plywood Manufacturing (NAICS 321211)
- Household Furniture (except Wood and Metal) Manufacturing (NAICS 337125)
- Industrial Building Construction (NAICS 236210)
- Manufactured Home (Mobile Home) Manufacturing (NAICS 321991)
- Motor Vehicle Seating and Interior Trim Manufacturing (NAICS 336360)
- New Multifamily Housing Construction (except For-Sale Builders) (NAICS 236116)
- New Single-Family Housing Construction (except For-Sale Builders) (NAICS 236115)
- Office Furniture (except Wood) Manufacturing (NAICS 337214)
- Oil and Gas Pipeline and Related Structures Construction (NAICS 237120)
- Other Millwork (including Flooring) (NAICS 321918)
- Plumbing, Heating, and Air-Conditioning Contractors (NAICS 238220)
- Polystyrene Foam Product Manufacturing (NAICS 326140)
- Residential Remodelers (NAICS 236118)
- Roofing Contractors (NAICS 238160)
- Rubber Product Manufacturing for Mechanical Use (NAICS 326291)

[2] NAICS Association from http://www.naics.com/index.html

- Showcase, Partition, Shelving, and Locker Manufacturing (NAICS 337215)
- Siding Contractors (NAICS 238170)
- Surgical Appliance and Supplies Manufacturing (NAICS 339113)
- Tile and Terrazzo Contractors (NAICS 238340)
- Tire Retreading (NAICS 326212)
- Urethane and Other Foam Product (except Polystyrene) Manufacturing (NAICS 326150)
- Water and Sewer Line and Related Structures Construction (NAICS 237110)
- Wood Container and Pallet Manufacturing (NAICS 321920)
- Wood Kitchen Cabinet and Countertop Manufacturing (NAICS 337110)
- Wood Window and Door Manufacturing (NAICS 321911)
- Paint and Wallpaper Stores (NAICS 444120)

PUBLIC PROCESS

PAR 1168 was developed through a public process that included a series of Working Group Meetings as shown in Table 1-1 below, which also summarizes the key topics discussed at each of the Working Group Meetings. Working Group Meetings ranged from one to three hours and included detailed presentations, which are posted on the South Coast AQMD's website[3].

Table 11-1: Summary of Working Group Meetings and Public Workshop

Meeting title	Date	Highlights
Working Group Meeting #1	February 11, 2022	• Rule Background • Preliminary Technology Assessment • Concluded a rule amendment is required
Working Group Meeting #2	April 12, 2022	• Continued technology assessments • Presented survey results for exempt solvent • Risk assessment for use of t-BAc and pCBtF in roofing projects
Working Group Meeting #3	July 21, 2022	• Presented the preliminary conclusions on technology assessment • Proposed to prohibit use of t-BAc and pCBtF due to toxicity concerns

[3] http://www.aqmd.gov/home/rules-compliance/rules/scaqmd-rule-book/proposed-rules/rule-1168

Meeting title	Date	Highlights
		• Proposed not to exempt Opteon 1100 as a VOC due to unknown toxicity
Working Group Meeting #4	August 11, 2022	• Revised the proposed VOC limits for roofing categories after pCBtF prohibition • Weight percent metric for Foam Sealants • Proposed amended rule language
Public Workshop	September 1, 2022	• Proposed amended rule including updated VOC limits and effective dates • Discussed Rubber Vulcanization Adhesive industry request • Proposed considering limited exemption for Opteon 1100 contingent on OEHHA assessment
Public Consultation	September 27, 2022	• Revisions to certain VOC limits and effective dates • Delayed pCBtF prohibition for certain categories • Conditional exemption for Opteon 1100 • Weight-based VOC limits to all categories for products sold packaged and applied using a propellant (based on industry feedback, reverted back to previously proposed weight percent metric only for Foam Sealants and Insulation) • Reporting requirements for t-BAc and pCBtF used in Regulated Products

Staff also met with industry stakeholders and their representatives throughout the rule development process. Table 1-2 below summarizes stakeholder meeting during the rulemaking:

Table 11-22: Meetings with Stakeholders

Date	Stakeholder
November 12, 2021	Plastic Pipe and Fittings Association (PPFA)
November 18, 2021	Oatey
December 2, 2021	The Adhesive and Sealant Council (ASC)
December 7, 2021	Lubrizol
January 28, 2022	Weldon
February 4, 2022	Weldon
February 22, 2022	Soprema
February 25, 2022	Roof Coatings Manufacturers Association (RCMA)
March 3, 2022	Owens Corning
March 8, 2022	Asphalt Roofing Manufacturers Association (ARMA)
March 23, 2022	Sashco
March 24, 2022	DAP
April 6, 2022	Adhesive and Sealant Council (ASC)
May 6, 2022	ICP
May 11, 2022	Asphalt Roofing Manufacturers Association (ARMA)
May 19, 2022	Representatives of pipe cement manufacturers
May 20, 2022	Weldon
June 28, 2022	Oatey
July 7, 2022	Weldon
July 19, 2022	Single Ply Roofing Industry (SPRI)
July 27, 2022	Roof Coatings Manufacturers Association (RCMA)
July 29, 2022	Foam Industry Stakeholders
August 17, 2022	ITW
August 18, 2022	Foam Industry Manufacturers
August 19, 2022	ICP
August 23, 2022	SPRI
August 25, 2022	R.D. Abbot

Date	Stakeholder
September 8, 2022	Sashco
September 15, 2022	GAF
September 20, 2022	SPRI

CHAPTER 2 : TECHNOLOGY ASSESSMENT

DISCUSSION ON EXEMPT COMPOUNDS

BACKGROUND ON TECHNOLOGY ASSESSMENT

TECHNOLOGY ASSESSMENTS FOR NINE CATEGORIES OF ADHESIVES AND SEALANTS

DISCUSSION ON EXEMPT COMPOUNDS

Background on t-BAc and pCBtF

In 1994, the U.S. EPA exempted pCBtF from the definition of a VOC, and in 2004, South Coast AQMD added pCBtF as an exempt VOC compound in Rule 102. A Rule 102 VOC exemption means pCBtF is not considered a VOC for any application in the South Coast AQMD.

In 2004, the U.S. EPA exempted t-BAc from the definition of a VOC, but due to toxicity concerns, the South Coast AQMD did not allow for an unlimited Rule 102 exemption but did allow for several limited exemptions in source specific rules, e.g., Rules 1113 and 1151. In 2013, the Rule 1113 amendment included a resolution that directed staff to review the exemption for t-BAc due to renewed toxicity concerns. OEHHA finalized their t-BAc assessment in 2017, concluding that it had a higher cancer potency than previously estimated. In 2018, staff presented the preliminary t-BAc assessment and expressed concerns regarding pCBtF because OEHHA had not assessed its toxicity. Based on staff recommendations, the Stationary Source Committee directed staff to: remove existing t-BAc exemption in Rules 1113 and 1151 when rules are amended and request OEHHA to review the potential toxicity of pCBtF and remove the exemption, as resources allow, if pCBtF is deemed a potential carcinogen. In 2020, the pCBtF Hot Spots cancer inhalation unit risk factor document was adopted by OEHHA, which indicated pCBtF is a potential carcinogen.

pCBtF Survey

Staff conducted a survey in February 2022 for adhesive and sealant manufacturers who reported sales into or within the South Coast AQMD. The intent of the survey was to assist the understanding of the extent to which exempt solvents are used to formulate compliant products. The two exempt compounds of interest for this survey were pCBtF, also known as Oxsol 100, and t-BAc. The main focus of this survey was pCBtF, which is considered a VOC exempt solvent for adhesives and sealants. The table below shows the survey questions.

Table 2-1: pCBtF February 2022 Survey Questions

	Requested Information
1.	Company name, contact person, and an email address
2.	Do you sell adhesives or sealants into or within the South Coast AQMD?
3.	Do any of the adhesives or sealants sold into or within the South Coast AQMD contain para-chlorobenzotrifluoride (pCBtF), also known as Oxsol 100?
4.	Information regarding general adhesives or sealants categories include pCBtF
5.	Describing the product if the category is any other adhesive or sealant in above question, or if the product category was not listed in the survey

	Requested Information
6.	The approximate weight percent of pCBtF in formulations
7.	Alternative products that do not contain pCBtF that could replace the pCBtF adhesives or sealants
8.	If the alternate products comply with the Rule 1168 VOC limits
9.	Do any of the adhesives or sealants sold into or within the South Coast AQMD contain tertiary-Butyl Acetate (t-BAc)?

In total, 25 manufacturers responded to the survey. Most reported that the pCBtF range for these categories was between 4% to 25%. Eleven manufacturers reported use of pCBtF and five manufacturers reported that they have alternatives for pCBtF. Categories reported using pCBtF in the survey were: Architectural Adhesive and Sealants, Roofing Adhesive and Sealants, Adhesive and Sealant Primers, Any Other Adhesive, Any Other Sealant, Flooring Adhesive. On April 28, 2022, staff followed up with manufacturers that submitted the pCBtF survey to gather more information on the percent usage of pCBtF in their products. Some manufacturers responded to staff's request. Only a small subset of Rule 1168 products indicated that they use pCBtF, and the range of pCBtF reported for all reported categories was between 4.5 percent to 90 percent. The product categories that were reported in the follow up survey were: All Other Roof Sealants, All Other Sealants, Single Ply Roof Membrane Sealants, and All Other Adhesive Primers. The majority of the feedback staff received was from roofing products manufacturers. The range of pCBtF reported for roofing products was between 40% to 90%.

t-BAc and pCBtF in Roofing Products

During staff meetings with roofing industry stakeholders, roofing manufacturers indicated that they rely on pCBtF to meet the proposed VOC limits that will go into effect on January 1, 2023, and requested staff to consider allowing the continued use for pCBtF for roofing applications since roofing applications occur outside, which reduces potential exposure. Staff relied on the previous t-BAc assessments to evaluate risks: 1) 2017 t-BAc White Paper focused on existing limited exemption for automotive and industrial maintenance coatings and 2) Risk assessment of potential t-BAc use in roofing adhesives that was conducted during the prior rule development when stakeholders were seeking an exemption for t-BAc.

Due to toxicity concerns, staff reviewed the limited VOC exemption for t-BAc when used in certain automotive coatings and industrial maintenance (IM) coatings in the 2017 t-BAc white paper.

Table 2-2: Risks associated with Using t-BAc in Automotive and Industrial Maintenance (IM) coatings

	Automotive Coatings	IM Coatings
Cancer Potency Factor $(mg/kg\text{-}day)^{-1}$	$6.7 * 10^{-3}$	$6.7 * 10^{-3}$
Risk Factor (in one million)	17(1)	3.8(1)
Acute Hazard Index (HI) (non-cancer)	$5.11 * 10^{-3}$	0.4

Staff presented the results to the Stationary Source Committee in April 2017, which recommended removing the VOC exemption for t-BAc and requesting OEHHA to assess the potential toxicity of pCBtF.

During the 2017 rule amendment, staff assessed the health risks associated with potential t-BAc usage in roofing products using the following assumptions:

- Offsite receptors only exposed to acute effects; adhesives are not continually applied to the same roof, so chronic exposure not evaluated
- Concentrations estimated by air dispersion modeling
- Usage estimated at 500 gal/day for 10,000 ft^2 area elevated at 35 feet
- Receptor located at a 25-meter distance

Based on the assessment in 2017, staff decided not to exempt t-BAc in Rule 1168.

Table 2-3: 2014 t-BAc assessment for roofing projects

	Toxic Air Contaminant	Acute Hazard Index
Baseline	0.5% Ethylbenzene,10% Toluene and Hexane, 5% Methyl Ethyl Ketone (MEK)	0.9
Future	50% t-BAc	17

OEHHA implements Proposition 65 and compiles the list of substances that cause cancer or reproductive harm, and OEHHA also provides risk assessments reports. The OEHHA 2015 and 2018 t-BAc and 2020 pCBtF reports include Inhalation Slope Factor (ISF) which is the same factor previously called Cancer Potency Factor (CPF).

Table 2-4: OEHHA t-BAC and pCBtF Cancer Potency Factors

Report	ISF (CPF) $(mg/kg\text{-}day)^{-1}$
Draft OEHHA t-BAc (2015)	$6.7 * 10^{-3}$
Final OEHHA t-BAc (2018)	$5.0 * 10^{-3}$
Final OEHHA pCBtF (2020)	$3.0 * 10^{-2}$

During the current amendment, the Roof Coatings Manufacturers Association (RCMA) asked staff to consider limited exemption for roofing adhesives. During the 2017 rule amendment, t-BAc toxicity was assessed for a roofing project and Acute HI was calculated to be 17. Rule 1401 – New Source Review of Toxic Air Contaminants limits Acute HI of new projects to less than 1.0. Cancer Potency Factor for pCBtF is considerably higher than for t-BAc; however, there was not sufficient data available for OEHHA to evaluate the acute risks of pCBtF. Due to the lack of data on the acute risk of pCBtF, staff relied on the 2013 assessment of using t-BAc in a roofing project.

In 2013, South Coast AQMD performed a modeling study to assess the Acute Hazard Index (HI) of t-BAc used in a roofing project. Modeling assumptions were provided by industry stakeholders:

- Daily usage of 500 gallons per day
- Total area covered each day 10,000 sq ft
- 50% t-BAc content
- Receptor was located at a 25 m distance
- Acute Reference Exposure Level (REL) for t-BAc was assumed to be 10,000 ug/m3
- Release height was assumed to be 35 ft
- Acute HI was calculated to be 17, which is > 1.0

Based on the modeling results, staff concluded to move forward without including a t-BAc or pCBtF exemption for a roofing application. However, during Working Group Meeting #2, stakeholders raised concerns about the usage assumptions made for the previous t-BAc toxicity modeling assessment and provided updated daily usage estimates for a typical roofing project. Staff updated the source release height from 35 ft to 20 ft to reflect a two-story building. Staff considered three levels of solvent content to represent the wide variety of available products in the market. Staff evaluated the acute risks associated with roofing projects; since roofing projects are conducted infrequently, risks to nearby receptors are an acute risk, not a chronic risk.

Staff performed updated modeling for five meteorological stations at different locations in the South Coast AQMD (highlighted in light blue) as shown in Figure 2-1 below:

Figure 2-1: Meteorological Stations used in AERMOD in the South Coast AQMD

Based on solvent daily usage and project coverage area provided by stakeholders, staff will provide two scenarios to assess the associated risks: Scenario #1: Provided by Firestone Building Products and Scenario #2: Provided by SPRI in a comment letter received on July 5, 2022.

Risk assessments generally focus on the worse-case scenario, but staff considered a range of scenarios. Staff's assessment includes two different scenarios for five locations and three t-BAc weight percent, and in total 30 different cases were assessed. Table 2-5 below shows a summary of the modeling assessment.

Table 2-5: AERMOD Model Inputs and Results for Roofing Projects Using Different Scenarios

		SCENARIO #1	SCENARIO #2
MODEL INPUTS	Daily Usage (gal)	140	85
	Coverage Rate (sq ft / gal)	50	60
	Total Covered Area (sq ft)	7,000	5,100
	Source Release Height (ft)	20	20
	Receptor Distance (m)	25	25
	t-BAc content	25%, 50%, and 75%	25%, 50%, and 75%
	# of Roofing Project Locations	5	5
MODEL RESULTS	Acute HI for range for all locations	3.0 – 14.6	1.4 – 7.6

Rule 1401 – New Source Review of Toxic Air Contaminants limits Acute HI of new projects to less than 1.0. In all scenarios, the Acute HI exceeds 1.0 with a maximum of 14.6. Updated assumptions (e.g., 5100 sq ft total coverage area) provided by stakeholders likely underestimates a commercial or industrial roofing project. Even with updated assumptions, risk assessment demonstrates an unacceptably high risk to offsite receptors (e.g., a nearby residence). OEHHA has not established an acute end point for pCBtF at this time; however, the Governing Board directed staff to rely on the precautionary principle, which is to prioritize reducing toxic risk over VOC reductions. When the risk is unknown, staff uses a precautionary approach, and with no acute end points, the precautionary approach is to not allow the exemption. Staff could reconsider assessment when more data on the acute risks of pCBtF becomes available.

Comparing t-BAc and pCBtF toxicity to Group II Compounds

South Coast AQMD Rule 102 – Definitions lists the exempt compounds. Group II compounds are those that are already restricted or will be restricted in the future because they are either toxic, potentially toxic, upper atmosphere ozone depleters, or cause other environmental impacts. Four Group II compounds have a defined Cancer Potency Factor or Reference Exposure Level (REL).

Table 2-6: Cancer Potency Factor for Group II Compounds

Compound	Cancer Potency Factor (Slope Factor)
perchloroethylene (perc)	0.021
DMC	0.0035
t-BAc	0.0047
pCBtF	0.03

For the four compounds shown in Table 2-6, pCBtF has the highest Cancer Potency Factor of all Group II exempt compounds (almost 50 percent higher than perc).

Table 2-7 shows the Acute Reference Exposure Level (REL) for Group II compounds. Acute HI has an inverse correlation with REL. t-BAc has the lowest REL, meaning the highest risk among Group II compounds. Cancer Potency Factor for pCBtF is much higher than t-BAc, perc, and DMC, but there is no established Acute REL.

Table 2-7: Acute REL for Group II Compounds

Compound	Acute REL
perc	20,000
DMC	14,000
t-BAc	10,000
pCBtF	N/A

Staff Recommendations on t-BAc and pCBtF

This comparison of other toxic compounds that are prohibited from use in Rule 1168 supports going beyond the Stationary Source Committee's recommendation to remove the VOC exempt status of t-BAc and pCBtF. OEHHA's assessment of t-BAc and pCBtF shows compounds to be as toxic as many chemicals currently prohibited; therefore, staff recommends prohibiting the use of t-BAc and pCBtF.

Discussion on Opteon 1100

In 2017, Chemours reached out the South Coast AQMD regarding a possible VOC exemption for Opteon 1100 (HFO-1336mzz-Z, CAS number 692–49–9). South Coast AQMD does not exempt a compound unless it is exempted by the U.S. EPA. In November 2018, the U.S. EPA revised the regulatory definition of VOC to exempt Opteon 1100 due to negligible contribution to the formation of tropospheric ozone. Opteon 1100 is listed as an acceptable substitute by the U.S. EPA under the Significant New Alternatives Policy (SNAP) program for Foam Blowing Agents, Refrigeration and Air Conditioning, Cleaning Solvents, and Aerosol Solvent. In 2020, South Coast AQMD reviewed available toxicology data for Opteon 1100 and based on staff's review of the

data provided, did not find anything of concern; however, the South Coast AQMD does not have the toxicological expertise of the staff at OEHHA to conduct such an assessment.

As a result of the "t-BAc Assessment White Paper" published in 2017, the South Coast AQMD Governing Board adopted a precautionary approach to VOC exempt compounds. The Stationary Source Committee recommended OEHHA evaluate any chemical prior to the South Coast AQMD exempting it to ensure regulatory VOC reductions do not encourage the use of chemicals that have a known or suspected toxic profile. A toxic profile is an air pollutant which may cause or contribute to an increase in mortality or serious illness, or which may pose a present or potential hazard to human health. A compound has a known toxic profile if, for example, it has an established Cancer Potency Factor (CPF) or Reference Exposure Level (REL). Opteon 1100 is an HFO and South Coast AQMD has exempted several HFOs in the past. There is a concern that HFOs can break down into Per- and Polyfluoroalkyl substances (PFAS) through atmospheric degradation. PFAS are organic substances that are persistent in the environment and can have serious health impacts on humans. OEHHA has not evaluated Opteon 1100, but the Stationary Source Committee directed staff to adopt a precautionary approach to exempt VOC compounds.

At this time, staff does not recommend including Opteon 1100 as a VOC exempt compound upon rule adoption; but staff proposes the exemption become effective if OEHHA has sufficient information to establish a Cancer Inhalation Unit Risk Factor, an acute reference exposure level (REL) and a chronic REL of Opteon 1100 and does not adopt a cancer risk factor for Opteon 1100, and develops an acute REL (or interim acute REL) and a chronic REL (or interim chronic REL) for Opteon 1100 which are higher than those for trans-1-Chloro-3,3,3-Trifluoropropene (HFO-1233zd), which is the HFO it would replace. In March 2014, OEHHA completed its evaluation on the toxicity of HFO-1233zd and issued an Interim Evaluation of the Toxicity of trans-1-Chloro-3,3,3-Trifluoropropene. As a result of the evaluation, OEHHA developed an interim acute REL and a chronic REL as in the Table below. Those values will be referenced for determining Opteon 1100 exemption.

Table 2-8: REL Values by OEHHA 2014 Interim Evaluation

Compound	Interim Acute REL (µg/m3)	Interim Chronic REL (µg/m3)
HFO-1233zd	270,000 (51 ppm)	2100 (0.4 ppm)

The exemption will also be limited to two-component foam sealants used in a professional setting by workers trained with procedures and guidelines to reduce potential risk of exposure. Staff is concerned with including any VOC exemption without a toxic assessment by OEHHA; hence, staff recommends a limited and conditional exemption as a balanced approach.

Staff will seek an assessment from OEHHA on Opteon 1100. If the assessment determines Opteon 1100 meets the conditions in Rule 1168, which triggers the exemption from the definition of a VOC under Rule 1168, staff will conduct outreach and include guidance on the South Coast AQMD website. If, however, OEHHA identifies potential toxicity concerns, staff will work to better understand the toxicity concerns from Opteon 1100, which is an HFO, and if the toxicity concerns could more broadly apply to other HFOs. Staff will report back to the Governing Board

once OEHHA completes their assessment to seek guidance if a broader policy regarding HFOs should be considered.

DISCUSSION ON THE TECHNOLOGY ASSESSMENTS

South Coast AQMD proposes lower VOC limits to reduce emissions to work toward achieving air quality goals. While most VOC limits reflect new technology in the marketplace and are based on currently available products, in some instances, the VOC limit is based on manufacturer feedback especially when the products may not be widely available. Based on Rule 1168 amended in 2017, staff proposed to perform a technology assessment for nine different categories: Foam Sealants; ABS to PVC Transition; PVC Welding Cement; CPVC Welding Cement; All Other Roof Adhesives; Single Ply Roof Membrane Adhesives; All Other Roof Sealants; Single Ply Roof Membrane Sealants; and Top and Trim Adhesives. This technology assessment is required to assess the feasibility of the proposed VOC limits that will go into effect on January 1, 2023.

A South Coast AQMD technology assessment can take many forms including third-party evaluation, laboratory testing and evaluations, or an in-house evaluation. Rule 1168 technology assessment was conducted in-house including evaluation of previous survey data, the QERs, consultation with the manufacturers, and working group meetings. The primary sources of data staff relied on were the: 1) 2013 Survey, and 2) QERs. In 2014, staff conducted a survey of adhesives and sealants sold into and within the South Coast AQMD in 2013, and the survey included the sales and emissions of those products. In addition, staff relied on the QERs to perform the technology assessment. Rule 1168 requires manufacturers and private labelers to submit QERs every three to five years based on the timeline shown in Table 2-9 below.

Table 2-9: Reporting Deadlines for QERs

Reporting Deadlines		Reported Years
Manufacturers or Private Labelers	Big Box Retailers & Distribution Centers	
September 1, 2019	May 1, 2019	2017, 2018
September 1, 2022	May 1, 2022	2020, 2021
September 1, 2025	May 1, 2025	2023, 2024
September 1, 2030	May 1, 2030	2028, 2029
September 1, 2035	May 1, 2035	2033, 2034
September 1, 2040	May 1, 2040	2038, 2039

At this time, staff only has the complete set of QERs for 2017 and 2018. That data likely doesn't include recent product reformulations to meet the future compliance deadlines. The next QER deadline is September 2022.

There are different metrics that staff uses to assess the data for products under Rule 1168. The market penetration of low-VOC products is a useful indicator of technical feasibility and Sales

Weighted Average (SWA), which shows VOC levels of products in the category, but rather than averaging it for all products, it weighs the VOC levels toward products with higher sales volumes.

In the next section, staff will provide the technology assessment for nine categories of adhesives and sealants.

TECHNOLOGY ASSESSMENTS

In the sections below, the data, discussions with stakeholders, and staff proposal for each category included in the technology assessment will be provided.

Top and Trim Adhesives

The June 2002 amendment of Rule 1168 included a category for Top and Trim Adhesives. Top and Trim Adhesives are used to adhere automobile and marine trim, including headliners, vinyl tops, vinyl trim, sunroofs, dash covering, door covering, floor covering, panel covering, and upholstery. The VOC limit was set at 540 g/L, less water and exempt compounds, until January 1, 2004, when a 250 g/L VOC limit went into effect. In October 2003, the rule was amended, and the proposed VOC limit reduction was delayed for one year to allow manufacturers additional time to reformulate. The rule was amended again in December 2004 to further delay the effective date of the 250 g/L VOC limit to January 1, 2007.

While the initial results were promising, the technical challenge of high heat resistance was never overcome and Top and Trim Adhesive users switched to higher VOC products (620 g/L), using the 55-gallon per year exemption. All reported sales for the Top and Trim category in 2012 was for the high-VOC products. Rather than decrease emissions from this category by 0.2 tpd, the 250 g/L limit in conjunction with the volume usage exemption increased emissions by 0.04 tpd.

To address the increased emissions due to the 55-gallon per year exemption, in 2017 staff reinstated the 540 g/L limit and excluded Top and Trim Adhesives from the 55-gallon per year exemption effective January 1, 2019. The removal of the 55-gallon exemption resulted in manufacturers reformulating products to meet the 540 g/L limit, prohibiting the products with VOC limits above 620 g/L.

The technology assessment for the Top and Trim Adhesives category included a thorough analysis of the 2013 survey data, 2017 and 2018 QERs (Table 2-10 and Figure 2-2), and extensive discussion with stakeholders and manufacturers. Table 2-10 data show that the baseline emissions have decreased since 2013 and the sales weighted average (SWA) VOC for the average VOC content of products based on the sales volume has also decreased. In 2018, the SWA VOC was 337 g/L, which is below the 540 g/L VOC limit. Figure 2-2 shows that in 2017 and 2018, most of the products were in the 10-20 g/L and 610-620 g/L ranges. Since the 55-gallon exemption became effective in 2019, the use of high VOC products (> 600 g/L) has been eliminated and currently all the products in this category meet the 540 g/L limit. Staff has been in discussions with stakeholders with regards to meeting the upcoming 250 g/L VOC limit. Manufacturers have not yet been successful in reformulating all their products to the proposed 250 g/L, due to the supply chain issues and price spikes in recent years and other challenges. Based on stakeholders' comments, it is challenging for lower VOC products to meet the necessary performance standards. For example, adhesives work on flat areas, but the challenge is with the contoured areas (e.g., seats). Manufacturers still see a potential to reformulate to 250 g/L but need more time.

Staff's proposal is to retain the 250 g/L limit with a future effective date of January 1, 2028, to allow an additional five years for reformulations. The delayed emission reductions would be

0.1 tpd according to the 2017/2018 QER, but this number will likely be an overestimate since the 2017/2018 QER included the high VOC (> 600 g/L) products that have been phased out since 2019.

Table 2-10: Top and Trim Adhesives Data

Top and Trim Adhesives			
Existing Rule Limit: 540 g/L Effective Now			
Existing Rule Limit: 250 g/L Effective 1/1/2023			
Proposed Rule Limit: 250 g/L Effective 1/1/2028			
	2013	2017	2018
Sale Volume (gal)	PD*	75,000	60,000
Baseline (tpd)	0.35	0.28	0.23
# of Products	PD	19	19
SWA* VOC (g/L)	526	424	337

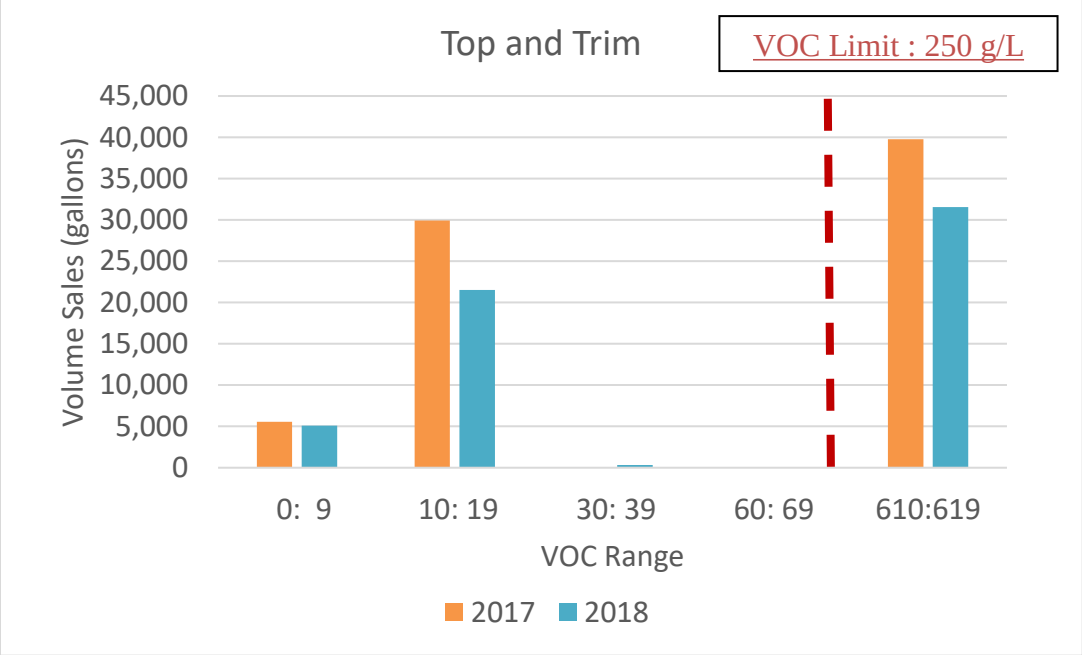

Figure 2-2: Top and Trim Adhesives 2017/2018 QER Sales Data

Foam Sealants

Foam Sealants are products used to fill and form durable, airtight seals to common building substrates. They are typically sprayed into building cavities to provide water resistance, thermal resistance, or acoustic dampening. The foam itself is typically a one-component or two-component polyurethane that contains little or no VOC. However, the propellants used in some of the aerosol products do contribute to the VOC content. The majority of the products offered for sale and the majority of the volume reported used are aerosol products. In the 2017 amendment, staff proposed

to reduce the VOC limit of the foam sealant to 50 g/L, effective January 1, 2023, provided the technology assessment demonstrates the VOC limits are feasible. As the VOC in these products is predominantly from the propellants, it was expected that to comply with the proposed limits, manufacturers would use alternative non-VOC propellants or utilize application techniques that do not depend on propellants to disburse the product.

In 2022, staff performed a technology assessment for the Foam Sealant category including a thorough analysis of the 2013 survey data, 2017 and 2018 QERs (Table 2-12 and Figure 2-3) and extensive discussion with stakeholders and manufacturers. The data shows that the baseline emissions have decreased since 2013 despite the increase in the number of products sold in the South Coast AQMD. In 2018, the SWA VOC was 148 g/L, which is substantially below the current 250 g/L VOC limit. Figure 2-3 shows that in 2017 and 2018, most of the products were in the range of 150-160 g/L. Stakeholders requested further subcategorization of the foam sealant category and staff took a closer look into the 2017/2018 QER data and separated the one-component and two-component foam sealants. One-component foam sealants as shown in Table 2-13 and Figure 2-4, exceed the proposed 50 g/L VOC limit. The majority of Foam Sealants fall into the one-component foam sealant category. However, the Two-Component Foam Sealants meet the proposed 50 g/L VOC limit as shown in Table 2-14 and Figure 2-5. Staff considered several options for subcategorizations and, based on stakeholders' recommendation to consider using the ASTM D717 – Standard Terminology of Building Seal and Sealants and the U.S. EPA segmentation of foam sealants in their Significant New Alternatives Policy (SNAP) rule definitions, staff proposes to subcategorize the Foam Sealant category into the following three subcategories: One-Component Foam Sealant, Low-Pressure Two-Component Foam Sealant, and High-Pressure Two-Component Foam Sealant.

For One-Component Foam Sealant, staff initially proposed 150 g/L. The proposed limit was adjusted to 180 g/L during further discussion with stakeholders. It was suggested there are some products with VOC emissions around 180 g/L that were not reported. The three proposed subcategories and VOC limits for Foam Sealants are: 1) One-Component Foam Sealant with a 180 g/L VOC limit, 2) Low-Pressure Two-Component Foam Sealant, retaining the 50 g/L VOC limit, and 3) High-Pressure Two-Component Foam Sealant, retaining the 50 g/L VOC limit. Removing the 50 g/L VOC limit for the One-Component Foam Sealants and reducing the limit from 250 g/L to 180 g/L would achieve 0.01 tpd emission reductions and the foregone emissions would be 0.12 tpd.

Weight Percent Metric

Staff is proposing to change the metric for regulating foam sealants. A gram per liter metric relies on calculating volume solids, which is a complicated calculation for liquid products and becomes further complicated for pressurized product and propellant in a container. A complicated regulatory standard can lead to confusion and the inadvertent sale of non-compliant products. To simplify compliance, staff is proposing a weight percent limit for foam sealants and foam insulation. The approximate conversion is 10 g/L ~ 1 percent by weight. Staff confirmed this conversion factor based on Safety Data Sheets (SDS) of foam products that list VOC content in both g/L and weight percent. The change in the regulatory limit metric will also simplify the VOC test method development for Foam Sealants, which was impacted by social distancing requirements due to the pandemic. Method development requires laboratory staff to work in-person as a collaborative process. The proposed conversion to weight-based VOC limits for foam sealants is also aligned with CARB protocols for pressurized products. The weight-based VOC

analysis process involves separation of propellant, identification and discounting of exempts in propellant; compliance can often be determined solely from propellant VOC.

Considering weight-based VOC for Foam Sealant subcategories, staff proposes the VOC limits as in Table 2-11 below:

Table 2-11: Foam Sealant Proposed Limits and Effective Dates

	Proposed Limit	Effective Date
One-Component Foam Sealant	18% (in place of 180 g/L)	July 1, 2023
High-Pressure Two-Component Foam Sealant	5% (in place of 50 g/L)	January 1, 2023
Low-Pressure Two-Component Foam Sealant	5% (in place of 50 g/L)	January 1, 2023

Foam Sealant Data as Reported – without Subcategories

Rule 1168 currently has only one category for foam sealants. The following data includes all of the data as reported. In the table and figures that follow, staff manually separated out the One-Component Foam Sealants from the Two-Component Foam Sealants.

Table 2-12: Foam Sealant Data as Reported – without Subcategories

Foam Sealant			
Existing Rule Limit: 250 g/L Effective Now			
Existing Rule Limit: 50 g/L Effective 1/1/2023			
Proposed Rule Limit: See Tables 14 and 15 for Subcategories			
	2013	2017	2018
Sale Volume (gal)	155,000	107,000	105,000
Baseline (tpd)	0.27	0.18	0.18
# of Products	16	37	45
SWA VOC (g/L)	153	154	148

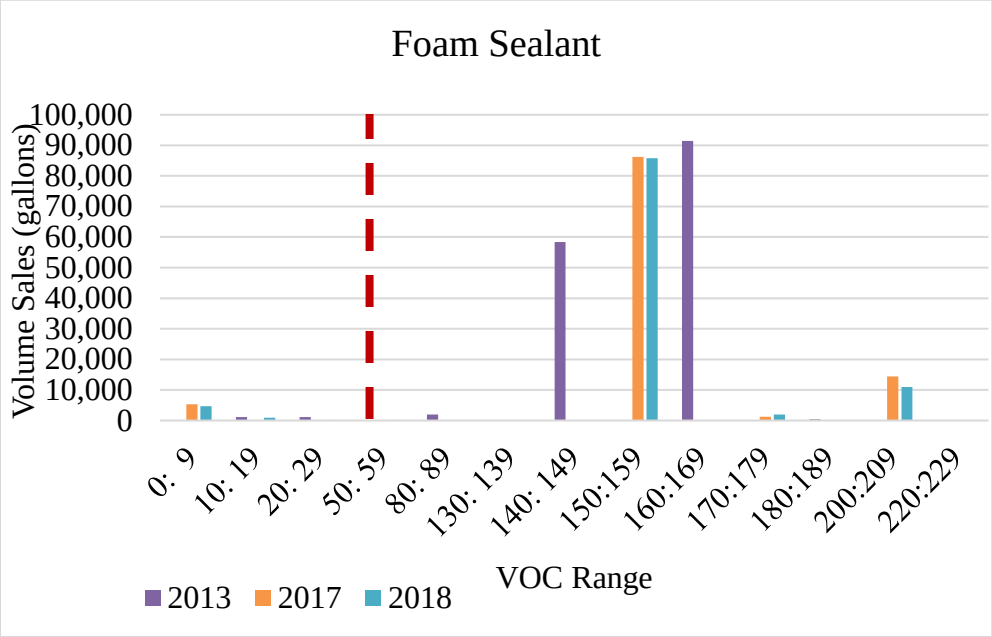

Figure 2-3: Foam Sealant 2017/2018 QER Sales Data as Reported – without Subcategories

One-Component Foam Sealants

For Table 2-13 and Figure 2-4, staff manually separated out the One-Component Foam Sealant data.

Table 2-13: One-Component Foam Sealants Data

Foam Sealant – 1K Foam Sealant			
Existing Rule Limit: 250 g/L Effective Now			
Existing Rule Limit: 50 g/L Effective 1/1/2023			
Proposed Rule Limit: 18%			
	2013	2017	2018
Sale Volume (gal)	152,000	102,000	99,000
Baseline (tpd)	0.27	0.18	0.18
# of Products	14	28	31
SWA VOC (g/L)	155	154	148

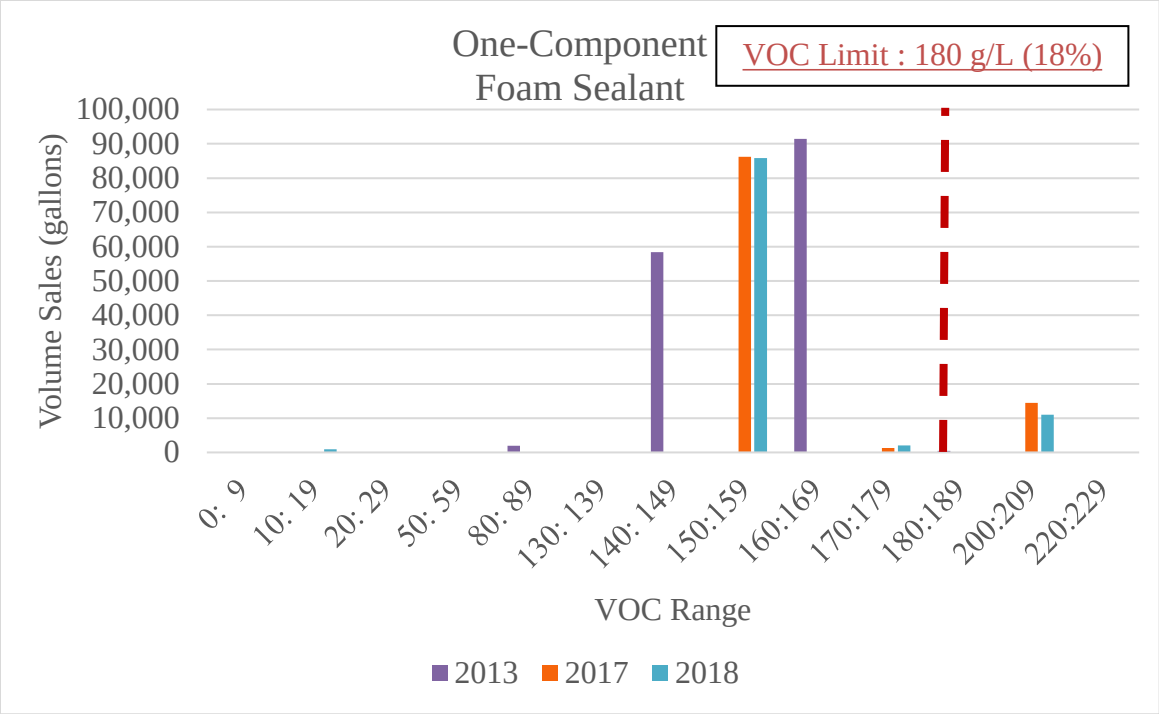

Figure 2-4: One-Component Foam Sealants 2017/2018 QER Sales Data

Two-Component Foam Sealants

For Table 2-14 and Figure 2-5, staff manually separated out the Two-Component Foam Sealant data.

Table 2-14: Two-Component Foam Sealants Data

Foam Sealant – 2K Foam Sealants			
Existing Rule Limit: 250 g/L Effective Now			
Existing Rule Limit: 50 g/L Effective 1/1/2023			
Proposed Rule Limit: 5% Effective 1/1/2023			
	2013	2017	2018
Sale Volume (gal)	PD	5,400	5,000
Baseline (tpd)	0.001	0.001	0.001
# of Products	PD	9	14
SWA VOC (g/L)	22	3	0.1

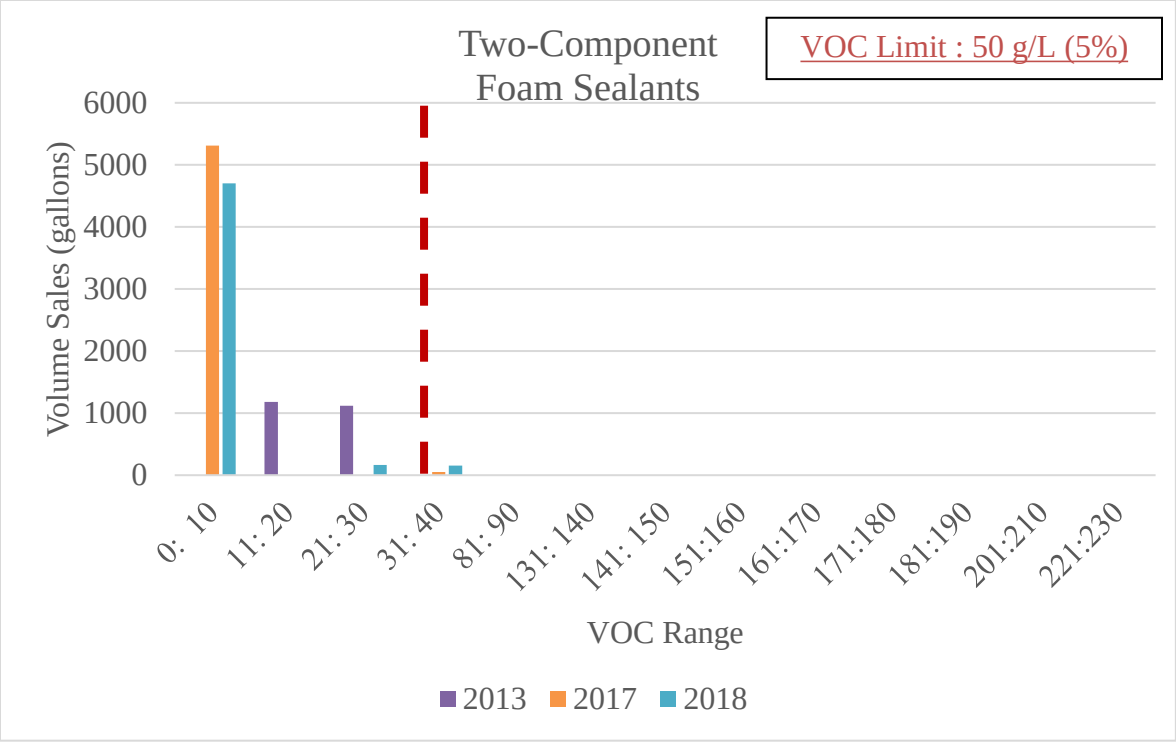

Figure 2-5: Two-Component Foam Sealants 2017/2018 QER Sales Data

Plastic Welding Cement

During the last rule amendment in 2017, the 2013/2014 survey indicated that CPVC and PVC Welding Cement products have a VOC content close to the 490 g/L and 510 g/L existing rule limits at that time. During the 2017 rule amendment staff proposed a 425 g/L limit for the PVC welding cement and a 400 g/L limit for the CPVC welding cement categories based on manufacturer feedback on what would be technically feasible, products released after the survey, including a product being marketed as a multi-purpose welding cement for a combination of ABS, PVC, and CPVC with a VOC content below 325 g/L, and a product marketed to the irrigation market for PVC and CPVC below the proposed limits for those categories.

The current rule amendment started with a thorough technology assessment for the PVC, CPVC, and ABS TO PVC Welding Cement products including an analysis of the 2013 survey, 2017 and 2018 QER data (Table 2-15 and Figure 2-6), and extensive discussions with stakeholders and manufacturers as shown in Table 2-15. Each of the three categories will be discussed in the next sections.

PVC Plastic Cement

As shown in Table 2-15 and Figure 2-6, based on QER data the PVC category has shown some decrease in VOC levels but not enough to meet the future limit of 425 g/L limit. However, after having several discussions with stakeholders, staff concluded that the PVC category can meet the future VOC limit effective January 1, 2023 and will retain the 425 g/L limit for this category. The products reformulated to meet the January 1, 2023 deadline are starting to be shipped to retail locations; therefore, the product sales will not appear in the QERs until the manufacturers are required to report their 2022 and 2023 sales.

Table 2-15: PVC Plastic Cement Data

PVC Plastic Cement			
Existing Rule Limit: 510 g/L Effective Now			
Existing Rule Limit: 425 g/L Effective 1/1/2023			
Proposed Rule Limit: 425 g/L Effective 1/1/2023			
	2013	2017	2018
Sale Volume (gal)	159,000	155,000	155,000
Baseline (tpd)	0.92	0.85	0.85
# of Products	164	336	335
SWA* VOC (g/L)	522	480	480

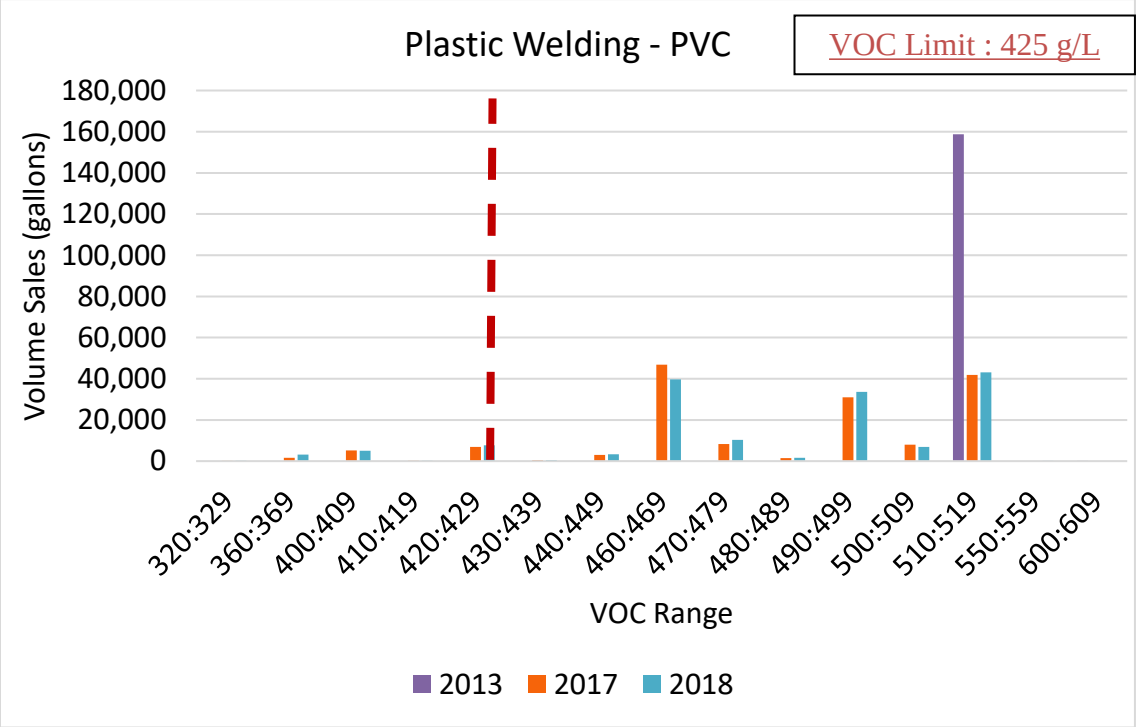

Figure 2-6: PVC Plastic Cement 2017/2018 QER Sales Data

CPVC Plastic Cement

Since the latest data available was for 2017 and 2018, as shown in Table 2-16 and Figure 2-7 below, the data didn't show a significant number of products meeting the future limits, but trends show VOC levels decreasing and the data didn't show any recent reformulations. Staff had several discussions with the Plastic Welding Cement manufacturers and their representatives. The initial feedback was that some manufactures have reformulated their products to meet the future limits while others are still working on future compliant products. Manufacturers were most concerned

with those CPVC products that are used in life safety systems (e.g., fire sprinkler system) and CPVC used for industrial applications. Stakeholders requested additional time to reformulate and perform extensive required testing. Staff concluded that there are technical challenges and high costs associated with reformulating the CPVC – Life Safety Systems products and CPVC for industrial applications. Therefore, staff proposes to create two subcategories under the CPVC category. The first subcategory is "CPVC Welding Cement for Life Safety Systems" and the other is "Higher Viscosity CPVC Welding Cement." Staff will maintain the current 490 g/L limit for CPVC for Life Safety Systems and will delay the effective date for Higher Viscosity CPVC to July 1, 2024, with the previously proposed 400 g/L VOC limit. The forgone emissions for the CPVC for Life Safety System subcategory will be 0.01 tpd and the delayed emissions for higher viscosity CPVC will be 0.01 tpd. In addition, PAR 1168 will require specific labeling requirements to distinguish these products from the lower-VOC CPVC cements.

Table 2-16: CPVC Plastic Cement Data

CPVC Plastic Cement			
Existing Rule Limit: 490 g/L Effective Now			
Existing Rule Limit: 400 g/L Effective 1/1/2023			
Proposed Rule Limit: See Table 25 for Subcategories			
	2013	2017	2018
Sale Volume (gal)	10,700	6,700	8,200
Baseline (tpd)	0.06	0.035	0.04
# of Products	37	58	58
SWA VOC (g/L)	651	383	469

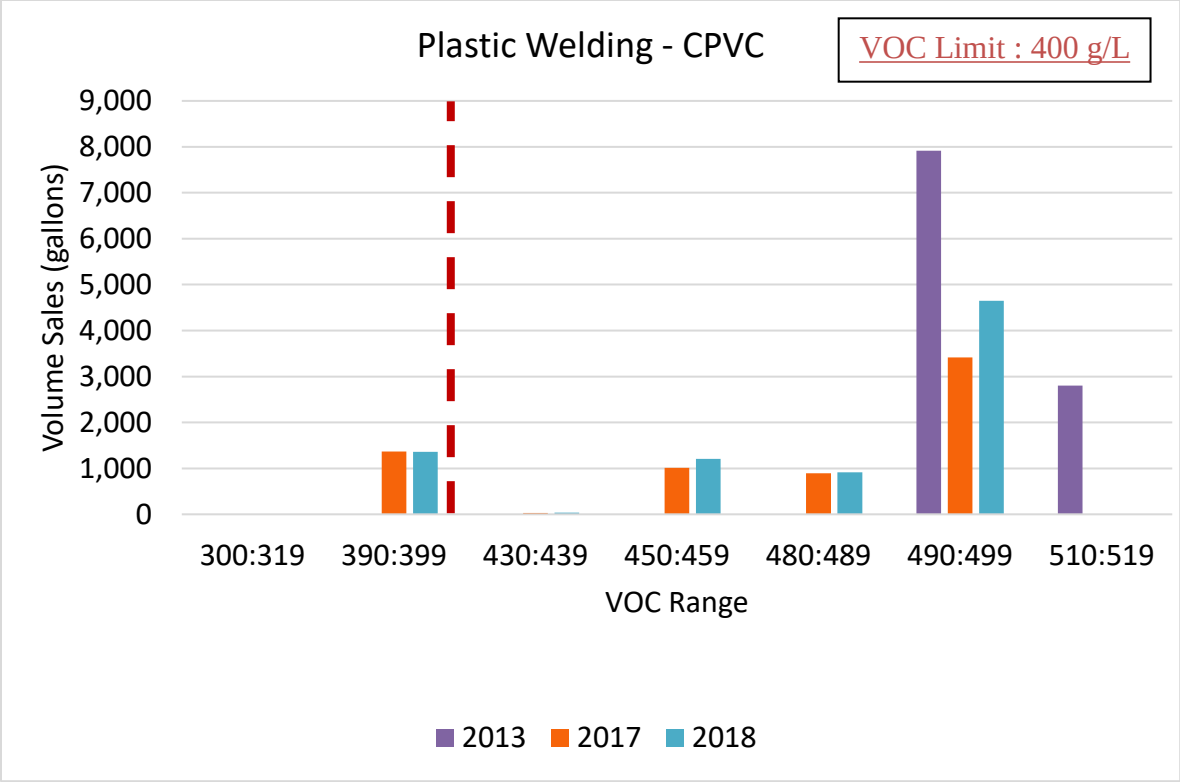

Figure 2-7: CPVC Plastic Cement 2017/2018 QER Sales Data

ABS to PVC Plastic Cement

This category was added based on stakeholder input during the 2017 rule amendment since stakeholders indicated they need higher VOC limit to adhere the PVC to the ABS. Staff proposed an initial limit of 510 g/L with a VOC reduction in 2023 to 425 g/L. As shown in Table 2-17 and Figure 2-8, based on QER data the ABS to PVC category has shown decrease in VOC levels and the majority of the products are in the 320 g/L to 329 g/L range and the SWA for this category has decreased from 510 g/L in 2013 to 377 g/L and 390 g/L in 2017 and 2018 respectively, which is well below the 425 g/L VOC limit that will go into effect on January 1, 2023. Staff proposes to retain the 425 g/L future limit for this category.

Table 2-17: ABS to PVC Plastic Cement Data

ABS to PVC Plastic Cement			
Existing Rule Limit: 510 g/L Effective Now			
Existing Rule Limit: 425 g/L Effective 1/1/2023			
Proposed Rule Limit: 425 g/l Effective 1/1/2023			
	2013	2017	2018
Sale Volume (gal)	254	1,800	2,000
Baseline (tpd)	0.001	0.007	0.008
# of Products	PD	PD	PD
SWA* VOC (g/L)	510	377	390

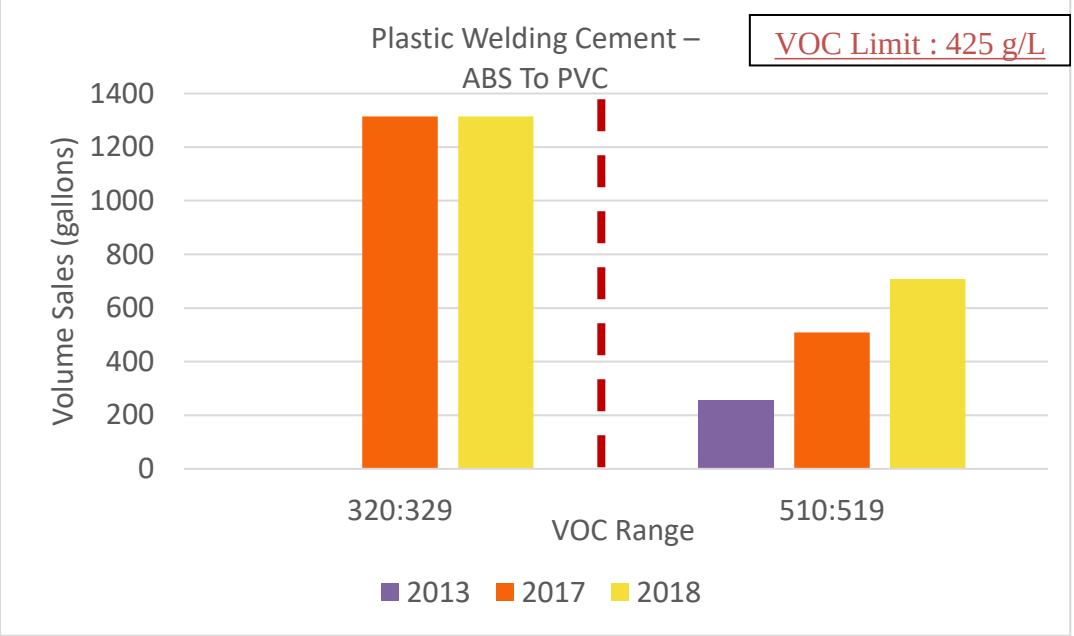

Figure 2-8: ABS to PVC Plastic Cement 2017/2018 QER Sales Data

Roofing Products

Background

During the initial phase of the last amendment to Rule 1168, staff proposed significant reductions that were expected to be achieved by exempting DMC and t-BAc from the definition of a VOC. Due to the toxicity concerns of DMC and t-BAc and the uncertainty of the on-site exposure modeling methodologies, the rule amendment process was put on hold. While it was on hold, South Coast AQMD staff conducted a toxics symposium in October 2014 and drafted an assessment on t-BAc, the "t-BAc Assessment White Paper," which was released in October 2016 and findings were presented to the Stationary Source Committee in November 2016 and April 2017. The assessment resulted in the Stationary Source Committee recommending a precautionary approach

when considering the exempt status for any compound with a toxic endpoint. With the Governing Board's direction not to allow further VOC exemptions for DMC or t-BAc, staff re-initiated the amendment to Rule 1168 with a more modest proposal on VOC reductions for roofing adhesives and sealants. During the rule amendment, stakeholders requested technology assessments for roofing adhesives and sealants to assess if further subcategorizations should be included.

During the current rule amendment, staff performed a thorough analysis on the QERs data for all four roofing categories to assess the available (2017 and 2018) VOC data and the feasibility of the proposed limits. After presenting the preliminary results and staff's proposal during Working Group Meeting #1, staff followed up with stakeholders to discuss the preliminary proposals and the potential subcategorizations as shown in Table 2-18.

Table 2-18: Meetings with Roofing Industry Stakeholders and Representatives

Date	Stakeholder
February 22, 2022	Soprema
February 25, 2022	Roof Coatings Manufacturers Association (RCMA)
March 8, 2022	Asphalt Roofing Manufacturers Association (ARMA)
May 11, 2022	Asphalt Roofing Manufacturers Association (ARMA)
July 27, 2022	Roof Coatings Manufacturers Association (RCMA)
August 23, 2022	Single Ply Roof Industry (SPRI)
September 20, 2022	Single Ply Roof Industry (SPRI)

Staff's initial assessment was to separate the category for asphalt-based roofing adhesives in the All Other Roofing Adhesive category and the new category could have a low VOC limit (~30 g/L). For other roofing categories, staff did not find a need for further subcategorizations. In the next subsection for All Other Roof Adhesives, more information for this subcategorization will be provided.

As detailed in the beginning of this chapter, staff is proposing to prohibit the use of t-BAc and pCBtF in PAR 1168. Manufacturers currently using these compounds to achieve lower VOC limits and manufacturers that planned to use these compounds to meet future effective limits will be impacted by the prohibition. Staff confirmed that the proposed limits, for example for roofing adhesives, may need to be reassessed, and after discussions with stakeholders, staff proposed the updated VOC limits for the categories impacted by the t-BAc and pCBtF prohibition, which will be discussed in the next subsections for each affected category.

All Other Roof Adhesives

As shown in Figure 2-9 the majority of the products in this category are in the range of 20 g/L – 30 g/L VOC. Since these products are all asphaltic adhesives, during Working Group Meeting #1 staff proposed to make a subcategorization in the All Other Adhesive category for asphaltic

adhesives. After discussions with stakeholders, staff recommended to have two subcategories: 1) Shingle Laminating Adhesive: an asphalt-based adhesive used to adhere laminate sheets or shingles when manufacturing Shingle Laminating Adhesive and 2) Hot Applied Modified Bitumen/Built Up Roof Adhesive: a solid asphalt adhesive that must be heated in order to be applied. Table 2-19 and Figure 2-9 show the updated All Other Roof Adhesives category after excluding asphaltic products. After proposing the subcategorizations, stakeholders asked about the need for QER requirements for asphaltic roofing products; since not all asphaltic products are roofing adhesive and VOCs are so low there is no value in reporting VOC levels. However, staff sees value in QER for all categories and manufacturers can estimate the volume of product used as an adhesive for products that have multiple uses and knowing the volumes of low-VOC categories is useful for planning and emission estimates.

Table 2-19: All Other Roof Adhesives Data (Before Subcategorization)

All Other Roof Adhesives	
Existing Rule Limit: 250 g/L Effective Now	
Existing Rule Limit: 200 g/L Effective 1/1/2023	
Proposed Rule Limit: 250 g/l Effective Upon Adoption	
	2017 (same as 2018)
Sale Volume (gal)	>> 100,000
Baseline (tpd)	1.6
# of Products	54
SWA VOC (g/L)	22

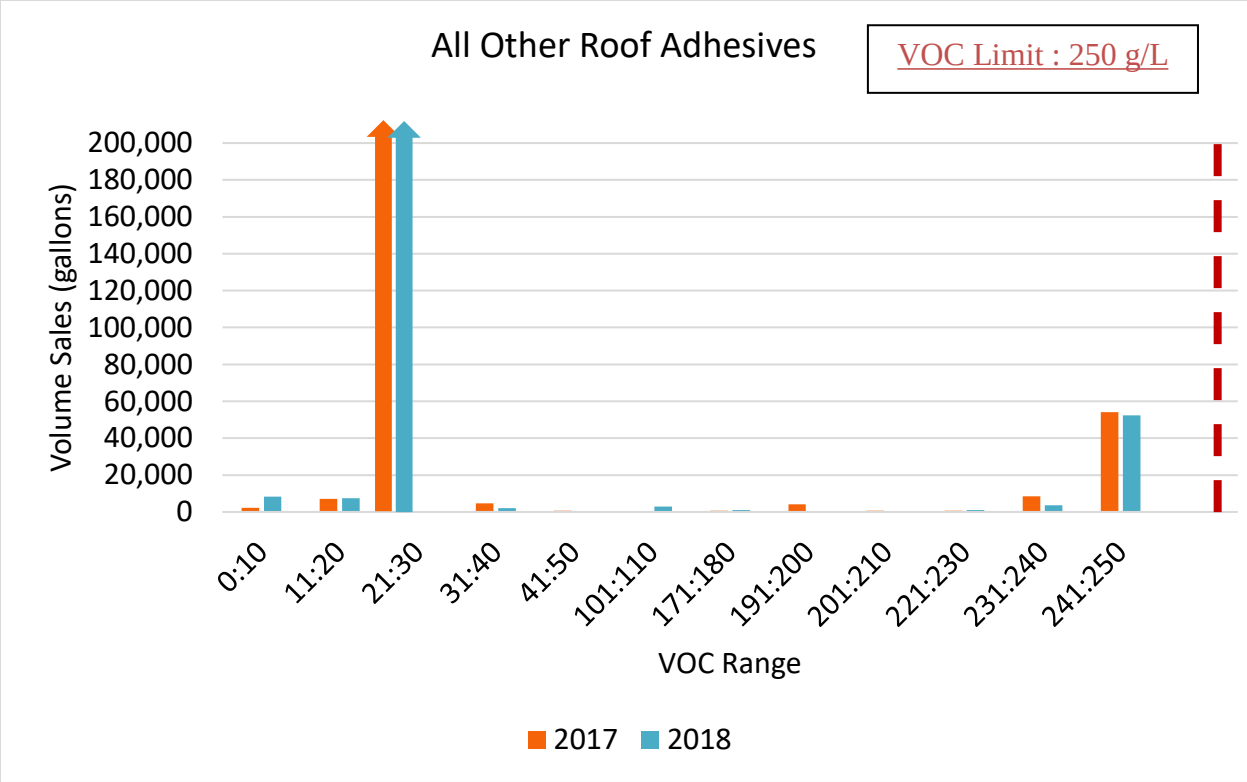

Figure 2-9: All Other Roof Adhesives 2017/2018 QER Sales Data (Before Subcategorization)

All Other Roof Adhesives with Asphaltic Products Removed

Stakeholders indicated pCBtF prohibition will impact their ability to comply with the future limit for roofing products. For the All Other Roof Adhesive category and based on 2017/2018 QERs, the majority of the products are in the 241-250 g/L range. Staff reviewed the products Technical Data Sheets (TDS) and SDS for all reported products and no product listed pCBtF on the documents. Staff proposes to revert back to the 250 g/L limit for this category. The 250 g/L limit was established in 1993 as the default VOC limit, well before the exemption of pCBtF. Staff concludes that the 250 g/L limit is technically feasible since All Other Roof Adhesives had to meet that limit in 1993 without the use of pCBtF.

Table 2-20: All Other Roof Adhesives (After Subcategorization)

All Other Roof Adhesives (Updated)	
Existing Rule Limit: 250 g/L Effective Now	
Existing Rule Limit: 200 g/L Effective 1/1/2023	
Proposed Rule Limit: 250 g/l Effective Upon Adoption	
	2017 (same as 2018)
Sale Volume (gal)	80,000
Baseline (tpd)	0.17
# of Products	46
SWA VOC (g/L)	188

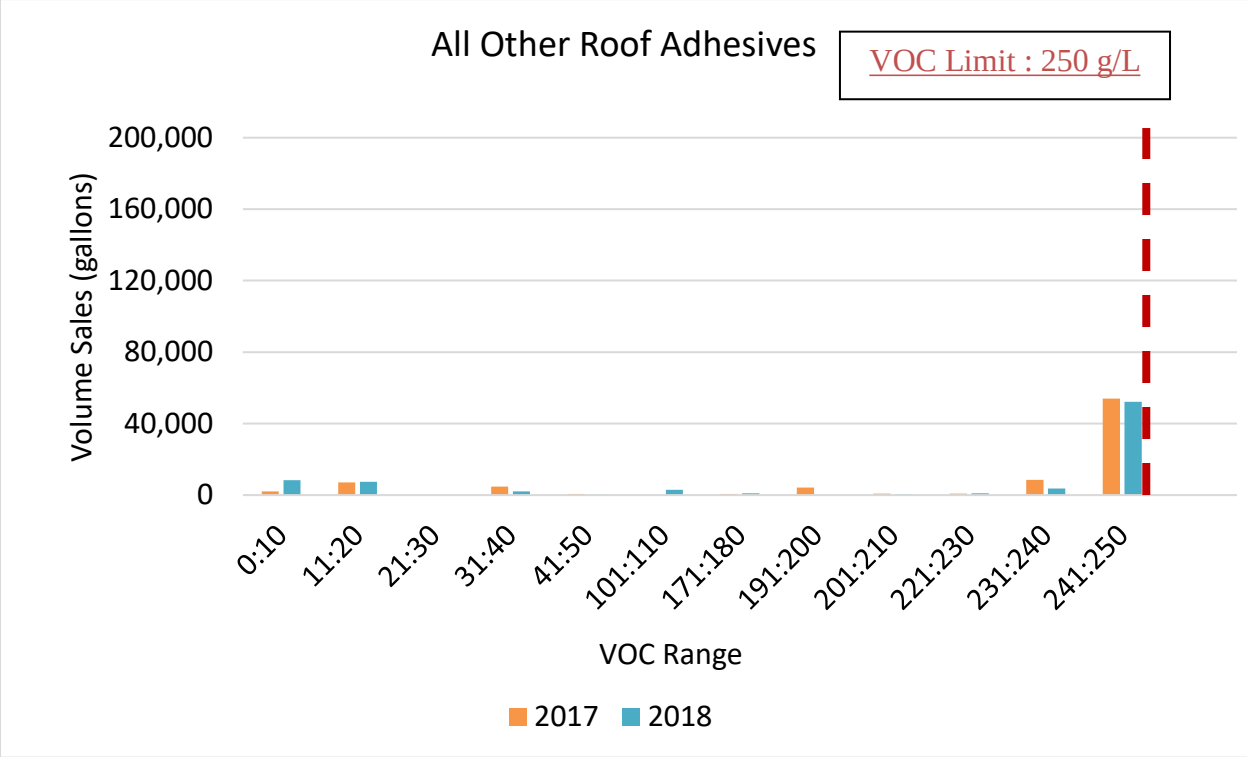

Figure 2-10: All Other Roof Adhesives 2017/2018 QER Sales Data (After Subcategorization)

Single ply Roof Membrane Adhesives

There are several pathways to reformulating lower-VOC products: 1) exempt solvents as has been discussed thoroughly in the staff report, and 2) water-based products. Reformulations away from organic solvents to water has proven to be very successful in many products; however, the transition to water-based adhesives has not been as widespread.

During the 2017 rule development, concerns were raised regarding the use of water-based adhesives in cool weather. The 2017 staff report stated 50 percent of the market share was waterborne. Based on the 2018 QER, only ~ 10 percent of the market share was waterborne, showing solvent-based products are being reformulated to meet 200 g/L limits. However, based on the 2017/2018 QERs as shown in Table 2-21 and Figure 2-11, sizable market share already meets the 200 g/L VOC limits and the data show decreasing SWA VOC from 2013 to 2017/2018 QERs; there are a cluster of products formulated at 250 g/L. Technology assessment for this category was also to determine if subcategorization for this category is warranted. After discussions with roofing industry stakeholders, staff proposes that no further subcategorization for this category is needed. Although data shows a reduction in VOC content of Single Ply Roof Membrane Adhesives, stakeholders indicated a pCBtF prohibition will impact ability to comply with future 250 g/L limit. Staff reviewed the TDS and SDS for all reported products and 11 products listed pCBtF on the SDS. Staff is proposing to revert back to the 250 g/L limit for this category and this limit was in effect since 1998 as the default VOC limit, well before the exemption of pCBtF.

Staff purchased and tested seven roofing adhesives and sealants sold in the South Coast AQMD for pCBtF and only found one sample, a single ply roof membrane adhesive, that contained 1.3 percent pCBtF.

After the Public Workshop, manufacturers recommended staff include a separate subcategory for EPDM/TPO Single Ply Roof Membrane Adhesives as those products rely on a higher percent of pCBtF to comply with the VOC limits. Staff's research verified these products contain higher levels of pCBtF than other Single Ply Roof Membrane Adhesives. Therefore, staff proposes to include a new category for EPDM/TPO Single Ply Roof Membrane Adhesives and provide four years for product reformulation before the pCBtF prohibition takes effect. In addition, staff is proposing to allow two years for product reformulation for the Single Ply Roof Membrane Adhesives, instead of the original proposal of one year.

Table 2-21: Single Ply Roof Membrane Adhesives Data

Single ply Roof Membrane Adhesive			
Existing Rule Limit: 250 g/L Effective Now			
Existing Rule Limit: 200 g/L Effective 1/1/2023			
Proposed Rule Limit: 250 g/l Effective Upon Adoption			
	2013	2017	2018
Sale Volume (gal)	260,000	230,000	270,000
Baseline (tpd)	0.45	0.36	0.38
# of Products	52	61	60
SWA VOC (g/L)	147	120	125

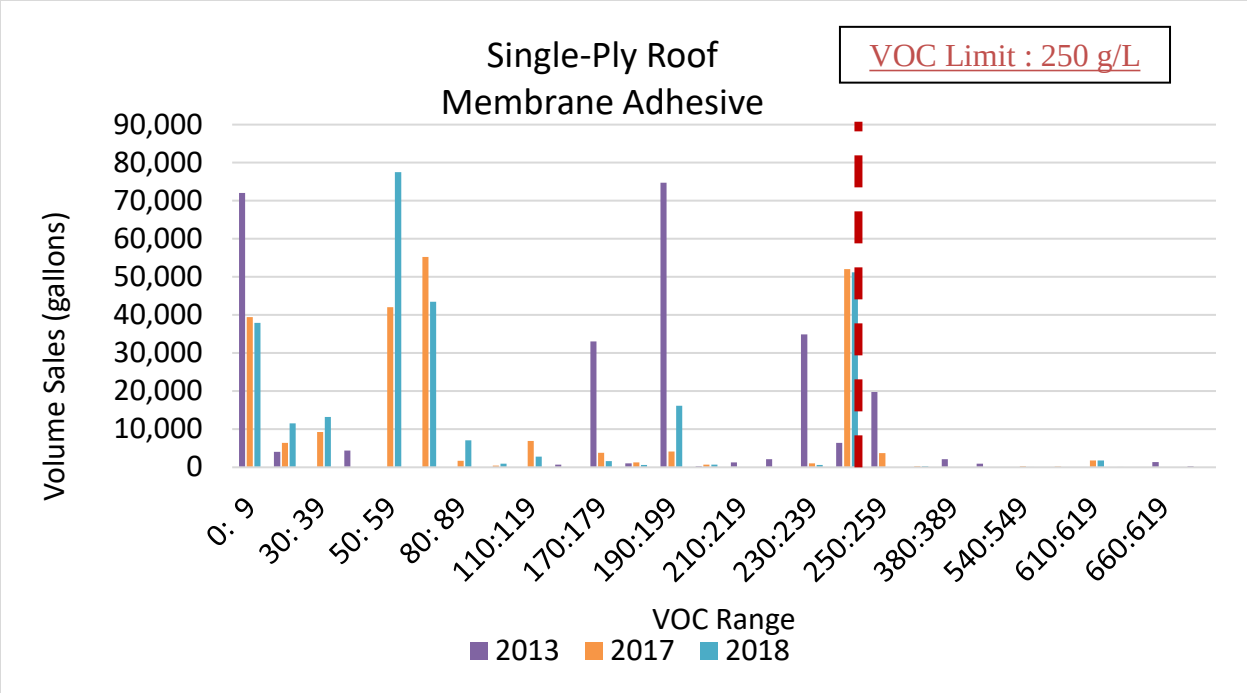

Figure 2-11: Single Ply Roof Membrane Sealants 2017/2018 QER Sales Data

All Other Roof Sealants

This category includes all roof sealants except Single Ply Roof Membrane Sealants. Most products are either asphalt or polyurethane-based. The low-VOC products are reactive or elastomeric products that require the surface to be moisture-free. High-VOC solvent-based products are formulated for application in wet environments, e.g., leak repair during rainfall. Based on the 2017/2018 QER data (Table 2-22 and Figure 2-12) All Other Roof Sealants category, there is a considerable market share reformulated to meet the future effective limits and SWA VOC is below the future compliant limit, but survey data does not reflect most recent reformulations since the data is from 2017 and 2018 and the next set of reports are not due until September 2022.

Stakeholders indicated pCBtF prohibition will impact ability to comply with the future 250 g/L limit. Staff reviewed the TDS and SDS for all reported products and two products listed pCBtF on the SDS. Based on the products reported in the QERs, staff is proposing to revert back to the 300 g/L limit for this category and this limit was in effect since 1998 (previously non-membrane roof sealant category in previous versions of the Rule 1168), well before the exemption of pCBtF. Staff is proposing to allow two years for product reformulation before the pCBtF prohibition takes effect for All Other Roof Sealants, instead of the original proposal of one year.

Table 2-22: All Other Roof Sealants Data

All Other Roof Sealants	
Existing Rule Limit: 300 g/L Effective Now	
Existing Rule Limit: 250 g/L Effective 1/1/2023	
Proposed Rule Limit: 300 g/l Effective Upon Adoption	
	2017 (same as 2018)
Sale Volume (gal)	45,000
Baseline (tpd)	0.12
# of Products	60
SWA VOC (g/L)	198

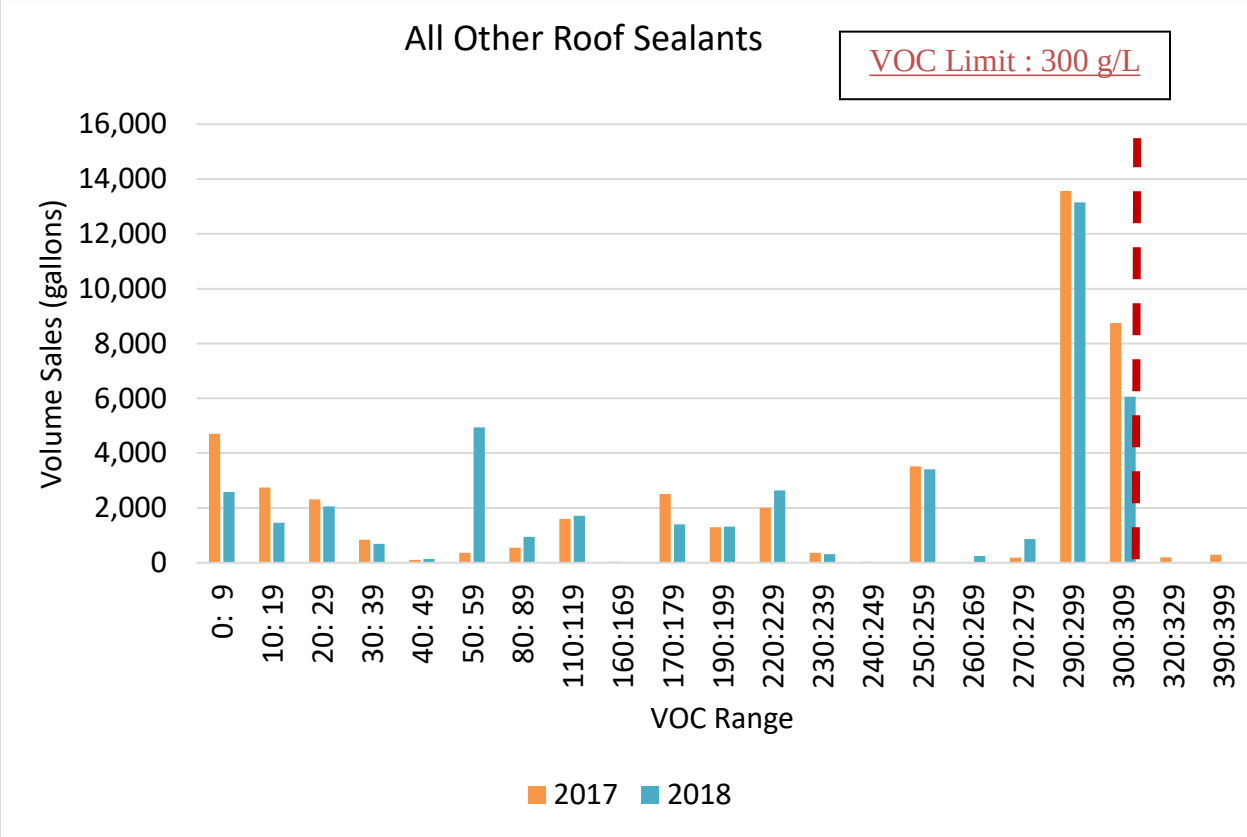

Figure 2-12: All Other Roof Sealants 2017/2018 QER Sales Data

Single Ply Roof Membrane Sealants

Single Ply Roof Membrane Sealants technologies include Low-VOC water-based sealants, 100 percent solids sealants, and solvent-based sealants, which includes sealants formulated with exempt solvents. As shown in Table 2-23 and Figure 2-13, the overall volume and baseline emissions is much lower than for All Other Roofing Sealants. The 2017/2018 QER data shows a

decrease from 2013, and SWA for this category has been decreased from 96 g/L in 2013 to around 81 g/L in 2017/2018. The vast majority of the products in this category are meeting the proposed 250 g/L limit.

Stakeholders indicated a pCBtF prohibition will impact their ability to comply with the future 250 g/L limit. However, during the pCBtF survey only one product reported to have pCBtF in this category. Staff also reviewed the TDS and SDS for all reported products and one product listed pCBtF on the SDS as well. Since the supermajority of existing products are meeting 250 g/L, staff is proposing to retain the 250 g/L limit.

The roofing industry suggested that Cut Edge Single Ply Roof Membrane Sealants should be carved out from this category to allow for a longer timeframe for reformulation. These specialty sealants are sold in squeeze tubes and are only used for small sections of roofing installations or repair. Staff is proposing to allow four years for product reformulation before the pCBtF prohibition takes effect for Cut Edge Single Ply Roof Membrane Sealants. In addition, staff is proposing to allow two years for product reformulation before the pCBtF prohibition takes effect for the Single Ply Roof Membrane Sealants (Except Cut Edge), instead of the original proposal of one year.

Table 2-23: Single Ply Roof Membrane Sealants Data

Single Ply Roof Membrane Sealants			
Existing Rule Limit: 450 g/L Effective Now			
Existing Rule Limit: 250 g/L Effective 1/1/2023			
Proposed Rule Limit: 250 g/l Effective 1/1/2023			
	2013	2017	2018
Sale Volume (gal)	8,300	13,000	13,000
Baseline (tpd)	0.027	0.012	0.012
# of Products	33	36	33
SWA VOC (g/L)	96	81	82

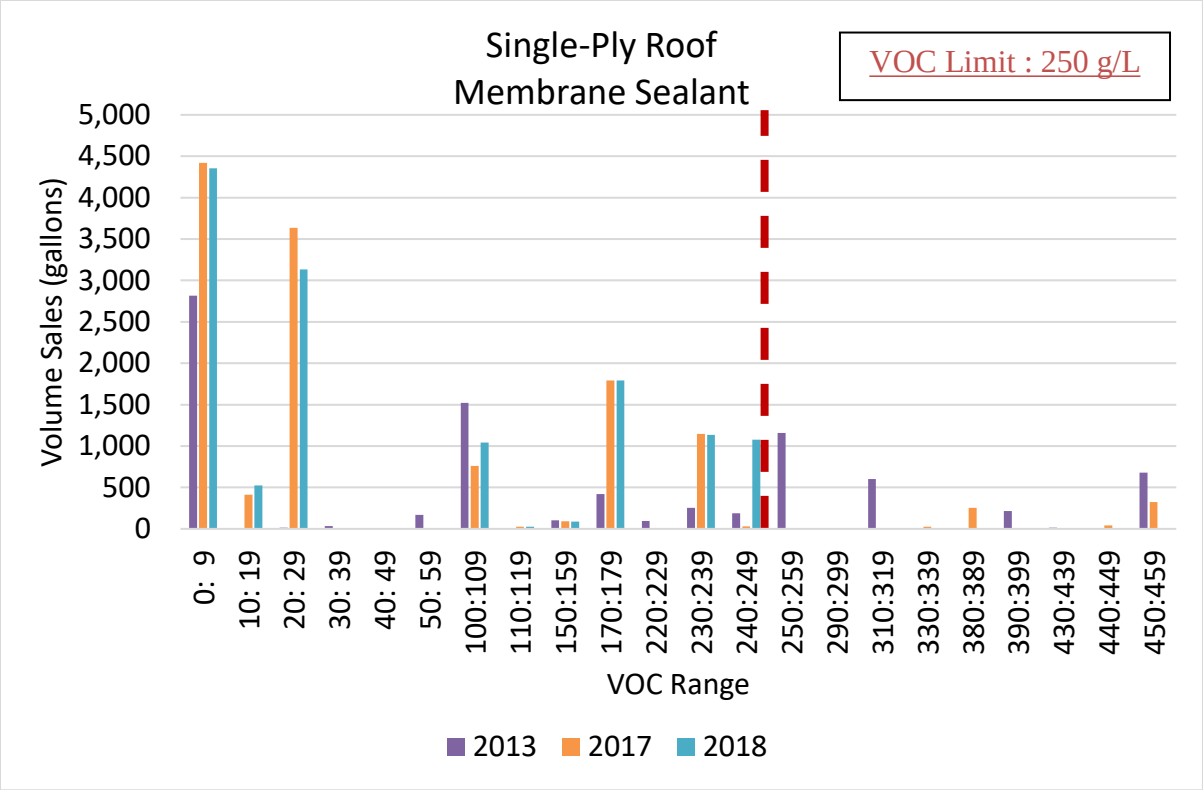

Figure 2-13: Single Ply Roof Membrane Sealants 2017/2018 QER Sales Data

OTHER PROPOSED CHANGES TO RULE

In the sections below, staff discusses other changes that are not related to the technology assessment.

Clear, Paintable, And Immediately Water-Resistant Sealant

While Rule 1168 did not require a technology assessment for Clear, Paintable, and Immediately Water-Resistant Sealants, a manufacturer asked staff to consider a higher VOC limit due to the loss of the pCBtF exemption. Clear, Paintable, and Immediately Water-Resistant Sealants was a new category included during the 2017 amendment. The products serve a similar purpose as Architectural Sealants, which are already achieving lower VOC limits (250 g/L). During the 2017 rule amendment, although South Coast AQMD staff did not recognize the necessity to have a product that is clear and paintable and immediately waterproof, staff acknowledged that the enforcement of these types of products would drive business out of the Basin. Staff confirms the regulated products that fall within this category as All Other Architectural Sealants, which has a VOC limit of 250 g/L. Staff allowed an additional five years since 2017 for the products in this category to provide enough time for reformulations to reduce the VOC content from 380 g/L to 250 g/L.

Stakeholders raised concerns about the new 250 g/L limit which will go into effect on January 1, 2023. Manufacturers indicated they can only meet the proposed VOC limits using pCBtF – no other exempt solvents are available and only aromatic solvents are compatible with these products. Aromatics have toxicity concerns as pCBtF, e.g., benzene, toluene, etc., but the rule currently does

not preclude their usage. Since these products are being used by consumers, toxicity is a significant concern. Even though the baseline emissions for this category are low, about 0.025 tpd, staff wants to prioritize lowering toxicity based on the Stationary Source Committee's direction. Considering this is a new category created in 2017, staff is confident that other Architectural Sealants currently meeting the 250 g/L VOC limit could replace this product based on the immediately waterproof aspect of sealant. Having a sealant that is both clear and paintable are not priorities especially considering toxic risk of the product. Staff also understands the manufacturers that have been using pCBtF for this product category would want to retain their products and need additional time to reformulate products without pCBtF. Therefore, staff proposes to delay the implementation of the proposed 250 g/L limit and pCBtF prohibition for this category to allow time for the required reformulations.

Rubber Vulcanization Adhesive

While Rule 1168 does not require a technology assessment for Rubber Vulcanization Adhesives, a stakeholder asked staff to consider a higher VOC limit due to some technical challenges to meet the proposed 250 g/L. Prior to 2017 amendment, VOC limit was 250 g/L but most facilities complied using the 55-gallon exemption. The 55-gallon exemption was removed in 2017 amendment and the VOC limit was increased to 850 g/L limit to reflect the VOC level of existing products. The 250 g/L limit was set for a future date allowing time for reformulation. There are some water-based products available in market with less than 5 g/L but do not work for all applications. Currently, solvent based products are formulated at 850 g/L. Staff proposes to retain the current 850 g/L limit and allow five years for reformulations. The 250 g/L VOC limit will go into effect on January 1, 2028.

Roof Adhesive Primer and Roof Sealant Primer

Rule 1168 does not require a technology assessment for any primers, and the rule does not include a specialty category for primers for roof application. Adhesive primers used for roof application is currently part of All Other Adhesive Primers subject to the 250 g/L VOC limit. Sealant primers used for roof application is currently part of All Other Sealant Primers subject to the 750 g/L VOC limit. Staff's evaluation of QER reports indicates that three out of four adhesive primers for roof application at or below 250 g/L are relying on pCBtF to achieve compliance. Staff proposes to create a new product category for Roof Adhesive Primer, retaining the 250 g/L VOC limit, but delaying the pCBtF prohibition for this product category. Staff also proposes to create a new product category for Roof Sealant Primer, retaining the 750 g/L VOC limit, but delaying the pCBtF prohibition for this product category. The prohibition delay would allow more time for reformulating the products without pCBtF. Staff is proposing to allow four years before the prohibition takes effect for the Roof Adhesive Primers, effective January 1, 2027, as staff identified a high percentage of the products in that category containing pCBtF. Staff is proposing to allow two years before the prohibition takes effect for the Roof Sealant Primers, January 1, 2025, as the roofing industry expressed concern regarding the timeframe it will take for product reformulation. If there is a product that can be used as both a Roof Adhesive Primer and a Roof Sealant.

Weight Percent VOC Metric

Based on meetings with various stakeholders, staff has been made aware that many products in different regulated product categories can be sold and applied as pressurized products using a propellant. For the same reason staff changed the VOC metric to a weight percent VOC for foam sealants and foam insulation, and staff considered to propose to include a weight percent VOC

limit for all categories which required a manufacturer to comply with the weight percent VOC limit for all products packaged and applied using a propellant and to comply with the gram per liter (g/L) limit for all other products. However, since some stakeholders raised concerns on the conversion factor of VOC limits to weight percent, at this time, staff will only keep the weight percent limit for foam sealants and foam insulations.

CHAPTER 3 : PROPOSED AMENDED RULE LANGUAGE

PROPOSED AMENDED RULE 1168

Staff is proposing the following amendments to Rule 1168. The proposed amendments are primarily on the revised VOC limits for several product categories or new subcategories and the prohibition of t-Bac and pCBtF use in the regulated products. Some other amendments are for rule clarification or streamlining.

Purpose (a) and Applicability (b)

The purpose and applicability are currently both under subdivision (a). Staff proposes to separate the applicability to a new subdivision for a more streamlined rule structure.

In addition, staff proposes to extend the applicability by adding the stationary sources, which has been intended by the rule. The proposed change would provide clarity.

Definitions (c)

The primary proposed revision to this subdivision will be the addition of several new definitions. Staff proposes to establish new categories and subcategories and VOC content limits to reflect the results of the technology assessment. Accordingly, the following definitions for those new categories and subcategories will be added:

- CPVC Welding Cement for Life Safety Systems
- Higher Viscosity CPVC Welding Cement
- One-Component Foam Sealants
- High-Pressure Two-Component Foam Sealants
- Low-Pressure Two-Component Foam Sealants
- Shingle Laminating Adhesive
- Hot Applied Modified Bitumen/Built Up Roof Adhesive
- Cut Edge Single Ply Roof Membrane Sealant
- EPDM/TPO Single Ply Roof Membrane Adhesive
- Roof Adhesive Primers
- Roof Sealant Primers

The proposed revision includes removing the definition for Energy Curable Adhesives and Sealants. This definition references ASTM Test Method 7767 Standard Test Method to Measure Volatiles from Radiation Curable Acrylate Monomers, Oligomers, and Blends and Thine Coatings Made from Them. On August 22, 2022, U.S. EPA issued a partial State Implementation Plan (SIP) disapproval for Rules 1106 and 1107 for ASTM Test Method D7767-11 which is not a U.S. EPA approved test method and cannot be used to enforce a SIP approved rule. Staff is proposing to remove this definition, which was only included as a mechanism to include the test method, to avoid a SIP disapproval.

Staff is proposing a revision to the definition for Exempt Compound. The definition references Rule 102 for exempt compound. For the purpose of this rule, the definition would include a conditional and limited exemption for Opteon 1100. The exemption would not be effective unless

the conditions are met as previously discussed. In addition, the exemption is limited to two-component foam sealants applied in an industrial or professional setting.

Requirements (d)

This provision sets the requirements for VOC limits and effective dates for adhesives and sealants by categories and subcategories, as summarized in Rule 1168 Table 1 – Regulated Product Categories and VOC Limits. Staff is proposing a revision to Rule 1168 Table 1 to reflect the proposed new VOC limits and effective dates for some categories and new subcategories. Please see Table 3-1 below for a summary of the proposal as compared with the current requirements. Another proposed revision to Table 1 is to provide weight-based VOC limits for foam product categories, with a conversion of 0.1 weight percent for one gram per liter. Those foam product categories include Foam Insulation, One-Component Foam Sealants, High-Pressure Two-Component Foam Sealants, and Low-Pressure Two-Component Foam Sealants.

Additionally, staff is proposing a clarification to paragraph (d)(2) for the most restrictive clause. By way of clarification, a product subject to a specialty category with a higher-VOC limit is not subject to lower-VOC limit of the default "All Other" category. For example, All Clear, Paintable, and Immediately Water-Resistant Sealant is subject to the 380 g/L limit for this category, and it is not subject to the 300 g/L limit for All Other Roof Sealant or the 250 g/L for All Other Architectural Sealant. However, the most restrictive clause would apply to a sealant that can be used as a roofing sealant, a window sealant and a door sealant. In that instance, the lower limit of 50 g/L would apply instead of the 250 g/L roofing sealant.

Table 3-1: Summary of Table 1 Revisions

Category	Current limit effect 1/1/23	Proposed Subcategory	Staff Proposal	Effective Date
Top and Trim	250 g/L	N/A	250 g/L	1/1/2028
Foam Sealant	50 g/L	One-Component	18 %	7/1/2023
		High-Pressure Two-Component	5 %	1/1/2023
		Low-Pressure Two-Component	5 %	1/1/2023
PVC Welding Cement	425 g/L	N/A	425 g/L;	1/1/2023
CPVC Welding Cement	400 g/L	CPVC	400 g/L	1/1/2023
		CPVC – Life Saving Systems	490 g/L	Upon Adoption
		CPVC – High Viscosity CPVC Welding Cement	400 g/L	7/1/2024
All Other Roofing Adhesive	200 g/L	All Other Roofing Adhesives	250 g/L	Upon Adoption
		Shingle Laminating Adhesive	30 g/L	1/1/2023
		Hot Applied Modified Bitumen/Built Up Roof Adhesive	30 g/L	1/1/2023
Single Ply Roof Membrane Adhesive	200 g/L	EPDM/TPO Single Ply Roof Membrane Adhesive	250 g/L	Upon Adoption
		Single Ply Roof Membrane Adhesive (Except EPDM/TPO)	250 g/L	Upon Adoption
All Other Roofing Sealant	250 g/L	N/A	300 g/L	Upon Adoption
Single Ply Roof Membrane Sealant	250 g/L	Cut Edge Single Ply Roof Membrane Sealant	250 g/L	1/1/2023
		Single Ply Roof Membrane Sealant (Except Cut Edge)	250 g/L	1/1/2023
Clear, Paintable, Immediately Water-Resistant Sealant	250 g/L	N/A	250 g/L	1/1/2026
Rubber Vulcanization Adhesive	250 g/L	N/A	250 g/L	1/1/2028
All Other Adhesive Primers	250 g/L	Roof Adhesive Primers	250 g/L	Upon Adoption
		All Other Adhesive Primers	250 g/L	Upon Adoption

All Other Sealant Primers	750 g/L	Roof Sealant Primers	750 g/L	Upon Adoption
		All Other Sealant Primers	750 g/L	Upon Adoption

Reporting and Recordkeeping Requirements (e)

Rule 1168 includes two specific recordkeeping provisions. Manufacturers, big box retailers, and distributors must retain records to support the data reported in the QERs; owners or operators of stationary sources that use adhesives or sealants to manufacture products must maintain records pursuant to Rule 109 – Recordkeeping for Volatile Organic Compound Emissions. The current rule specifies reporting and recordkeeping under separate subdivisions (f) and (d) and it is not specific that the Rule 109 only applies to stationary sources.

In addition, in paragraphs (e)(4) and (e)(6) staff proposes to clarify that big box retailers, distribution centers, and facilities using the 55-gallon exemption must maintain records to verify all required data being reported for three years and make them available upon request by the Executive Officer.

For rule streamlining and clarification, staff is proposing to combine the reporting and recordkeeping requirements under subdivision (e). As result, subdivision (e) will be amended to include the following provisions:

- General Quantity and Emission Report (QER)
- Aerosol QER
- Private labeler requirements (as related to QER)
- Big box retailer or distribution center QER
- QER reporting timeline
- Facilities Using the 55-Gallon Exemption
- Recordkeeping for QER
- Rule 109 recordkeeping
- Confidentiality of Information

Staff is also proposing to add a reporting requirement in QER for any product containing more than 0.01 weight percent of t-BAc and/or pCBtF. This reporting requirement would apply to manufactures and private labelers under subparagraphs (e)(1)(G) and (e)(2)(J). This reporting requirement would begin with the next reporting cycle in 2025. The Table below shows the QER reporting schedule adopted during the 2017 amendment:

Table 3-2: QER Reporting Schedule

Reporting Deadlines		Reported Years
Manufacturers & Private Labelers	**Big Box Retailers & Distribution Centers**	
September 1, 2019	May 1, 2019	2017, 2018
September 1, 2022	May 1, 2022	2020, 2021
September 1, 2025	May 1, 2025	2023, 2024
September 1, 2030	May 1, 2030	2028, 2029
September 1, 2035	May 1, 2035	2033, 2034
September 1, 2040	May 1, 2040	2038, 2039

Administrative Requirements (g)

This subdivision includes labeling and QER requirements. As mentioned above, staff proposes to move the QER requirements to subdivision (e). With the reporting requirements moved, this subdivision now only includes labeling requirements; therefore, subparagraphs (g)(1)(A) through (g)(1)(G) have been promoted to paragraphs (g)(1)(though (g)(7). Staff also proposes to add labeling requirements for two new CPVC subcategories, CPVC For Life Safety Systems and Higher Viscosity CPVC Welding Cement. The following statement will be required to be displayed on the container, effective July 1, 2023:

- Each container of CPVC For Life Safety Systems shall include the statement "For CPVC Life Safety System Uses Only" prominently displayed.
- Each container of Higher Viscosity CPVC Welding Cement shall include a statement prominently displayed on the label to indicate if the product is formulated for "Medium" or "Heavy" or "Extra Heavy" applications.

Staff also proposes to amend the labeling requirement to address Regulated Products subject to weight percent VOC limits; the following statement has been added:

- Effective January 1, 2026, Foam Insulation, One-Component Foam Sealants, High-Pressure Two-Component Foam Sealants, and Low-Pressure Two-Component Foam Sealants shall display the VOC as percent VOC by weight.

Prohibition of Sales and Use (h)

Currently the rule prohibits the sale and use of regulated products that contain chloroform, ethylene dichloride, methylene chloride, perchloroethylene, and trichloroethylene and all Group II exempt solvents except volatile methyl siloxanes (VMS). Small, but non-negligible, quantities of VMS

are widely used in silicone-based sealants. The Group II exempt solvent prohibition was included during the 2017 amendments, and it included an effective date of January 1, 2019, that has passed. PAR 1168 combines the prohibition into one paragraph removing the archaic effective date.

Staff also proposes to prohibit the use of t-BAc and pCBtF under subdivision (h). This proposal is based on staff's assessment of t-BAc and pCBtF health risk and the Stationary Source Committee's direction to take a precautionary approach when considering expanding or including an exemption for any compound with a toxic endpoint. The proposal also includes a sell-through and use-through provision for products manufactured prior to the effective date of the t-BAc and pCBtF prohibition. Sell-through and use-through provision are already included in Rule 1168 when there is a VOC limit change for a Regulated Product, the amendment includes the same consideration for the new prohibitions. Based on stakeholder feedback and evaluation of reported data, staff proposed some delays of pCBtF prohibition for specialty products that rely on pCBtF and shorter sell-through and use-through periods to help offset the delays. The prohibition effective dates based on the product categories are illustrated in a new table included in the rule as below.

Table 3-3: Prohibition Effective Dates

Category	Prohibition Effective Date	Sell-through End Date	Use-through End date
	pCBtF Prohibition Effective Dates		
Cut Edge Single Ply Roof Membrane Sealant	January 1, 2027	January 1, 2028	January 1, 2028
EPDM/TPO Single Ply Roof Membrane Adhesive			
Roof Adhesive Primer			
Single Ply Roof Membrane Adhesive (Except EPDM/TPO)	January 1, 2025	January 1, 2028	January 1, 2028
Single Ply Roof membrane Sealants (Except Cut Edge)			
All Other Roof Sealants			
Roof Sealant Primer			
Clear, Paintable, and Immediately Water-Resistant Sealant	January 1, 2026	January 1, 2028	January 1, 2028
All Regulated Products not listed above	January 1, 2024	January 1, 2027	January 1, 2028
	t-BAc Prohibition Effective Dates		
All Regulated Products	January 1, 2024	January 1, 2027	January 1, 2028

Exemptions (j)

For regulated products with a VOC content no more than 20 g/L, Rule 1168 provided an exemption from subdivision (c) - the VOC emission limits and subdivision (d) - the Rule 109 recordkeeping requirements. However, Rule 1168 includes some limits as low as 20 g/L making the reason behind the 20 g/L exemption unclear. Staff proposes to change the exemption as follows:

- Regulated Products packaged and applied using a propellant, 2 percent VOC by weight or half the applicable VOC limit, whichever is lower;
- Low-Solids Regulated Products, 20 grams per liter material or half the applicable VOC limit, whichever is lower; and
- All other Regulated Products, 20 grams per liter, or half the applicable VOC limit, less water and less exempt compounds, whichever is lower.

In addition, staff is proposing to remove paragraph (j)(9) which allowed for the continued use of methylene chloride, a prohibited compound, in solvent welding formulation until January 1, 2021. The paragraph is being removed since that date has passed and those formulations can no longer use methylene chloride.

CHAPTER 4 : IMPACT ASSESSMENT

EMISSION INVENTORY

The emission inventory for the proposed amended rule was determined by the most recent QER available reported in September 2019 reporting the 2017 and 2018 adhesive and sealant sales into the South Coast AQMD. According to the 2017/2018 QERs, the baseline emission for the Rule 1168 is 6.2 tpd of VOC for 2017 and 2018 reporting years.

Table 4-1: 2018 Emissions

Category	2018 Emissions (tpd)
Top and Trim	0.2
Foam Sealants	0.2
All Other Roof Adhesives	1.6
Single Ply Roof Membrane Adhesive	0.3
All Other Roof Sealants	0.1
Single Ply Roof Membrane Sealants	0.01
PVC Welding Cement	0.9
CPVC Welding Cement	0.04
ABS to PVC Welding Cement	0.3
Clear, Paintable, Immediately Water-Resistant Sealant	0.03
Rubber Vulcanization Adhesives	0.4
All Other Adhesive Primer	0.01
Other Rule 1168 Categories	2.1
Total	6.2

The categories for which a technology assessment has been performed include 3.3 tpd of the total baseline emissions with the All Other Roof Adhesives accounting for 1.6 tpd of total reported VOC emissions. Approximately 1.4 tpd of All Other Roof Adhesives category were asphaltic adhesives that staff separated and created two new subcategories. In the table below there is a list of products for which a technology assessment was either required by the rule or manufacturers reached out to staff to indicate there were issues with the upcoming VOC limits, with the total sales and SWA.

Table 4-2: Products in Technology Assessment and Products with Proposed VOC Limit Revisions

Emission Source	2017		2018		
	Total Sales (gallons)	SWA (g/L)	Total Sales (gallons)	SWA (g/L)	
Top and Trim	75,000		424	60,000	337
Foam Sealant	107,000		154	105,000	148
All Other Roof Adhesives[1,2]	80,000		188	80,000	188
Single Ply Roof Membrane Adhesive	230,000		120	270,000	125
All Other Roof Sealants[2]	45,000		198	45,000	198
Single Ply Roof Membrane Sealants	13,000		81	13,000	82
PVC Welding Cement	155,000		480	155,000	480
CPVC Welding Cement	6,700		383	8,200	469
ABS To PVC Welding Cement	1,800		377	2,000	390
Clear, Paintable, Immediately Water-Resistant Sealant	8,700		420	6,800	322
Rubber Vulcanization Adhesives	Protected Data		653	Protected Data	710
Total Sales in Table	733,500			747,400	
Total Sales of Regulated Products	**14,000,000**			**16,000,000**	

[1] Non-asphaltic All Other Roof Adhesives
[2] Same data reported for 2017 and 2018

CONTROL TECHNOLOGY

Compliance with PAR 1168 is expected to be met with manufacturers reformulating regulated products by substituting certain chemicals with other chemicals that contain less VOCs, less or no toxics, and no stratospheric ozone-depleting compounds. The manufacturers will have flexibility to use any compliant alternative reformulation in order for their product to meet the VOC limits in PAR 1168. Physical modifications to or new installations of manufacturing equipment, including the installation of control equipment, would not be expected to be needed in order to reformulate products. For certain categories, there are existing products that meet the proposed lower VOC content limits, so reformulation is practicable. Finally, some end-users can comply with the rule using alternative options such as the 55-gallon per year exemption; control devices, such as emission collection systems; or an Alternative Emission Control Plan.

EMISSION REDUCTIONS

Staff is not projecting any overall emission reductions resulting from this rule amendment. Based on the technology assessment, which includes staff discussions with stakeholders and analyzing the QER data, staff is proposing to revise some of the proposed 2017 VOC limits or delay effective dates for VOC limits. However, the change was not the same for all impacted categories; the 2017 proposed limits will remain unchanged for some categories, while for other categories, staff proposed a delayed effective date. For some categories the 2017 proposed limits were reverted back to the pre-2017 limits. Due to the proposed pCBtF and t-BAc prohibition, VOC limits for roofing products have been reverted to the pre-2017 limits, with the exception of Single Ply Roof Membrane Sealants. The prohibition affected the ability of manufacturers to meet the 2017 proposed VOC limits.

For solvent cement categories including PVC, CPVC, CPVC for Life Safety Systems, Higher Viscosity CPVC, staff proposed to maintain the 2017 proposed limits for PVC, CPVC, and Higher Viscosity CPVC, but the limit for the CPVC for Life Safety Systems will be at the pre-2017 proposed limits. For Foam Sealants and Top and Trim Adhesives there would be some emission reductions. In the case of Top and Trim Adhesives, since 2003, the VOC limit reduction to 250 g/L was delayed twice to allow manufacturers to reformulate. Staff proposed to allow five years for reformulations and the 250 g/L will go into effect on January 1, 2028. The delayed and foregone emissions and emission reductions are presented in the table below.

Table 4-3: Proposed VOC Limits, Delayed and Foregone Emissions, and Emission Reductions

	VOC limit prior to 2017 amendment	2017 Proposed VOC limit Effective Jan 2023	2022 Proposed VOC limits	Proposed Effective Date	Delayed Emission Reductions (tpd)	Foregone Emission Reductions (tpd)
Top and Trim Adhesives	540	250	250	1/1/2028	0.1	0
One-Component Foam Sealants	250	50	18 %	7/1/2023	0.01	0.12
High-Pressure Two-Component Sealant	250	50	5%	1/1/2023	0	0
Low-Pressure Two-Component Sealant	250	50	5%	1/1/2023	0	0
All Other Roof Adhesives	250	200	250	Upon Adoption	0	0.03
SHINGLE LAMINATING Adhesive	250	250	30	1/1/2023	0	0
Hot Applied Modified Bitumen/Built Up Roof Adhesive	250	250	30	1/1/2023	0	0

	VOC limit prior to 2017 amendment	2017 Proposed VOC limit Effective Jan 2023	2022 Proposed VOC limits	Proposed Effective Date	Delayed Emission Reductions (tpd)	Foregone Emission Reductions (tpd)
Single Ply Roof Membrane Adhesives	250	200	250	Upon Adoption	0	0.07
All Other Roof Sealants	300	250	300	Upon Adoption	0	0.05
Single Ply Roof Membrane Sealants	450	250	250	1/1/2023	0	0
PVC Welding Cement	510	425	425	1/1/2023	0	0
CPVC Welding Cement	490	400	400	1/1/2023	0	0
CPVC – Life Safety Systems	490	400	490	N/A	0	0.01
Higher Viscosity CPVC	490	400	400	7/1/2024	0.01	0
Clear, Paintable, Immediately Water-Resistant Sealant	380	250	250	1/1/2026	0.007	
Rubber Vulcanization Adhesive	850	250	250	1/1/2028	0.29	
Total					0.42	0.28

The delayed emission reductions and foregone emissions reductions from the proposed amendments will be 0.42 tpd and 0.28 tpd, respectively.

COST ASSESSMENT

Cost effectiveness analysis is not required for PAR 1168 as the proposed VOC limits either retains, delays, or increases the VOC limits, except for two roofing subcategories with a lower proposed limit. Staff analysis has determined that all reported products of those two new roofing subcategories are meeting the proposed limit.

Stakeholders contend that prohibiting pCBtF may trigger product reformulation for certain categories and entail additional cost. The primary impact would be on four roofing categories as discussed previously, some adhesive primers primarily used for roofing, and some Clear, Paintable, And Immediately Water-Resistant Sealants. Staff is proposing to retain the current emission limit for Single Ply Roof Membrane Sealants and revert the emission limits for other three roofing categories back to the pre-2017 limits. For Single Ply Roof Membrane Sealants, two out of 37 products were found to contain pCBtF. Staff conducted an internet search for the market price of Single Ply Roof Membrane Sealants and found that the cost of this product with pCBtF is not higher than some other products at similar VOC emission level but containing no pCBtF. As

discussed in Chapter 3, staff identified three specialty products that are relying on pCBtF to meet the limits and is proposing to carve out subcategories to allow for longer time to reformulate. Staff also estimated costs reformation costs for Clear, Paintable, And Immediately Water Resistant Sealants.

The number of products that contain pCBtF are shown in the table below.

Table 4-4: Categories and number of products that contain pCBtF

Category	# Of products contain pCBtF
Single Ply Roof Membrane Adhesive including EPDM/TPO Single Ply Roof Membrane Adhesive	**11**
Single Ply Roof Membrane Sealant including Cut Edge Single Ply Roof Membrane Sealant	**2**
All Other Roof Adhesives	**0**
All Other Roof Sealants	**2**
All Other Adhesive Primer	**3**
Clear, Paintable, Immediately Water-Resistant Sealant	**3**
Total Roofing Products	**18**
Total Products	**21**

SOCIOECONOMIC ASSESSMENT

Health and Safety Code Section 40440.8 requires a socioeconomic impact assessment for proposed and amended rules resulting in significant impacts to air quality or emission limitations. This rule amendment will result in the elimination of two toxic solvents, t-BAc and pCBtF, and there are no VOC emission reductions; therefore, it does not include a cost effectiveness assessment This assessment shall include affected industries and a range of probable costs.

AFFECTED INDUSTRIES

The proposed amendments to Rule 1168 would affect approximately 76 adhesive and sealant manufacturers, of which 15 are manufacturing the products within the South Coast Air Basin. The majority of the affected facilities belong to the industries of Asphalt Shingle and Coating Materials (NAICS 324122) Adhesive Manufacturing (NAICS 325520), and Industrial Building Construction (NAICS 236210). Out of the 15 affected facilities, ten are in Los Angeles County, two are in Orange County, and one is located in San Bernardino County.

PAR 1168 would also affect the intermediate users of adhesive and sealant products. The sectors that make extensive use of products subject to the proposed amendments mainly belong to Construction (NAICS 23), Durable and Nondurable Manufacturing (NAICS 33 and 31-32, respectively) as presented in Table 4-5. More than 99 percent of these affected sources are area sources for which staff has no detailed information.

Table 4-5: Potentially Affected Intermediate Users by Industry

Construction (NAICS 23)
Industrial Building Construction (NAICS 236210)
New Multifamily Housing Construction (NAICS 236116)
Commercial and Institutional Building Construction (NAICS 236220)
New Single-Family Housing Construction (NAICS 236115)
Residential Remodelers (NAICS 236118)
Oil and Gas Pipeline and Related Structures Construction (NAICS 237120)
Water and Sewer Line and Related Structures Construction (NAICS 237110)
Roofing Contractors (NAICS 238160)
Siding Contractors (NAICS 238170)
Tile and Terrazzo Contractors (NAICS 238340)
Drywall and Insulation Contractors (NAICS 238310)
Flooring Contractors (NAICS 238330)
Glass and Glazing Contractors (NAICS 238150)
Plumbing, Heating, and Air-Conditioning Contractors (NAICS 238220)
Nondurable Manufacturing (NAICS 31-32)
Footwear Manufacturing (NAICS 316210)
Hardwood Veneer and Plywood Manufacturing (NAICS 321211)
Manufactured Home (Mobile Home) Manufacturing (NAICS 321991)
Other Millwork (including Flooring) (NAICS 321918)
Wood Container and Pallet Manufacturing (NAICS 321920)
Wood Window and Door Manufacturing (NAICS 321911)
Asphalt Shingle and Coating Materials Manufacturing (NAICS 324122 and 325520)
Adhesive Manufacturing (NAICS 325520).
All Other Rubber Product Manufacturing (NAICS 326299)
Polystyrene Foam Product Manufacturing (NAICS 326140)
Rubber Product Manufacturing for Mechanical Use (NAICS 326291)
Tire Retreading (NAICS 326212)
Urethane and Other Foam Product Manufacturing (NAICS 326150)
Durable Manufacturing (NAICS 33)
Refrigeration Equipment Manufacturing (NAICS 333415)
Custom Architectural Woodwork and Millwork Manufacturing (NAICS 337212)
Household Furniture (except Wood and Metal) Manufacturing (NAICS 337125)
Motor Vehicle Seating and Interior Trim Manufacturing (NAICS 336360)
Office Furniture (except Wood) Manufacturing (NAICS 337214)
Showcase, Partition, Shelving, and Locker Manufacturing (NAICS 337215)
Surgical Appliance and Supplies Manufacturing (NAICS 339113)
Wood Kitchen Cabinet and Countertop Manufacturing (NAICS 337110)

Lastly, if the additional costs associated with the proposed amendments are eventually passed on to end-users of PAR 1168 applicable products would potentially affect the general public (consumers).

Compliance Cost

The purpose of PAR 1168 is to adjust some VOC limits and compliance dates based on the technology assessments and the proposed prohibition of t-BAc and pCBtF. For the purpose of this analysis, staff quantified the impacts of the additional compliance costs and potential savings associated with the pCBtF prohibition. The costs of VOC reductions that were included in the 2017 amendment are not included as they were assessed as part of the last amendment. Staff also did not assess any costs associated with delayed compliance dates.

Potential Cost Savings

The estimated cost savings are due to the high cost of pCBtF; replacement solvents will be less expensive. Staff conducted a cost assessment of regulated products with and without pCBtF and found the non-pCBtF formulations to be between $20 to $40 cheaper than products formulated with pCBtF for each gallon. In this case, formulating away from pCBtF will result potential cost savings. The only exception are clear, paintable, immediately water-resistant sealants where the newer, low-VOC products are more expensive. For those products, the cost of reformulation is reflected in the price and cost savings are not included in the potential cost saving assessment. This comports with staff's cost assessments from previous VOC rule amendments where manufacturers stated the high cost of pCBtF was a barrier to reformulation.

Staff estimated the cost saving based on a conservative estimate of $15 saved per gallon reformulated. Based on manufacturer feedback on products sold into the South Coast AQMD that are formulated with pCBtF, the total estimated gallons that will have to be reformulated are approximately 400,000 gallons, not including the clear, paintable, immediately water-resistant sealants. That would result in a cost saving of approximately $738,000 over ten years.

Reformulation Costs Incurred

Cost effectiveness calculations for VOC rule amendments typically estimates costs incurred based on the incremental increase of the reformulated products, but as mentioned above, all products staff identified as formulated with pCBtF were more expensive than the non-pCBtF products. Therefore, that analysis only shows cost savings. However, manufacturers will incur cost for product reformulations. Staff will estimate the reformulation costs based on an estimated 20 percent cost increase from the cost of existing products and multiple that times the volume of products that must be reformulated. A 20 percent cost increase has been used for past VOC rule amendments to estimate reformulation costs. Staff estimates the reformulation costs at $515,000 over ten years.

In addition to the reformulation costs, there are also third-party testing costs associated with roofing adhesives and sealants. The majority of products staff identified as containing pCBtF are roofing products; therefore, staff is including third-party testing costs in the assessment. Based on manufacturer feedback, this testing can cost up to $150,000 per product. Staff identified approximately 20 roofing products that are formulated with pCBtF sold into or within the South Coast AQMD resulting in approximately $400,000 cost incurred annualized over 10 years.

The last cost staff evaluated was for clear paintable and immediately water-resistant sealants. For these products, staff did identify higher costs for the reformulated products. The product volumes

are protected data was less than three manufacturers reported selling product containing pCBtF so staff will only report the estimated cost incurred, which is $220,000 annualized over 10 years.

Reporting Costs

In addition to reformulation and testing costs, minor additional costs will be incurred for the new requirement that manufacturers must include the weight percent pCBtF and t-BAc in the reported regulated products. Costs associated with the QERs were evaluated during the 2017 amendment. The additional reporting requirement will not add a significant cost to the facilities. Staff has not identified a significant number of products formulated with either pCBtF or t-BAc so the impacts should be minimal.

Overall Cost of Rule Amendment

Based on the estimated cost savings of approximately $738,000 and the costs incurred of $735,000 for roofing reformulation, $220,000 for clear, paintable, and immediately water-resistant sealants and $400,000 for third party testing for roofing products, the overall cost of the rule amendment is $397,000.

Socioeconomic Impacts of CEQA Alternatives

Four alternatives to PAR 1168 were developed for the CEQA analysis in the Subsequent Environmental Assessment (SEA) prepared for PAR 1168: Alternative A - No Project; Alternative B - More Stringent Proposed Project; Alternative C - Less Stringent Proposed Project; and Alternative D - Extended Effective Dates for VOC Limits in October 2017 Version of Rule 1168. This section provides a summary of each alternative as well as an assessment of the possible socioeconomic impacts resulting from these alternatives.

Alternative A – No Project

CEQA requires the specific alternative of "No Project" to be evaluated. A "No Project" Alternative consists of what would occur if the proposed project was not approved; in this case, not adopting PAR 1168. Under Alternative A, manufacturers would be allowed to continue to formulate adhesives and sealants for sale and use within South Coast AQMD's jurisdiction that meet the VOC limits established in the October 2017 version of Rule 1168. However, manufacturers of certain adhesives and sealants have indicated that they need more time to develop compliant products or cannot meet the applicable VOC limits by the January 1, 2023 effective date due to technological limitations, creating potential compliance issues, and likely resulting in the originally projected VOC emission reductions not being fully achieved. Moreover, under Alternative A, t-BAc and pCBtF would continue to be classified as VOC-exempt solvents and as such, could continue to be used in formulating adhesives and sealants subject to PAR 1168. Since there would be no additional reformulations or t-BAc and pCBtF prohibition in this alternative, there would be no cost associated with this proposal.

Alternative B – More stringent Proposed Project

PAR 1168 proposes revisions to the VOC limits and corresponding effective dates for certain categories of adhesives and sealants based on the technology assessment that was conducted. Alternative B proposes the same VOC limits but those limits would need to occur six months earlier than the proposed project for the categories of One-Component Foam Sealant and Higher Viscosity CPVC Welding Cement while the effective date to meet the proposed VOC limits for

Top and Trim Adhesive, Clear, Paintable, Immediately Water-Resistant Sealant, and Rubber Vulcanization Adhesive would need to occur twelve months earlier than the proposed project.

A 20 percent cost increase is used for estimating Alternative B reformulation costs as compared with the proposed project. Staff estimates the reformulation costs at $850,000 over 10 years. With no change to other cost assumptions, the overall cost of Alternative B is $510,000. However, the feasibility may be compromised due to the shorter timeline for the manufacturers to reformulate in Alternative B.

Alternative C – Less Stringent Proposed Project

Alternative C proposes less stringent requirements. Under Alternative C, the categories of Top and Trim Adhesive, One-Component Foam Sealant, Higher Viscosity CPVC Welding Cement, Clear, Paintable, Immediately Water-Resistant Sealant, and Rubber Vulcanization Adhesive would have an additional 12 months to meet the proposed VOC limits in PAR 1168.

A 10 percent cost decrease is used for estimating Alternative C reformulation costs as compared with the proposed project. Staff estimates the reformulation costs at $640,000 over ten years. With no change to other cost assumptions, the overall cost of Alternative C is $300,000.

Alternative D – Extended Effective Dates for VOC Limits in October 2017 Version of Rule 1168

Alternative D would not change the January 1, 2023 effective VOC limits in the current rule for the following categories: One-Component Foam Sealant, Single Ply Roof Membrane Adhesive (including both subcategories with and without EPDM/TPO), All Other Roof Sealants, All Other Roof Adhesives, and CPVC Welding Cement for Life Safety Systems. However, under Alternative D, instead of January 1, 2023, the effective date would be postponed by seven years to January 1, 2030, providing industries with sufficient additional time to meet the VOC limits.

Compared with the proposed project, Alternative D would have more stringent VOC limits and less stringent effective dates for One-Component Foam Sealant, Single Ply Roof Membrane Adhesive (including both subcategories with and without EPDM/TPO), All Other Roof Sealants, All Other Roof Adhesives, and CPVC Welding Cement for Life Safety Systems. There would be more cost for the more stringent requirements and less cost for the less stringent requirements. For the roofing products, staff assumes there is no cost change from the proposed project. However, the feasibility of the achieving the more stringent VOC limits without the use of pCBtF as proposed by Alternative D for some products could be compromised as compared with the proposed project.

Regarding the CPVC Welding Cement for Life Safety Systems, keeping the January 1, 2023, VOC limit would result in additional costs as those products require reformulation and third-party testing. Staff estimates approximately 20 percent of the sales volume reported in the QERs could be sold for use on life safety systems. Using the same assumption as a 20 percent increase in the cost of products sold as a surrogate for reformulation costs, staff estimates reformulation would cost approximately $7,000 and third-party testing would cost approximately $70,000 annualized over 10 years. Alternative D could cost an additional $77,000 annualized over 10 years.

Table 4-**6**: Summary of Socioeconomic Impacts of CEQA Alternatives

	Reformulation Cost	Raw Material Savings	Third Party Testing	Total
Staff Proposal	$710,000	$(740,000)	$400,000	$370,000
Alternative A	$710,000	$(740,000)	$400,000	$370,000
Alternative B	$850,000	$(740,000)	$400,000	$510,000
Alternative C	$640,000	$(740,000)	$400,000	$300,000
Alternative D	$717,000	(740,000)	$470,000	$447,000

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 and CEQA Guidelines Section 15251(l); codified in South Coast AQMD Rule 110), the South Coast AQMD, as lead agency for PAR 1168, prepared a Subsequent Environmental Assessment (SEA) for the proposed project. The SEA is a substitute CEQA document prepared pursuant to CEQA Guidelines Section 15252 and in lieu of a Subsequent Environmental Impact Report. The SEA tiers off of the October 2017 Final Environmental Assessment (EA) for the October 2017 amendments to Rule 1168,[4] as allowed by CEQA Guidelines Sections 15152, 15162, 15168 and 15385. The Draft SEA was released for a 45-day public review and comment period to provide public agencies and the public an opportunity to obtain, review, and comment on the environmental analysis. Comments made relative to the analysis in the Draft SEA and responses to the comments will be included in the Final SEA.

DRAFT FINDINGS UNDER THE HEALTH AND SAFETY CODE

Health and Safety Code Section 40727 requires that prior to adopting, amending or repealing a rule or regulation, the South Coast 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 – Based on the technology assessment and the Governing Board direction to address the toxic risk of exempt compounds t-BAc and pCBtF, PAR 1168is necessary to delay or amend the effective dates of certain VOC limits.

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

[4] South Coast AQMD, 2017. Final Environmental Assessment (EA) for Proposed Amended Rule (PAR) 1168 – Adhesive and Sealant Applications, SCH No. 2017081031. http://www.aqmd.gov/docs/default-source/rule-book/Proposed-Rules/1168/draft-subsequent-environmental-assessment---sea.pdf?sfvrsn=8

Clarity –PAR 1168 is written and displayed so that the meaning can be easily understood by persons directly affected by them.

Consistency – PAR 1168 is in harmony with, and not in conflict with or contradictory to, existing statutes, court decisions, federal or state regulations.

Non-Duplication - PAR 1168 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 South Coast AQMD.

Reference - In amending this rule, the South Coast AQMD Governing Board references the following statutes which the South Coast AQMD hereby implements, interprets or makes specific: 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 amended rule with existing federal and South Coast AQMD regulations. There are no other existing or proposed South Coast AQMD rules that directly apply to the same source type (adhesive and sealant applications). The federal government has suggested standards in the form of a Control Techniques Guideline for Miscellaneous Industrial adhesives but has no regulatory requirements. The CARB CPR regulates certain consumer product adhesives and sealants throughout the state of California and the OTC has a Model Rule that applies to adhesives and sealants.

Table 4-7:Comparative analysis

	PAR 1168	CARB Consumer Products Regulation	U.S. EPA Control Techniques Guideline for Miscellaneous Industrial Adhesives	Ozone Transport Commission Model Rule for Consumer Products
Applicability	All use of adhesives, adhesive primers, sealants, or sealant primers excluding consumer and institutional use where the units of product, less packaging, weigh one pound or less and consist of less than 16 fluid ounces, and where there is an applicable VOC limit in the California Air Resources Board (CARB) Consumer Products Regulation.	Adhesives and sealants where the units of product, less packaging, weigh one pound or less and consist of 16 fluid ounces or less, that are sold for consumer and institutional use.	Voluntary guidelines to states to develop regulation to address adhesives used for industrial operations.	Sale and manufacture of consumer adhesives, adhesive primers, sealants, and sealant primers; and use restrictions that apply primarily to commercial/industrial applications.
Requirements	• VOC limits for adhesives used in architectural applications, industrial operations, and substrate specific applications. VOC limits for sealants used in architectural applications, roadway, and other applications. VOC limits for adhesive and sealant primers	• VOC limits for adhesives and sealants sold as consumer products for personal or institutional use • Three year sell through for products on shelf prior to effective date of rule • Most restrictive clause for products subject to multiple VOC limits	• VOC limits for adhesives, and adhesive primers used in industrial operations • Minimum transfer efficiency requirements • Minimum air pollution capture and control efficiency of 85% • Trash and debris containing VOC must be in closed containers	• VOC limits for adhesives used in architectural applications, industrial operations, and substrate specific applications. VOC limits for sealants used in architectural applications, roadway, and other applications. VOC limits for adhesive and sealant primers • Limit on VOC content of solvents used for cleaning,

	PAR 1168	CARB Consumer Products Regulation	U.S. EPA Control Techniques Guideline for Miscellaneous Industrial Adhesives	Ozone Transport Commission Model Rule for Consumer Products
	• Most restrictive clause for products subject to multiple VOC limits • Sell through for products on shelf prior to effective date of rule • Trash and debris containing VOC must be in closed containers • Minimum transfer efficiency requirements • Minimum air pollution capture efficiency of 90%; minimum air pollution reduction efficiency of 95% • Alternative Emission Control Plan • Storage restrictions for noncompliant products • Containers used for mixing shall be closed except when in use		• Containers used for mixing shall be closed except when in use • Closed containers for cleaning solvent storage	surface preparation or stripping • VOC content limit for solvents used to clean application equipment and requirements to clean in enclosed cleaning system • Minimum air pollution capture and control efficiency of 85% • Trash and debris containing VOC must be in closed containers
Recordkeeping	Daily recordkeeping	None	None	Monthly recordkeeping
Administrative	• Container labeling of VOC content and date of manufacture • Sales reporting from manufacturers, private labelers, big box retailers, and distribution centers • Annual reporting of sales utilizing 55-gallon per year exemption	• Container labeling of VOC content and date of manufacture • Sales reporting from manufacturers	• None	• Container labeling of VOC content

	PAR 1168	CARB Consumer Products Regulation	U.S. EPA Control Techniques Guideline for Miscellaneous Industrial Adhesives	Ozone Transport Commission Model Rule for Consumer Products
Prohibitions	• Prohibition of sale of products that do not meet VOC content limit • Prohibition of sale of products containing certain chlorinated compounds • Prohibition of sale of products containing certain exempt compounds • Prohibition of sale of products containing pCBtF and t-BAc	• Prohibition of sale of products that do not meet VOC content limit • Prohibition of sale of products containing certain chlorinated compounds • Prohibition of sales of adhesives with any chemical compound that has a Global Warming Potential of 150 or greater	• No atomization of cleaning solvent	• Prohibition of sale of products that do not meet VOC content limit
Exemptions	• Exemption for adhesives and sealants subject to other source specific rules • Regulated Products packaged and applied using a propellant, 2 percent VOC by weight or half the applicable VOC limit, whichever is lower, • Low-solids Regulated Products, 20 grams per liter material or half the applicable VOC limit, whichever is lower • Record keeping exemption (end-user) for products that contain less than 20 g/L VOC content or half the applicable VOC limit, less water and less exempt compounds, whichever is lower • Exemption for containers less than one ounce • Rule does not apply to use in research and development	• Exemption for solvents defined as low vapor pressure • Exemption for containers less than one ounce	• None	• Rule does not apply to use in research and development • Rule does not apply to consumer products used for personal or institutional use if regulated by another agency • Exemption for products that contain less than 20 g/L VOC content • Exemption for contact adhesives sold in volumes of one gallon or less • Exemption for certain miscellaneous uses • Rule does not apply to uses where annual emissions are less than 200 pounds per year • Exemption for products when used in quantities of 55 gallons per year or less

	PAR 1168	CARB Consumer Products Regulation	U.S. EPA Control Techniques Guideline for Miscellaneous Industrial Adhesives	Ozone Transport Commission Model Rule for Consumer Products
	• Exemption for products in certain categories when used in quantities of 55 gallons per year or less • Exemption for parade floats • Rule does not apply to consumer products used for personal or institutional use if regulated by CARB Consumer Product Regulation • Exemption for certain miscellaneous uses			

APPENDIX A: RESPONSE TO COMMENTS

PUBLIC WORKSHOP COMMENTS

Staff held a Public Workshop on September 1, 2022, to provide a summary of PAR 1168. The following is a summary of the comments received on PAR 1168 and staff's responses.

Commenter #1: Jordan Blank – GreenChem Industries LLC

The commenter expressed concerns on the prohibition of pCBtF and that it could potentially increase the use of water-based products that can cause challenges such as run-off and water contamination.

Staff Response to Commenter #1:

Staff understands some products will be impacted by the prohibition; however, the health benefit of removing toxic compounds would overweigh the impact. The toxicity of pCBtF has been assessed by OEHHA and the cancer potency factor for this compound is higher than Rule 102 Group II compounds such as t-BAc, DMC, and Perc. Based on the Governing Board's direction to prioritize toxicity over VOC reductions, staff proposed to prohibit the use of pCBtF.

Staff is proposing to maintain several of the existing VOC limits that will assist with the transition away from pCBtF and t-BAc and manufacturers have not indicated product will be reformulated to waterborne chemistries. South Coast AQMD is technology neutral and is not prescriptive for how manufacturers achieve VOC limits. There have been many successful reformulations using waterborne chemistries, non-toxic exempt solvent-based chemistries, high solids formulations, and reactive chemistries,

Commenter #2: Rita Loof – RadTech

The commenter asked staff to revert the initially proposed exemption 5 g/L level back to the existing 20 g/L level since current test methods are not able to detect VOC levels of less than 20 g/L. In addition, the rule has many limits that remain relatively high so the exemption should not be dictated by the lowest VOC limits in the rule.

Staff Response to Commenter #2:

While staff does not agree with the characterization of the test method uncertainty, staff does appreciate the suggestion to consider retaining the 20 g/L VOC exemption level for those higher-VOC categories and not base the exemption solely on a 5 g/L level. Based on this suggestion Staff revised the proposal to change the threshold to 20 g/L (or 2%), or half the applicable limit, whichever is lower; therefore, a product with a 20 g/L limit would be exempt for this recordkeeping requirement, only if its VOC emission is at or lower than 10 g/L and products up to 40 g/L could use this exemption if the emission can be at or lower than half the applicable limit

Commenter #3: Doug Raymond – on behalf of Chemours

The commenter thanked staff for including the weight percent metric for two-component foams and asked staff to consider including that for all products. Mr. Raymond thanked staff for considering a limited exemption for Opteon 1100.

Staff Response to Commenter #3:

Staff agrees with the suggestion for including a weight percent metric for all Rule 1168 categories for products packaged and applied using a propellant, however some stakeholders raised concerns

on the conversion factor on VOC limits to weight percent, so staffis not considering to include weight percent for all products at this time.

Regarding Opteon 1100, since the exemption of Opteon 1100 for Rule 1168 would help expand the product options and relieve supply issues, staff proposed to include a conditional, limited exemption for Opteon 110 based on OEHHA assessment. The condition is based on a review by OEHHA that does not find Opteon 1100 is a carcinogen and finds it is less toxic than the HFO it will replace. The exemption will also be limited to two-component foam sealants used in an industrial or professional setting by workers trained with procedures and guidelines to reduce potential risk of exposure. Staff is concerned with including any VOC exemption without a toxic assessment by OEHHA; hence, recommends a limited and conditional exemption as a balanced approach.

Commenter #4: Neema Toolaabee – DAP

Commenter asked staff to allow reporting foam products in the QERs under aerosol QER section since they will be reported by weight percent in future.

Staff Response to Commenter #4:

Staff agreed with this comment and amended rule language to make it clear that foam products packaged and applied using a propellant shall be reported as percent VOC by weight. Staff will also reflect that change in the form manufacturers use to submit their QERs.

Commenter #5: Dr. Joseph Lyou – President & CEO at Coalition for Clean Air

Commenter supported staff's efforts on prohibiting toxic compounds which was also a concern during 2017 amendment. The commenter asked staff to consider including cost avoided due to health benefits from prohibiting toxic compounds in the socioeconomic report.

Staff Response to Commenter #5:

Staff appreciates the commenters support and agrees evaluating the health care costs avoided would be a valuable study. Due to limited resources and the limited timeline due to the upcoming VOC limits that cannot be achieved at this time, staff has not conducted a health benefits analysis.

Commenter #6: Mark Abramowitz – Community Environmental Services

Commenter expressed concerns on the limited exemption for Opteon 1100 and asked staff not to allow exemption for Opteon 1100 due to potential toxicity concerns of HFOs.

Staff Response to Commenter #6:

Staff understands the commenters concerns for the proposed Opteon 1100 exemption. Staff is proposing to condition the exemption on an evaluation by OEHHA's. Staff is also proposing to limit the exemption to only two-component foam sealants used in a professional setting. Staff feels this limited and conditional approach is health protective and follows the Governing Board's directive to take the precautionary approach in regard to potential exempt compounds.

Commenter #7: Heather Estes – GAF

The commenter thanked staff for considering the stakeholders concerns and reverting back the proposed exemption margin limit from reporting requirements to 20 g/L since current test methods are not able to detect VOC levels of less than 20 g/L.

Staff Response to Commenter #7:

Please read the staff response to commenter #2.

Commenter #8: Katy Wolf – Consultant

The commenter supported staff on pCBtF and t-BAc prohibition and suggested to include health benefits in the socioeconomic report.

Staff Response to Commenter #8:

Please read staff response to commenter #5.

Commenter #9: Bill Almond – The Adhesive and Sealant Council

The commenter asked staff to clarify test method 24 is not the proper VOC test method for foam sealants and thanked staff for updating the proposed limit for one-component foams based on stakeholder's input.

Staff Response to Commenter #9:

Staff agrees that U.S. EPA Reference Method 24 is not the appropriate test method to measure the VOC content of foam sealants. Staff developed a VOC Guidance Document, with the assistance of the manufacturers, to clarify what test method is appropriate for each type of Regulated Product subject to Rule 1168. The Guidance Document includes a discussion of the test methods for foams and a flow chart for the most appropriate test method. At this time, the South Coast AQMD laboratory is developing a test method for compliance determinations, but that work is not complete. When there is no appropriate test method, South Coast AQMD relies on the manufacturer's formulation data to confirm the VOC content of Regulated Products. The change in metric from g/L to weight percent will simplify the VOC calculation from the product formulation and will simplify the test method development for foam products.

COMMENT LETTERS

Comment Letter #1

Sashco, Inc.
10300 East 107th Place
Brighton, CO 80601 7176
Phone: 303-286-7271
Fax: 303-286-0400

August 19, 2022

Mr. Ben Benoit
South Coast Air Quality Management District
21865 Copley Dr.
Diamond Bar, CA 91765

Dear Mr. Benoit,

It has been publicly stated many times in many forums that the goal of SCAQMD is not to regulate products out of the market. With the ban of PCBTF and adoption of a 250g/L VOC limit, clear, paintable, and immediately water-resistant sealants are being regulated out the market. Given the clearly stated goal of SCAQMD staff in this situation, it is clear that action needs to be taken to ensure the mutual goal can be achieved.

Established precedent from SCAQMD has always been to gather information (public and otherwise), prior to making a major change of such significant impact to the industry. Again, historically, SCAQMD has responded to industry input by providing adequate time for industry to adjust to new regulations and/or new restrictions. This did not occur in this instance – the recently announced PCBTF ban. The process was not followed. Industry has neither been provided adequate time to review the ban prior to adoption, nor necessary time to modify products.

The rule 1168 update adopted in Oct 2017 created the new category – "Clear, Paintable, And Immediately Water-Resistant Sealants" – giving industry 5 years to develop a formula that reduces VOC content from 380 to 250 g/L. 1-1

As Sashco has communicated to the SCAQMD staff previously and again most recently during the conference call on 3/23/2022, Sashco products in the clear, paintable, and immediately water-resistant category are formulated in a mixture of aliphatic and aromatic solvents. This solvent mixture is required to dissolve the SEBS (styrene- ethylene/butylene-styrene triblock rubber), a key component of this technology. To meet the lower 250 g/L VOC limit, Sashco's formulation efforts over the last 5 years has focused on removing the current aromatic solvent, toluene, and replacing it with PCBTF. Replacing all the toluene with PCBTF reduces the VOC content to 300 g/L. Efforts to further reduce the VOC content to 250 g/L, required much more reformulation effort to maintain the current properties of Sashco's clear, paintable, and immediately water-resistant sealants.

Similar to the voices SCAQMD staff have heard on 8/11/2022 from industry colleagues, Sashco must also voice extreme discontent, for an identical mishandling by SCAQMD staff, in which

staff has shared that the time, effort, and expense spent to meet the requirements, at almost the end of the 5-year reformulation window, was all wasted because the exempt solvent upon which Sashco has based all reformulation work on is being prohibited!

It was only in the 3rd working group on 7/21/22 that SCAQMD staff published the recommendation to prohibit the use of PCBTF. Compounding the matter is the fact that there has been NO DELAY ACCEPTED in reasonably adjusting the 1/1/2023 VOC reduction scheduled for this category! This prohibition will force Sashco to stop selling clear, paintable, and immediately water-resistant sealants in SCAQMD.

As discussed in the 3/23/22 conference call, Sashco is also currently using PCBTF to meet the current 300 g/L limit for all other roof sealants.

Sashco manufactures and sells a cartridge and brush grade version of the clear, paintable, and immediately water-resistant roofing sealant. Both sealants are formulated with PCBTF to meet the existing 300 g/L limit. If Sashco must replace the PCBTF in these formulations with a non-exempt aromatic solvent, the VOC level will increase to 380 g/L for the cartridge grade and to 550 g/L for the brush grade.

Sashco's squeeze tube grade of clear, paintable, and immediately water-resistant sealant also contains some PCBTF. The PCBTF formula is at 380 g/L. The non-PCBTF formula is at 410 g/L. 1-1

The table below summarizes the PCBTF and non-PCBTF formulas that Sashco currently manufactures for the California market and the non-PCBTF alternate formula if PCBTF is prohibited.

Product	SCAQMD Rule 1168 VOC category & VOC limit (2017)	PCBTF formula VOC Compliant	Non-PCBTF formula	Formulated for California after 2017 rule update?	Container size
Lexel cartridge	Clear, paintable & immediately water-resistant 380 g/L	No PCBTF in current formula	<380 g/L	Yes	10.5 fl oz cartridge
Lexel squeeze tube		<380 g/L	410 g/L #	Yes	5 fl oz squeeze tube
Through the Roof! Cartridge grade	All other roof sealants 300 g/L	<300 g/L	<380 g/L #	Yes	10.5 fl oz cartridge
Through the Roof! Brush grade		<300 g/L	<550 g/L #	No*	1 quart & 1 gallon can

* This was formulated for the "non-membrane roof sealant" category that was combined into the "all other roof sealants" category in the 2017 rule update
# not sold in California

Attached is a document Sashco provided to SCAQMD in 2014 that explains the market needs for a clear, paintable & immediately water-resistant sealant.

At this time Sashco is formally requesting both a review of the SCAQMD process which led to this situation in which a product, made by a company working in good faith and high transparency with SCAQMD staff, is at extremely high risk of being regulated out of the marketplace in spite of stated goals to the contrary and adoption of one of the following remedies given the situation:

1-1

1. PCBTF prohibition: DELAY implementation of the 250g/L VOC limit for Clear, Paintable, and Immediately water-resistant architectural and roofing sealants and INCREASE the VOC limit to <=410 g/L for "Clear, Paintable, and Immediately Water-Resistant Sealants" and "All Other Roof Sealants" categories for a period of 3 years. Create a new category for "Clear, Paintable, and Immediately Water-Resistant Non-Membrane Roof Sealant" with a VOC limit of 550 g/L for a period of 3 years.
   or
2. DELAY the ban of PCBTF for "Clear, Paintable, and Immediately Water-Resistant Sealants" and "All Other Roof Sealants" categories while retaining the existing VOC g/L limits established in the October 2017 "Upon Adoption" for a period of 3 years.

Sashco anticipates working with SCAQMD to arrive at mutually beneficial 1168 update that meets both Sashco capabilities and SCAQMD targets.

SCAQMD has made it clear that the 2022 Rule 1168 update is being finalized soon. Sashco is looking forward to a response from SCAQMD in 14 days from receipt.

Regards,

Paul Beymore

R&D Director
Sashco, Inc. | 10300 E. 107th Place, Brighton CO 80601
Mobile: 720-670-3598
sashco.com | pbeymore@sashco.com

Staff Response to Comment Letter #1

Response to Comment 1-1:

Thank you for submitting a comment letter detailing Sashco's concerns and for meeting with South Coast AQMD staff to further discuss your concerns. Staff appreciates your comment acknowledging the South Coast AQMD's air quality goals and recognizes the concerns of Sashco regarding the proposal to prohibit use of pCBtF due to toxicity concerns. Staff understands some products will be impacted by the prohibition of pCBtF, including Clear, Paintable, and Immediately Water-Resistant Sealants.

Based on the September 8, 2022, meeting staff held with Sascho, the request to allow for more time for reformation of All Other Roof Sealants is based on a misinterpretation of the applicability of the most restrictive clause in Rule 1168. Staff understands how that provision could be

misinterpreted and amended the language to clarify the intent of this clause in the proposed amended rule language.

Staff does not support the first request which would raise VOC limits in order to allow for the sale of products that are currently not legal to sell into California and the current VOC limits in Rule 1168 for All Other Roof Sealants which is 300 g/L.

With regard to the request to allow more time before the prohibition of pCBtF goes into effect for Clear, Paintable, and Immediately Water-Resistant Sealants, staff appreciates the good faith effort Sashco has made and the time it took to reformulate their product(s) to meet the lower VOC limits using a solvent the South Coast AQMD has previously exempted from the definition of a VOC. As such, staff proposes to allow three years for Sashco to reformulate Clear, Paintable, and Immediately Water-Resistant Sealants without pCBfF. However, at the end of that period, Clear, Paintable, and Immediately Water-Resistant Sealants will be expected to achieve a VOC content to 250 g/L. To compensate for delayed prohibition, staff is proposing to reduce the sell-through and use-though to two years.

Staff believes a VOC content limit at 250 g/L or lower is technically feasible based on recently submitted Quantity and Emission Reports (QERs) from adhesive and sealant manufacturers required under Rule 1168. The QERs show progress has been made reformulating lower-VOC sealants that are clear, paintable, and immediately water-resistant without pCBtF. Many major, international manufacturers of adhesives and sealants reported Clear, Paintable, and Immediately Water-Resistant Sealants achieving VOC levels as low as 50 g/L or less. The sales volume reported from these new lower-VOC products also indicate consumer acceptance. The QERs have only recently been received, so a more in-depth evaluation of the data is necessary before a VOC content limit lower that 250 g/L can be recommended.

Comment Letter #2

GAF

We protect what matters most™

September 12, 2022

Mojtaba Moghani, Ph.D.
Planning, Rule Development and Implementation
South Coast AQMD
21865 Copley Drive
Diamond Bar, CA 91765

Re: Proposed Amended Rule 1168
Adhesives and Sealant Applications

To Whom It May Concern:

By this letter, GAF is submitting comments on the Proposed Amended Rule 1168 for adhesive and sealant applications for roofing products in the South Coast Air Quality Management District.

Founded in 1886, GAF is the leading roofing manufacturer in North America. As a member of the Standard Industries family of companies, GAF is part of the largest roofing and waterproofing business in the world. The company's products include a portfolio of roofing and waterproofing solutions for residential and commercial properties.

The proposed amendment creates a new category for shingle laminating adhesive that applies to *asphalt based adhesives used to adhere individual layers during the manufacture of multi-layer asphalt shingles*. While we agree that this type of product has a relatively low VOC value, it is not typically a stand-alone adhesive that is sold to consumers. Rather, the laminating adhesive is a component of a finished product, and is in a solid state between layers of asphalt shingle materials when it comes to the consumer market. It is key to the over-all performance of laminated shingles. 2-1

GAF is concerned that this current proposal is based off a small sample size of a product that is not significantly contributing to the air quality concerns of SCAQMD. Furthermore, setting a limit of 30 g/L when the upper values of the QER data was 29 g/L does not allow for testing variability when using designated VOC test methods. If a limit must be placed on this material, GAF would suggest 50 g/L. But requiring testing on a low-VOC material has the potential of raising the cost of the product which would affect homeowners and building owners, as these products are the most popular and cost-effective roofing choice for single-family residential buildings in California.

In summary, GAF recognizes and appreciates the efforts of the SCAQMD staff to review and amend Rule 1168 that improves air quality in California; however, we oppose this proposal creating a new category for shingle laminating adhesives. GAF supports appropriate VOC limits for relevant products.

GAF appreciates the opportunity to submit a public comment. Please feel free to reach out to me for further assistance or clarification. I can be reached at 352/549-0170 or heather.estes@gaf.com.

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Respectfully submitted,

Heather Estes
Senior Codes and Regulatory Compliance Specialist
GAF

Staff Response to Comment Letter #2

Staff presented "All Other Roof Adhesives" category data during working group meeting #1 Staff's preliminary assessment was to break-up the "All Other Roof Adhesives" category into further subcategories to address the large volume of low-VOC products in this category. Staff found two types of low-VOC products in this category; Shingle Laminating Adhesives and Hot Applied Modified Bitumen/Built Up Roof Adhesive. The assessment is not based on a small sample of products, these new subcategories have very high sales volume.

Regarding Shingle Laminating Adhesives mentioned in this comment letter, the proposed 30 g/L VOC limit provides a considerable compliance margin. During the technology assessment, those products were grouped in the 20 – 29 g/L range. However, their VOC contents are all less or equal to 20 g/L as reported by the manufacturers. Further, based on staff's discussion with manufacturers who submitted QERs, these products are all much less than 20 g/L, and manufacturers report them as less than or equal to 20 g/L to include a compliance margin.

Through a follow-up meeting with GAF regarding this comment letter, staff verified that the concern is on the test method. GAF is concerned that the 30 g/L limit would require them to use the gas chromatography method specified by Rule 1168 Test Method Guidance document for non-reactive adhesives at or less than 150 g/L for VOC. This method is not the most appropriate method for testing asphaltic roofing adhesives and would be more costly than U.S. EPA Reference Method 24. These products are very low-VOC, they are solid at room temperature and require heat for application. There is little to no water and no solvents. U.S. EPA Reference Method 24 measures the volatiles as what is driven off in a forced air oven at 110°C. Staff agrees that method is better suited for these products and commits to amending the Rule 1168 VOC Test Method Guidance Document to specify that these asphaltic adhesives should be tested using U.S. EPA Reference Test Method 24 analysis.

Comment Letter #3

ASPHALT ROOFING™
MANUFACTURERS ASSOCIATION

September 13, 2022

Heather Farr, Planning and Rules Manager
Mojtaba Moghani, Ph.D., AQ Specialist
South Coast Air Quality Management District (SCAQMD)
21865 Copley Dr.
Diamond Bar, CA 91765

TRANSMITTED via email

Dear Ms. Farr and Dr. Moghani:

On behalf of the Asphalt Roofing Manufacturers Association (ARMA)—the trade association representing North America's asphalt roofing manufacturing companies and their raw material suppliers— I want to thank SCAQMD staff for considering and including in the draft rule the modifications to the subcategory definitions for Hot Applied Modified Bitumen/Built Up Roof Adhesive and Shingle Laminating Adhesive that ARMA submitted on August 17th. Also, I want to express our appreciation for the opportunity to offer the three additional comments that follow on Proposed Amended Rule 1168.

(1) Definition of Hot Applied Modified Bitumen/Built Up Roof Adhesive

Based on review of the definition proposed in the "preliminary draft rule" that was released August 19th, further consideration within ARMA, and discussions with the Single Ply Roofing Industry (SPRI), we recommend the following modifications to the proposed definition for Hot Applied Modified Bitumen/Built Up Roof Adhesive:

> *HOT APPLIED MODIFIED BITUMEN/BUILT UP ROOF ADHESIVE. A thermoplastic hot melt adhesive ~~substant~~ which requires high temperature conversion to a fluid at the point of application and complies with ASTM D312 or ASTM D6152. Installation or repair includes the application of roofing insulation ~~installation~~, roofing ply sheets, roofing membranes, and aggregate surfacing.*

3-1

These modifications are offered for the following reasons:

- Clarify that this material is a thermoplastic hot melt adhesive and falls within the (j)(7) exemption to the section (g) labeling provisions
- Change "substant" to "adhesive"
- Add ASTM D6152 as a second reference standard; failure to include it in the original submission leaves the definition incomplete and excludes materials that should be in the subcategory
- Correct "installation" to "insulation"

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(2) Definition of Shingle Laminating Adhesive

We recommend the following modification to the definition of Shingle Laminating Adhesive:

> *SHINGLE LAMINATING ADHESIVE is an asphalt-based thermoplastic hot melt adhesive used to adhere individual layers during the manufacture of multi-layer asphalt shingles.*

This proposed change expresses the nature of the materials used for lamination during production of asphalt shingles and clarifies that these materials fall within the (j)(7) exemption to section (g) labeling provisions.

3-2

(3) Regulatory Limit for Hot Applied Modified Bitumen/Built Up Roof Adhesive AND Shingle Laminating Adhesive

We ask that you reconsider the regulatory limit proposed for these two new subcategories. ARMA proposes a regulatory limit of 50 g/L rather than the 30 g/L included in the draft rule. This is consistent with the recommendation in our August 17th letter.

According to information shared in Working Group Meeting #1 on February 11, 2022, the technology assessment for All Other Roof Adhesives included forty-six products, showed a large sales volume in the 20-29 g/L VOC range, and indicated about 80% of those materials were built up roofing asphalt. That means thirty-six or thirty-seven of the surveyed products were built up roofing asphalt and about nine or ten products were something else (presumably shingle laminating adhesive). These are both very small data sets upon which to propose a regulatory limit within 1 g/L of the upper end of the range of assessed materials. This point alone is a reasonable basis for a more cautionary approach.

3-3

Another concern is the unknown variability when existing test methods are applied to these materials. As was pointed out by an attendee during the September 1st Public Workshop, the known variability of EPA Method 24 is relatively large. *Test Method Guidance Document: Rule 1168-Adhesive and Sealant Applications* identifies SCAQMD Method 313 as the appropriate test method for non-reactive adhesives with VOC less than or equal to 150 g/L. Method 313 includes no estimate of variability. It is plausible that compliant materials may obtain non-compliant results due solely to method variation. This is a legitimate issue and data shared to date does not address test method precision specific to these new proposed subcategories. Setting a regulatory limit higher than the proposed 30 g/L is appropriate based on the current state of knowledge.

ARMA recommends that the regulatory limits for both proposed new subcategories be set at 50 g/L rather than the 30 g/L limits indicated in the proposed amended rule released August 19th.

We appreciate your consideration of this input. If you have any questions about the recommendations contained herein, please contact me at your convenience.

Sincerely,

Aaron R. Phillips

Aaron R. Phillips
Vice President of Technical Services

Staff Response to Comment Letter #3

Response to Comments #3-1 and #3-2:

Staff agreed with the stakeholders suggestion and modified the proposed definitions for Shingle Laminating Adhesives and Hot Applied Modified Bitumen/Built Up Roof Adhesive categories.

Response to Comment #3-3:

Please refer to response to comment letter #2 regarding the VOC limits for two new subcategories. Regarding the potential uncertainty of the test method, U.S. EPA Reference Method 24 has inherent errors when there is high water content, high exempt compounds concentrations, or both. For high solids products with little or no water or exempt compounds, the method relies on a percent solids bake and weigh oven test which is simple and accurate. Staff does not anticipate any

test method issues for these products but will amend the Rule 1168 Test Method Guidance document with specific guidance on how these products should be analyzed.

Comment Letter #4

SPRI
SINGLE PLY ROOFING INDUSTRY

September 13, 2022

Heather Farr
Mojtaba Moghani, Ph.D.
South Coast AQMD
21865 Copley Drive
Diamond Bar, CA 91765

Re: Response to South Coast AQMD Proposed Amended Rule (PAR) 1168 – Prohibition of Parachlorobenzotrifluoride

Dear Ms. Farr and Dr. Moghani,

The Single Ply Roofing Industry (SPRI) appreciates the opportunity to comment on the District's Proposed Amendment to Rule (PAR) 1168 – Adhesive and Sealant Applications.

SPRI recognizes the effort that went into the development of this proposed rule amendment and the Staff Report. However, there are several areas that we believe are not reasonable and cannot be supported by current or anticipated technology advances.

Prohibition of Parachlorobenzotrifluoride (PCBTF)

The PAR states "On or after January 1, 2025, no person shall manufacture for sale Single Ply Roof Membrane Adhesive in the South Coast AQMD that contains more than 0.01 percent of Parachlorobenzotrifluoride". There is also a January 1, 2024 date for any "Regulated Product" which would include all the other roofing adhesives, sealants, etc.

SPRI recommends that the manufacture prohibition date be moved to January 1, 2028 for adhesives, sealants, and primers that are used in roofing applications (Single Ply Roof or All Other Roof) and January 1, 2027 for other Regulated Products. More time is required to reformulate the products and certifying them by the third-party code testing approval companies to ensure code compliance. The aforementioned extension of timeline is based on SPRI Members' experience and historical developmental and approval cycles. Please see below for additional information.

Items impacting the Extension Request for Reformulation of the Products

- The Single Ply Roof Membrane Adhesive and All Other Roof Adhesives VOC limit of 250 g/L was in effect since 1993. Unfortunately, current adhesive formulas cannot simply be reverted to those 1993 formulations because methylene chloride, ethylene dichloride, perchloroethylene, and trichlorethylene were banned as of January 1, 2003
- Each adhesive, sealant, and primer formulation has different resins, plasticizers, additives, and solvent blends that are specific to the membrane type and manufacturer

4-1

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- Adhesives, sealants, and primers have different performance requirements and, as a result, the VOC content will depend on the type of product, its intended use, and the conditions in which it is applied. There is no single answer across product types.
- There are several important properties imparted by solvents in general and exempt solvents in particular. Key properties are dissolving polymers and resins, viscosity reduction, compatibility of the various formulation components, rheological properties, flash point, and evaporation rate (which affects drying time and "green strength"). These properties depend on the solvent(s) used as well as the other components in the product
- The development cycle for new or reformulated products can take up to 24 months before products are ready for extended internal testing and third-party certification testing.

4-1

Testing and Approvals

- A single ply roof is a highly engineered system. Roof components built into a specific assembly require internal and third-party testing to be compliant with local, state, and federal building codes, as well as the building owner's insurance requirements
- Since manufacturers warrant roof systems for upwards of 30 years, they must conduct the proper studies to ensure that any new adhesive will perform over that period. This work includes laboratory studies, field studies and code testing with such entities as Factory Mutual, Miami-Dade County, and Underwriters Laboratories.
- After the developmental cycle, extended internal testing must be performed by the manufacturers before adhesives, sealant, and primer assemblies are sent for third-party testing and approvals. This testing can take up to 12 months to complete. These tests include:
  - Membrane compatibility
  - Adhesive strength (peel strength of the adhered membrane)
    - Room temperature and accelerated aging (Mulitple replicants per test)
  - Heat resistance
  - Weatherability (UV resistance, moisture resistance, plasticizer migration, etc.)
  - Application
  - Wind uplift (before being sent to a third party)
  - Flame spread (before being sent to a third party)
  - Beta field testing with contractors to verify application and performance in the field - including coverage rates, ease of handling, working times, and green strength development.
- Third-Party testing and approvals can take 18 months to 24 months to complete. Third-party testing and approvals include wind uplift, fire resistance, flame spread, and additional tests as specified in the Building Code.

4-2

Sell Through Period

- The typical shelf life for roofing adhesives and sealants are 6 – 12 months. Any amount of sell through time over 12 months does not provide any relief for manufacturers or contractors
- Manufacturers and contractors do not have storage space for 6 – 12 months' worth of roofing adhesives and sealants making it difficult to plan reserve stock for the transition period. .

4-3

South Coast AQMD
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Conclusion
SPRI is requesting that the manufacturing prohibition date be moved from January 1, 2025 to January, 1 2028 for adhesives, sealants, and primers that are used in roofing applications (Single Ply Roof or All Other Roof) and from January 1, 2024 to January 1, 2027 for other Regulated Products. This is based on the details noted above and timelines summarized below:

- Reformulation: up to 2 years
- Lab and field evaluation: up to 1 year
- Third Party Certification: up to 2 years

4-3

Since adhesives, sealants, and primers will be past their shelf life after 12 months, SPRI believes that a 12 month sell through, and 24 months use through is acceptable.

Thank you for your time and consideration of our thoughts in this matter. Please let us know if you have any questions or need additional information.

Regards,

Randy Ober, Technical Director
SPRI, Inc.

Staff Response to Comment Letter #4

Response to Comments #4-1 and #4-2:

Staff appreciates the comments and understands reformulation efforts and subsequent testing take time to complete. Staff is proposing to allow 4 years before pCBtF is prohibited for the categories staff has identified a significant sales volume of products using pCBtF to comply with the VOC limits. That will allow additional time for manufacturers to reformulate. Staff also included the cost for third-party testing in the socioeconomic analysis.

Response to Comment #4-3:

Staff thinks a compromise of allowing longer time to reformulate and lessening the sell-through period is reasonable but only for those categories using pCBtF to comply with the VOC limits. As staff has presented, there are not many products using pCBtF. Staff is proposing to carve out three specialty categories where staff has identified a considerable number of products using pCBtF and will propose a longer timeline for reformulation and a shorter sell-through/use-through period.

Comment Letter #5

3M EHS | Product Stewardship

3M Center, Building 220-6E-03
St. Paul, MN 55144-1000

September 15, 2022

Dr. Mojtaba Moghani
Planning, Rule Development, Implementation
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765
via email to mmoghani@aqmd.gov

Dear Dr. Moghani:

3M Company ("3M") appreciates the opportunity to provide comments on the South Coast Air Quality Management District's draft proposed amendments to *Rule 1168 – Adhesive and Sealant Applications*.

3M supports the amendments to Rule 1168 to combine the prohibitions for certain toxic solvents ((g)(1)) and Group II exempt solvents ((g)(2)) into one prohibition under (h)(1), and to set an allowance for trace levels of prohibited compounds up to 0.01 percent, aligning with the California Air Resources Board Consumer Products Regulation. This especially helps to provide clarification for trace amounts of methylene chloride, as methylene chloride is both a toxic solvent prohibited under (g)(1), as well as a Group II exempt solvent prohibited under (g)(2).

Section (g)(1) of Rule 1168 contains the following prohibition on the sale and use of substances containing methylene chloride:

> "[N]o person shall use, supply, sell, or offer for sale a regulated product in the District that contains . . . methylene chloride . . ."

5-1

However, section (g)(2) states, in relevant part:

> "On and after January 1, 2019 . . . no person shall use, supply, sell, or offer for sale a regulated product in the District that contains Group II exempt compounds listed in Rule 102 in quantities greater than 0.1 percent by weight."

Rule 102, in turn, includes methylene chloride in the definition of Group II exempt compounds. Rule 1168, however, is silent as to how sections (g)(1) and (g)(2) operate in conjunction, if at all. 3M supports the amendments and appreciates the clarification and the alignment with the California Air Resources Board.

1

3M respectfully requests clarification on the following: Is the section pertaining to trace amounts (up to 0.01%) of prohibited compounds a clarification of the already existing rule, in which case companies can apply this clarification now, or is this an amendment to the rule, in which case the allowance for trace amounts of prohibited compounds, previously addressed under (g)(1), will not go into effect until the finalization of the rule? 5-1

Thank you for your consideration of 3M's comments. Please contact me via phone (651-650-1529) or email (LWurm@mmm.com) if you have any questions.

Thank you,
Lauren Wurm
Regulatory Supervisor

Staff Response to Comment Letter #5

Response to Comment #5-1:

During the last rule amendment, the prohibition for certain toxic solvents (paragraph (g)(1)) was expanded to include Group II exempt solvents (paragraph (g)(2)). The 2017-amended prohibition included a 0.1% limit which was not included in original prohibition. Methylene chloride was included in original prohibition and is also Group II exempt compound. Stakeholder questioned if the 2017-amended prohibition serves as an exception to the original prohibition to allow for 0.1% use of methylene chloride. Legal interpretation stated that the plain language of the rule, legislative history, and statutory construction all verify that the 2017-amended exemption is not an exception to the original prohibition of methylene chloride. Inclusion of the 0.1% limit was intended to only allow for trace amounts of Group II exempt compounds and not to allow for prohibited compounds to be used as additives at levels of 0.1% or below.

Under the 2017 amended rule, (g)(2) is not an exception to (g)(1) and per the current version of (g)(1), methylene chloride is prohibited. However, the paragraphs being questioned are combined in the current proposed amended rule to prevent any further confusion. The proposed (h)(1) would only allow for the trace amounts (up to 0.01%) of prohibited compounds.

Staff is proposing to change the trace levels allowance for prohibited compounds from 0.1 to 0.01 percent to be consistent with the California Air Resources Board Consumer Product Regulation and provides more realistic indication of a trace level contaminant and will be more health protective.

Comment Letter #6

Raymond Regulatory Resources (3R), LLC
Doug Raymond 13808 Duncan Run Rd. Galena, Ohio 43021
djraymond@reg-resources.com 440-339-4539

September 15, 2022

Mojtaba Maghani
mmoghani@aqmd.gov

Subject: Rule 1168 Opteon™ 1100

Dear Mojtaba,

On Behalf of The Chemours Company the following comments are being submitted on Proposed Rule 1168 on Adhesives & Sealants.

Chemours is a global leader in the production and sales of safe and energy efficient refrigeration, air conditioning, foam insulation, fire suppression, propellants and waste heat recovery fluids.

Comments

SCAQMD has been petitioned to exempt the compound HFO-1336mzz(Z), CAS number 692-49-9, trade name Opteon™ 1100, under Rule 1168. This compound has been exempt from the definition of Volatile Organic Compound (VOC) under the Clean Air Act (CAA) by the US Environmental Protection Agency (EPA) since November 2018.

Since 2019, Chemours has had ongoing discussions with SCAQMD on Opteon™ 1100 and submitted substantial amounts of documents pertaining to toxicology, reactivity, use cases, internal and external data to support an exemption. In that time period, when SCAQMD has had questions on these documents, Chemours has quickly responded to address any concerns to the satisfaction of SCAQMD.

6-1

Chemours customers intend to manufacture finished products using Opteon™ 1100 within the jurisdiction of SCAQMD as a way to meet and exceed The State of California decarbonization efforts. Using low Global Warming Potential (GWP) compounds like Opteon™ 1100 would positively contribute to these efforts. This VOC exemption would give the market additional options to comply with HFC phase out rules under the California Air Resources Board (CARB). Without this exemption, Chemours customers would not be able to meet the VOC limits being proposed by SCAQMD in their formulations.

In June of 2021, the petition was resent to SCAQMD. Based upon ongoing communications regarding this petition, Chemours believed that Opteon™ 1100 would be exempt in Rule 1168, and at no time was there any indication from the district that any additional work or documents would be needed for this exemption.

In February of 2022 SCAQMD had their first work group meeting on Rule 1168. On slide 47 of the staff presentation there was an indication that SCAQMD would proceed with the exemption of Opteon™ 1100. This further supported Chemours understanding that they had fulfilled the necessary requirements for the exemption petition.

On April 12, 2022, SCAQMD had their second work group meeting on Rule 1168. Again, on slides 44 & 45 SCAQMD states that Opteon™ 1100 was reviewed for toxicity and "did not find anything of concern". Thus, Chemours continued to believe Opteon™ 1100 would be exempt in Rule 1168 for use in manufacturing foams.

On July 21, 2022, in the 3rd workgroup meeting on Rule 1168, SCAQMD staff state that Opteon™ 1100 needs further review. SCAQMD reasoning is that board directed a precautionary approach to exempting compounds. However, this decision for the precautionary approach was made in 2017 and SCAQMD had been stating since 2020 that there are no concerns with this compound. To ask for additional assessment in July 2022 with a voting deadline for the rule in November 2022 gave Chemours no opportunity to complete any assessment in this timeframe and created an unrealistic expectation. 6-1

Opteon™ 1100 will only be used in two-component foam products. Due to the regulation of this compound by a US EPA Toxic Substances Control Act (TSCA) Significant New Use Rule (SNUR), commercial use of this substance is limited to Industrial and Professional uses only. This means that finished products containing Opteon™ 1100 cannot be sold into Do It Yourself (DIY) applications such as in home spray foam kits. Thus, according to federal mandate this compound can only be used in an Industrial or manufacturing setting where workers will utilize applicable Personal Protection Equipment (PPE) and follow risk mitigation procedures and guidelines to reduce potential risk of exposure.

SCAQMD has requested a potential definition of Industrial Use. The following wording is being proposed as a potential definition.
"Industrial or Professional setting includes settings where workers will be trained in safe handling and utilize applicable Personal Protection Equipment (PPE) and follow *risk mitigation procedures and guidelines, such as OSHA, to reduce potential risk of exposure."*

Over the last several decades, SCAQMD has considered nearly every Blowing Agent as VOC exempt, including HCFCs, HFCs, and HCFOs. If not granted, this would be a completely new stance that a Blowing Agent would not be granted VOC exemption, even when considered to be a better alternative to an incumbent.

13808 Duncan Run Rd. Galena, Ohio 43021 djraymond@me.com 440-339-4539 2

As recently as 2014, SCAQMD granted a VOC exemption under Rule 102 to another very similar Blowing Agent without going through a full OEEHA assessment. This Rule 102 is a much broader exemption than is being requested for Opteon™ 1100 under Rule 1168. Not granting this exemption would make an unequal playing field in the market for two Blowing Agent products with similar characteristics.

Given the very limited exemption and the SCAQMD toxicity review the compound Opteon™ 1100 should be exempted under Rule 1168 without further testing requirements. 6-1

Summary

Opteon™ 1100 is a well studied, fully commercialized product that has gone through evaluation by US EPA under several regulations including TSCA and the Clean Air Act, including the Significant New Alternatives Policy (SNAP) process and VOC exemption. Chemours has conducted through toxicology assessments of this substance in support of the marketed uses through their Product Stewardship and Sustainability organization. Beyond United States regulations, Opteon™ 1100 has also gone through evaluation from global regulatory authorities and similarly approved for these end use applications.

SCAQMD followed up with a toxicity review and "did not find anything of concern". In addition, the exemption being sought would be extremely limited and only used in a manufacturing setting with all OSHA requirements. Based upon successful use of this substance at facilities outside of California, manufacturers have expressed intent to implement use of this substance in California based on performance and environmental criteria.

Conclusion

Opteon™ 1100 should be exempted in November of 2022 for use by district facilities without further evaluation. Therefore, we respectfully request this limit exemption now without delay.

Thank you for your time. Any questions or comments please feel free to contact me at 440-339-4539 or at djraymond@me.com.

On Behalf of The Chemours Company,
Sincerely,

Douglas Raymond

Douglas Raymond

Cc: Heather Farr: hfarr@aqmd.gov

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Staff Response to Comment Letter #6

Staff Response to Comment #6-1:

Opteon 1100 was included to U.S. EPA's list of compounds excluded from the regulatory definition of volatile organic compound (VOC) in November 2018 based on its negligible contribution to ground-level ozone formation. The VOC exemption petition was submitted on February 4, 2014 by E.I. DuPont de Nemours (DuPont), predecessor of Chemours for Performance

Chemicals. Supporting materials for this exemption were documents focused on atmospheric reactivity and global warming potentials.

Staff recognizes the low ozone formation and global warming potential of Opteon 1100, but will no longer propose a new VOC exemption for a chemical unless OEHHA has conducted an assessment of the chemical as the Stationary Source Committee recommended regulatory VOC reductions do not encourage the use of chemicals that have a known or suspected toxic profile. Opteon 1100 is an HFO and South Coast AQMD has exempted several HFOs in the past; however, OEHHA has not evaluated Opteon 1100.

Staff is proposing a conditional exemption for Opteon 1100. That is the exemption will only become effective if OEHHA has sufficient information to establish a Cancer Inhalation Unit Risk Factor, an acute reference exposure level (REL) and a chronic REL of Opteon 1100 and does not adopt a cancer risk factor for Opteon 1100 and develops an acute REL (or interim acute REL) and a chronic REL (or interim chronic REL) for Opteon 1100 which are higher than those for trans-1-Chloro-3,3,3-Trifluoropropene (HFO-1233zd), which is the HFO it would replace. As suggested by the commenter, the exemption will be limited to two-component foam sealants used in a professional setting by workers trained with procedures and guidelines to reduce potential risk of exposure. Staff is concerned with including any VOC exemption without a toxic assessment by OEHHA; hence, recommends a limited and conditional exemption as a balanced approach.

Comment Letter #7

National Association of Chemical Distributors

South Coast AQMD
21865 Copley Drive
Diamond Bar, CA 91765

Dear South Coast Air Quality Management District:

The National Association of Chemical Distributors (NACD) is an international association of chemical distributors and their supply-chain partners. Member companies process, formulate, blend, re-package, warehouse, market, and transport chemical products across California. The industry that NACD represents is a major economic engine that generates $2.42 billion of tax revenue in California with over 300 facilities in the state.

NACD members are concerned with the actions being taken by the South Coast Air Quality Management District (SCAQMD) that would in amendments to Rule 1168 prohibit the use of both para-Chlorobenzotriflouride (pCBtF) and tertiary-Butyl Acetate (t-BAc). While we appreciate your concerns about both materials and their safety, we must strongly object to this course of action. Both pCBtF and t-BAc are core products for achieving violate organic compound (VOC) compliance for several end-users in various industries and applications.

NACD is concerned that a broad ban of the pCBtF and t-BAc will significantly restrict the amount of products that can meet VOC limits, as there are few acceptable alternatives to these substances. Without an adequate timeline allowing for industry to evaluate other substances to be used in place of pCBtF and t-Bac, this ban has the potential to disrupt the manufacturing of roofing products in California significantly. 7-1

Moreover, NACD believes there is a need for additional research to be conducted by SCAQMD. Moving forward with this rule is likely to increase the use of water-based chemistry to manufacture roofing products due to the limited alternatives to pCBtF and t-BAc. These substances do not have a significant level of research evaluating their long-term impacts to human health. NACD urges SCAQMD to allow more time before moving forward with a ban on pCBtF and t-BAc so the agency can conduct the needed research to confirm that banning these substances will not inadvertently promote chemistries that are more hazardous.

NACD asks that SCAQMD put a pause on this process until all parties can gather more data and more deeply evaluate the outcomes of moving forward with this revision to rule 1168. NACD acknowledges the importance of prioritizing the health of the communities that SCAQMD represents and hopes the agency carefully considers any proposed revisions to rule 1168.

Sincerely,

Jennifer C. Gibson

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Vice President, Regulatory Affairs

Staff Response to Comment Letter #7

Response to Comment #7-1:

Well before the 2017 Rule 1168 amendment, there were toxicity concerns regarding the use of t-BAc and pCBtF. During the 2017 rule amendment, staff assessed the health risks associated with potential t-BAc usage in roofing products and based on the assessment staff decided not to exempt t-BAc in Rule 1168. In 2020 OEHHA published the pCBtF assessment and it was found out that the Cancer Potency Factor for pCBtF is considerably higher than for t-BAc.

During the current rule amendment, staff performed an updated modeling assessment for t-BAc at five meteorological stations at different locations in the South Coast AQMD. Staff provided two scenarios based on solvent daily usage and project coverage area provided by stakeholders to assess the associated risks: Scenario #1: provided Firestone BP and Scenario #2: provide by SPRI. Risk assessments generally focus on the worse-case scenario, but staff considered a range of scenarios and in all the scenarios the Acute Hazard Index (HI) was higher than the threshold. The data was presented in Working Group Meeting #3. OEHHA has not established an acute end point for pCBtF but the Governing Board directed staff to rely on the precautionary principle, which is to prioritize reducing both known and unknown toxic risk over VOC reductions.

Staff has also assessed the extent of pCBtF usage in adhesives and sealants. In February 2022, staff conducted a survey of manufacturers regarding pCBtF usage; 25 manufacturers responded and 11 indicated they formulate some of their products with pCBtF. The pCBtF survey and manufacturer feedback indicated pCBtF is predominately used in roofing products. Staff also conducted an online search of all non-asphalt roofing sealant and adhesives and presented the survey and online research results during Working Group Meeting #4. Approximately 20% of Single-Ply Roof Membrane Adhesive category products contained pCBtF based on volume sales and the other roofing categories had very low number and sales of products containing pCBtF (less than 3%). Staff also collected samples from local retail stores for laboratory screening to further assess the extent of pCBtF usage in adhesives and sealants. Out of seven roof product samples, only one product was found to contain low levels of pCBtF, 1.3 wt %.

Staff has held more than seven meetings with roofing industry stakeholders; staff acknowledges the proposed pCBtF prohibition will impact some categories and based on several discussions with stakeholders, staff is proposing to delay the prohibition to allow time for reformulations for certain subcategories of products.