SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Preliminary Draft Staff Report

Proposed Amended Rule 1107 – Coating of Metal Parts and Products

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EXECUTIVE SUMMARY

Rule 1107 – Coating of Metal Parts and Products (Rule 1107) was adopted in June 1979 to reduce volatile organic compound (VOC) emissions from metal coating operations. Proposed Amended Rule 1107 (PAR 1107) balances the objective of regulating VOC emissions with addressing the toxicity of certain compounds used in coating formulations.

The Office of Environmental Health Hazard Assessment (OEHHA) determined that *tert*-Butyl Acetate (t-BAc) and para-Chlorobenzotrifluoride (pCBtF) have toxic end points, including carcinogenicity. These two compounds are commonly utilized by coating manufacturers to formulate coatings that comply with VOC content limits in South Coast AQMD rules due to their VOC exemption status. Under South Coast AQMD regulations, t-BAc is exempt from the definition of a VOC for certain product categories in a few source-specific rules, not including Rule 1107. In contrast, pCBtF is exempt from the definition of VOC for all uses, including products regulated under Rule 1107. PAR 1107 partially implements 2022 Air Quality Management Plan (AQMP) control measure CTS-01 to phase out t-BAc and pCBtF and assess opportunities for VOC emission reductions.

To expedite the phase out of pCBtF and t-BAc, PAR 1107 establishes a four-year reformulation period for coating categories that currently lack viable alternatives. During this time, manufacturers can develop products that meet Rule 1107 VOC content limits without relying on pCBtF and/or t-BAc. Following the reformulation period, there is a one-year sell-through period and a two-year use-through period. These additional phases ensure that manufacturers, distributors, and end users are provided with adequate time to transition to products without pCBtF and/or t-BAc. After the phase-out period provided, Rule 1107 coatings would be prohibited from containing pCBtF and/or t-BAc in excess of 0.01 percent by weight. For coating categories in which there are already alternatives without pCBtF and/or t-BAc, PAR 1107 establishes a shorter transition period to phase out coatings containing pCBtF and/or t-BAc. PAR 1107 will be fully implemented by July 1, 2033. The estimated cost of PAR 1107 is approximately $3,000,000.

PAR 1107 was developed through a robust public process. Four Working Group meetings were held on July 9, 2024, August 21, 2024, December 10, 2024, and May 7, 2025. A Public Workshop for PAR 1107 will be held on August 27, 2025.

CHAPTER 1: BACKGROUND

INTRODUCTION

Rule 1107 is a source-specific rule that was adopted to reduce VOC emissions from metal coating operations. Rule 1107 establishes VOC content limits for 22 categories of coatings, classified as either air-dried or baked, including several specialty and niche-use coatings. Rule 1107 is being amended to address health concerns related to pCBtF and t-BAc, which were identified by OEHHA as having toxic health endpoints, and evaluate potential VOC emission reductions.

BACKGROUND

Metal coatings protect, and in some cases, beautify the substrate they are applied upon. These coatings provide some level of protection from impact, abrasion, and corrosion. They may also need to retain a consistent color and gloss level over an extended period of time. In addition to the desired properties of a coating after curing, coatings must also have other acceptable characteristics, especially during application. This can include shelf life, sprayability, rheology, flow, pot life (for multi-component coatings), time-to-tack free, time-to-dry to recoat, and time until full cure. Quick drying times are not always the most desired feature. Acceptable drying times usually fall within a range that varies per the coating process and operation.

The industry sectors that make extensive use of coatings applied to metal parts and products include:

- Steel Product Manufacturing from Purchased Steel (NAICS 3312)
- Cutlery and Handtool Manufacturing (NAICS 3322)
- Architectural and Structural Metals Manufacturing (NAICS 3323)
- Boiler, Tank, and Shipping Container Manufacturing (NAICS 3324)
- Hardware Manufacturing (NAICS 3325)
- Coating, Engraving, Heat Treating, and Allied Activities (NAICS 3328)
- Other Fabricated Metal Product Manufacturing (NAICS 3329)
- Machinery Manufacturing (NAICS 333)
- Computer and Electronic Product Manufacturing (NAICS 334)
- Electrical Equipment, Appliance, and Component Manufacturing (NAICS 335)
- Motor Vehicle Parts Manufacturing (NAICS 3363)
- Other Transportation Equipment Manufacturing (NAICS 3369)
- Metal Household Furniture Manufacturing (NAICS 337124)
- Institutional Furniture Manufacturing (NAICS 337127)
- Office Furniture (except Wood) Manufacturing (NAICS 337214)
- Showcase, Partition, Shelving, and Locker Manufacturing (NAICS 337215)
- Other Miscellaneous Manufacturing (NAICS 3399)

The industries that supply coatings to facilities are covered by the Paint and Coating Manufacturing sector (NAICS 325510).

Development of Health Risk Understanding for pCBtF and t-BAc

In 1994, U.S. EPA granted pCBtF an exemption from the definition of a VOC (59 FR 50693)[1]. Similarly, in 2004, U.S. EPA added t-BAc to its list of VOC-exempt solvents (69 FR 69298)[2]. The initial exemptions were granted based on the chemicals' negligible photochemical reactivity. These exemptions were subsequently incorporated into South Coast AQMD rules. In 2005, a limited exemption for t-BAc was added to Rule 1151 – Motor Vehicle and Mobile Equipment Non-Assembly Line Coating Operations (Rule 1151), excluding its use in color and clear coat applications. In 2014, pCBtF was added to the list of VOC-exempt compounds under Rule 102 – Definition of Terms (Rule 102).

However, emerging toxicological data prompted a reevaluation of the pCBtF and t-BAc exemptions. In 2015, OEHHA released a draft HRA for t-BAc, indicating it may be more toxic than previously understood. In response, the resolution adopting the 2016 amendments to Rule 1113 – Architectural Coatings (Rule 1113) directed South Coast AQMD staff to reassess the exemption for t-BAc. Staff developed a white paper in 2017 and presented findings to Stationary Source Committee (SSC), which recommended that toxicity concerns should take precedence over VOC emission reductions if t-BAc was confirmed to be a carcinogen. The most recent Health Risk Assessments (HRA), which estimate lifetime health risks associated with exposure, were adopted for t-BAc in August 2018[3] and for pCBtF in August 2020[4]. As a result of these findings and determinations by OEHHA, removing the VOC exemption status of pCBtF and t-BAc is necessary to reduce toxic risk to workers and the general public.

Regulatory Impacts of pCBtF and t-BAc Phase Out

Currently, pCBtF is VOC-exempt under multiple rules, including Rule 1113, while t-BAc retains its exemption in Rule 1113 for specific uses, such as industrial maintenance and non-sacrificial anti-graffiti coatings. The exemptions play a practical role in product formulation. Coating manufacturers often aim to produce coatings that comply with both Rule 1107 and Rule 1113 to ensure versatility. By doing so, a single coating can be used both in controlled shop environments (Rule 1107 applications) and in the field (Rule 1113 applications). This approach reduces complexity for distributors and end users while ensuring compliance with VOC limits across all applications. While this co-benefit simplifies logistics, avoids regulatory issues, and expands market usability, it also creates challenges when considering future VOC limits and phasing out exempt compounds.

Prohibiting pCBtF and t-BAc in Rule 1107 carries implications for compliance with Rule 1113. pCBtF or t-BAc are commonly used to meet low VOC limits, such as those in Rule 1113. Once pCBtF and t-BAc are prohibited in Rule 1107, coatings that depend on these chemicals to meet VOC limits in Rule 1113 would no longer be permissible for use under Rule 1107. This could require manufacturers to develop separate coatings to meet requirements in Rule 1107 and Rule

[1] Federal Register :: Revision to Definition of Volatile Organic Compounds-Exclusion of para-Chlorobenzotrifluoride
[2] Federal Register :: Revision to Definition of Volatile Organic Compounds-Exclusion of t-Butyl Acetate
[3] Notice of Adoption of Cancer Inhalation Unit Risk and Slope Factors and Cancer Oral Slope Factor for Tert-Butyl Acetate - OEHHA
[4] Notice of Adoption of Cancer Inhalation Unit Risk Factor for p-Chloro-α,α,α-Trifluorotoluene - OEHHA

1113. While phasing out pCBtF and t-BAc is necessary to address emerging health concerns, coordination is also important to ensure that coatings remain compliant across all applicable regulations. Staff plans to begin rule development for Rule 1113 in the near future to coordinate the phase out.

2022 Air Quality Management Plan (AQMP)

The 2022 AQMP adopted on December 2, 2022, set forth a path for improving air quality and meeting federal air pollution standards by striving for zero-NOx emission technologies across all sectors and lower VOC emissions where feasible. The 2022 AQMP included Control Measure CTS-01 Further Emission Reductions from Coatings, Solvents, Adhesives, and Lubricants (CTS-01), which seeks to address the toxicity concerns of pCBtF and t-BAc and assess opportunities for VOC emission reductions [5]. PAR 1107 partially implements CTS-01 from the 2022 AQMP.

REGULATORY HISTORY

Rule 1107 was adopted on June 1, 1979, and it has been subsequently amended 20 times. The most recent amendment on January 6, 2023, addressed U.S. EPA's limited disapproval of Rule 1107 by removing a reference of ASTM D7767-11, "Standard Test Method to Measure Volatiles from Radiation Curable Acrylate Monomers, Oligomers and Blends and Thin Coatings Made from Them" (ASTM D7767). ASTM D7767 is not a U.S. EPA-approved test method and therefore cannot be used to enforce a SIP approved rule.

AFFECTED FACILITIES AND EQUIPMENT

Rule 1107 is applicable to all metal coatings operations except those performed on aerospace assembly, magnet wire, marine craft, motor vehicle, metal container, and coil coating operations. Rule 1107 does not apply to the coating of architectural components coated at the structure site or at a temporary unimproved location designated exclusively for the coating of structural components. Approximately 1,000 permits across 560 facilities are subject to Rule 1107.

PUBLIC PROCESS

The current rule amendment process began in June 2024. Staff conducted four Working Group Meetings on July 9, 2024, August 21, 2024, December 10, 2024, and May 7, 2025. The Working Group is composed of representatives from businesses, environmental groups, public agencies, and consultants. The purpose of Working Group meetings (WGM) is to discuss proposed concepts and work through the details of South Coast AQMD's proposal. Additionally, a Public Workshop will be held on August 27, 2025. The purpose of the Public Workshop is to present the proposed amended rule language to the general public and stakeholders and to solicit comments. Staff also conducted multiple site visits, held individual meetings with industry stakeholders, and distributed a survey to coating manufacturers requesting product data for each metal parts and products coating category as part of this rulemaking process. Table 1-1 summarizes the key topics discussed at each of the public meetings for PAR 1107.

[5] appendix-iv-a.pdf

Table 1-1 – Public Meeting Dates and Topics

Meeting Title	Date	Topics
Working Group Meeting #1	July 9, 2024	• Rule Background and Objectives • VOC and Exempt Compounds • Manufacturer Survey
Working Group Meeting #2	August 21, 2024	• Summary of WGM #1 • Site Visits • Manufacturer survey instructions
Working Group Meeting #3	December 10, 2024	• Summary of WGM #2 • Initial coating manufacturer survey results
Working Group Meeting #4	May 7, 2025	• Initial Preliminary Draft Rule Language • Updated coating manufacturer survey results
Public Workshop	August 27, 2025	• Preliminary Draft Rule Language • Preliminary impact assessments

CHAPTER 2: PCBTF/T-BAC TOXICITY AND VOC EMISSION REDUCTION POTENTIAL

INTRODUCTION

Two solvents that are exempt from the federal definition of a VOC due to their low photochemical reactivity, pCBtF and t-BAc, recently become a focus of public health concern. Health risk assessments for pCBtF and t-BAc identified elevated cancer potency factors, inhalation unit risks, and acute reference exposure levels (acute REL) compared to other regulated compounds. In response, South Coast AQMD evaluated the use of pCBtF and t-BAc in coatings regulated under Rule 1107 and developed PAR 1107 rule proposals to address toxicity while supporting future emission reductions.

BACKGROUND ON PCBTF AND T-BAC

In 1994, U.S. EPA exempted pCBtF from the federal definition of a VOC due to its negligible photochemical reactivity. In 2014, South Coast AQMD incorporated this exemption by adding pCBtF to Rule 102, which designates VOC-exempt compounds. As a result, pCBtF is currently not considered a VOC unless otherwise specified under any South Coast AQMD rule.

In 2004, U.S. EPA added t-BAc to its list of VOC-exempt compounds. However, South Coast AQMD did not provide a full exemption for t-BAc under Rule 102 due to concerns regarding potential toxicity. Instead, limited exemptions were granted for t-BAc through source-specific rules, such as Rule 1113.

The 2013 amendments to Rule 1113 included a resolution that directed staff to review the exemption for t-BAc due to renewed toxicity concerns. OEHHA finalized the health risk assessment for t-BAc in 2018 concluding that it had a higher cancer potential than previously estimated. In 2017, South Coast AQMD staff presented preliminary findings to SSC, including concerns regarding pCBtF, which OEHHA had not yet assessed at that time.

Based on staff recommendations, SSC directed staff to remove the existing t-BAc exemption in Rules 1113 and 1151. SSC also requested that OEHHA review the potential toxicity of pCBtF and South Coast AQMD staff remove the pCBtF exemption, as resources allow, if pCBtF is deemed a potential carcinogen. In 2020, the pCBtF health risk assessment was finalized by OEHHA, which indicated pCBtF is a potential carcinogen. Rule 1151 was amended on November 1, 2024, and included a prohibition of both pCBtF and t-BAc.

COMPARING PCBTF AND T-BAC TOXICITY TO OTHER COMPOUNDS

Staff considered several approaches to address the toxicity concerns for pCBtF and t-BAc, ranging from removing the VOC-exempt status to a complete prohibition of use. To inform that decision, staff considered how other compounds with potential toxic endpoints have historically been addressed. Under Rule 102, VOC-exempt compounds are categorized as either Group I or Group II. Group II compounds, while still considered exempt VOCs, may be prohibited from use in specific source rules due to health or safety concerns.

Two key toxicological metrics were considered in this analysis: the cancer potency factor and the acute REL. Cancer potency factor is a measure used to estimate the risk of cancer associated with

exposure to a carcinogenic substance and represents the increased cancer risk per unit of exposure over a lifetime measured in milligrams of a substance per kilogram of body weight per day. REL is the maximum concentration level of a substance in the air that is not expected to have adverse health effects in humans over a specified exposure duration measured in micrograms per cubic meter of air. RELs can be established for acute (short-term), 8-hour, or chronic (long-term). For context and comparison, the cancer potency factors and acute RELs for five compounds are summarized in Table 2-1 – Cancer Potency Factor Comparison and Table 2-2 – Acute REL Comparison, respectively.

Table 2-1 ─ Cancer Potency Factor Comparison

Compound	Cancer Potency Factor (mg/kg-day)
Perchloroethylene (perc)	0.021
Dimethyl Carbonate (DMC)	0.0035
t-BAc	0.0047
pCBtF	0.03
Ethylene Oxide (EtO)	0.31

For the five compounds shown in Table 2-1, pCBtF has the second highest cancer potency factor, with EtO being the only compound with a greater associated cancer risk due to exposure. The cancer potency factor of pCBtF is almost 50 percent higher than perchloroethylene's, a prohibited Group II Exempt Compound.

Table 2-2 shows the available acute RELs for the same five compounds. t-BAc has the lowest REL, meaning the highest risk among the compounds. The cancer potency factor for pCBtF is much higher than t-BAc, perc, and DMC, but it has no established acute REL.

Table 2-2 ─ Acute REL Comparison

Compound	Acute REL ($\mu g/m^3$)
perc	20,000
DMC	14,000
t-BAc	10,000
pCBtF	N/A
EtO	N/A

STAFF RECOMMENDATIONS ON PCBTF AND T-BAC

The preceding comparison of pCBtF and t-BAc to other toxic compounds that are prohibited from use in VOC rules, including Rule 1107, supports a prohibition of pCBtF and t-BAc. OEHHA's assessment of pCBtF and t-BAc shows these compounds to be as toxic as many chemicals currently prohibited; therefore, staff recommends prohibiting the use of pCBtF and t-BAc.

METAL PARTS AND PRODUCTS COATING MANUFACTURER SURVEY

In August 2024, staff conducted a manufacturer survey to understand the extent to which pCBtF and t-BAc are used to comply with the VOC limits in Rule 1107. The results of the survey were used to help evaluate VOC content, VOC emissions, and a potential prohibition timeline. Table 2-3 ─ Coating Manufacturer Survey Questions shows the requested information in the survey.

Table 2-3 ─ Coating Manufacturer Survey Questions

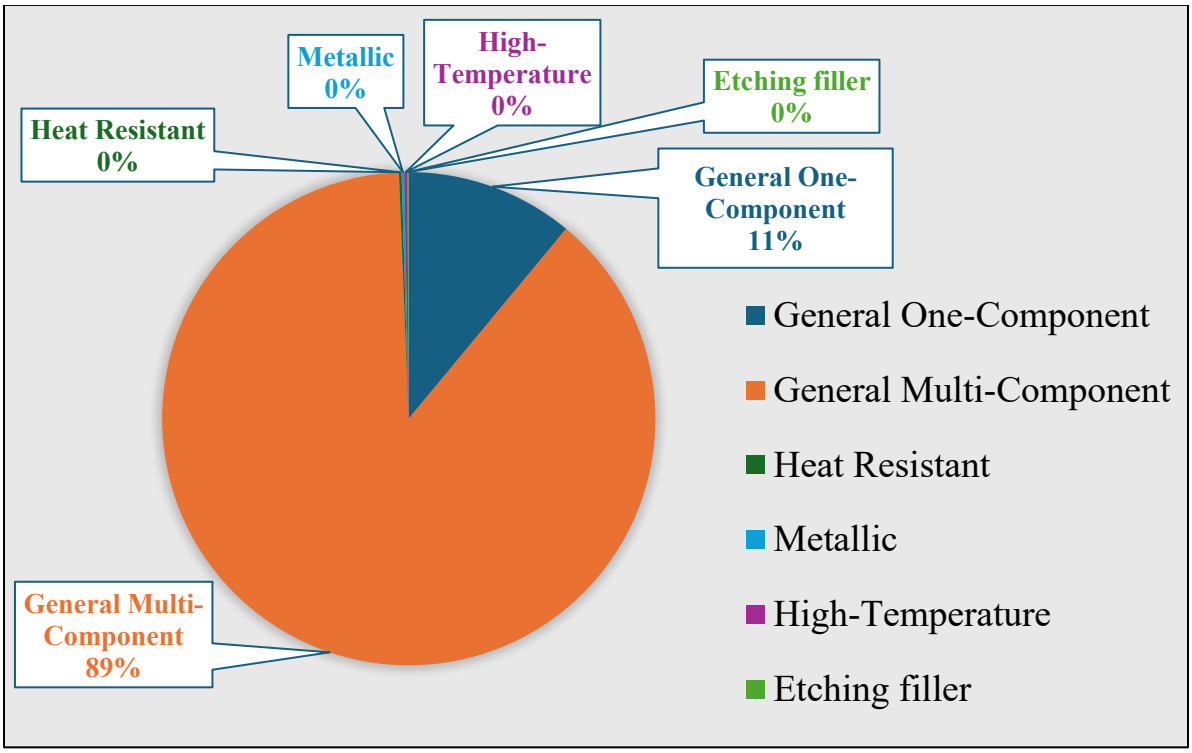
Requested Information	
1.	Company name, contact person, and an email address
2.	Product name
3.	Product category
4.	VOC content of product (regulatory and actual)
5.	Is the product water or solvent based
6.	Is the product air-dried or baked
7.	Percent content of pCBtF and/or t-BAc
8.	Annual volume sold and if that volume represents South Coast AQMD or California

In total, four of the 27 major metal parts and products coating manufacturers responded to the survey. Most reported that a large portion of the metal coatings categories are meeting the Rule 1107 VOC limits without the use of pCBtF and t-BAc. The following summarizes the major findings of the survey:

- 16 of the 22 Rule 1107 coating categories were not reported to be sold within South Coast AQMD
- Approximately 20 percent of the total reported sales volume of metal parts and products coatings contain pCBtF and/or t-BAc; however, some coating manufacturer surveys reported coating components separately, meaning more than 20 percent of coatings offered for sale could contain pCBtF and/or t-BAc;
- Only three metal parts and products coating categories reported both t-BAc and pCBtF: general one-component, general multi-component, and metallic;
- Three metal parts and products coating categories reported only containing pCBtF in their formulation: high-temperature, etching filler, and heat-resistant.

According to survey responses, general multi-component coatings account for approximately 89 percent of metal parts and products coating sales in California. The second-largest category, general one-component coatings, represents about 11 percent of sales. The remaining four categories: heat-resistant, high-temperature, etching filler, and metallic together make up less than one percent of total sales. pCBtF use is most prevalent in the general multi-component, etching filler, and metallic coating categories. Figure 2-1 ─ Coating Category Sales Percentages illustrates the percentage breakdown of Rule 1107 coating category sales in California.

Figure 2-1 ─ Coating Category Sales Percentages



Based on survey data submitted by manufacturers, the use of pCBtF is prevalent in only three metal parts and products coating categories, while t-BAc is used to a much lesser extent to meet Rule 1107 VOC limits (see Table 2-4 ─ Coating Category pCBtF Content). Survey responses indicate that viable alternatives without pCBtF and t-BAc are readily available for general one-component, heat-resistant, and high-temperature coatings.

However, during staff meetings with industry stakeholders, manufacturers reported that pCBtF is still primarily relied upon to comply with Rule 1107 VOC limits for general multi-component, etching filler, and metallic coatings. While replacements are being developed for these categories, they are not yet commercially available. This lack of suitable alternatives indicates that additional reformulation time will be necessary to phase out the use of pCBtF and t-BAc.

Based on manufacturer feedback and past experience with coatings rule development, staff recognize that reformulating coatings, particularly when eliminating key exempt solvents, requires significant resources. Cost estimates for reformulation are in the hundreds of thousands of dollars per coating, and the process can take up to four years to complete (See Chapter 4 for more details).

Table 2-4 – Coating Category pCBtF Content

Coating Category	Percent pCBtF	Average Percent pCBtF
General One-Component	Up to 58%	4%
General Multi-Component	Up to 98%	15%
Etching Filler	Up to 64%	41%
Metallic	Up to 40%	39%
High-Temperature	0%	0%
Heat-Resistant	Up to 7%	1%

COMPARISON OF RULE 1107 AND NATIONAL VOC LIMTS

Staff evaluated whether coatings that meet the national rule VOC limits without relying on pCBtF or t-BAc could be used to support a quicker transition under Rule 1107. This approach was effective in the recent amendment to Rule 1151, where aligning VOC limits with the national rule allowed coatings without pCBtF and t-BAc to be used in South Coast AQMD.

However, for the coating categories reported in the manufacturer survey, Rule 1107 VOC limits are generally consistent with the national limits. Only general one component coatings have a higher VOC limit under the national rule, 340 g/L compared to 275 g/L under Rule 1107. Table 2-5 – Comparison of Rule 1107 and National VOC Limits provides a comparison between Rule 1107 air-dried VOC limits for the reported coating categories and the corresponding national rule limits for metal parts and products coatings. All coatings reported in the manufacturer survey are subject to the air-dried VOC limits specified in Rule 1107.

Staff considered whether a temporary increase in the VOC limit for general one-component coatings could expedite the phase out of pCBtF and t-BAc. However, staff determined that suitable alternatives for general one-component coatings are already available, making a temporary increase in VOC limits unnecessary for the phase-out of pCBtF and t-BAc.

Since South Coast AQMD is preempted from setting VOC limits above federal levels, the strategy used in Rule 1151 to temporarily raise VOC limits is not feasible for most Rule 1107 coating categories. Furthermore, even if such VOC emission increases were allowed in Rule 1107, they would not offer practical benefits to phase out pCBtF and t-BAc; manufacturers stated that metal parts and products coatings used nationally also contain pCBtF and t-BAc.

Table 2-5 – Comparison of Rule 1107 and National VOC Limits

Coating	Rule 1107 VOC Limits for Air-Dried Coatings (g/L)	National VOC Limits for Air-Dried Coatings (g/L)
General One-Component	275	340
General Multi-Component	340	340
Etching Filler	420	420
Heat Resistant	420	420
Metallic	420	420
High-Temperature	420	420

OPPORTUNITIES FOR VOC REDUCTIONS

Staff analyzed the potential to reduce VOC limits in Rule 1107 to support the emission reduction objectives of CTS-01. Based on manufacturer survey data, the general one-component category appears to offer the greatest feasibility for VOC reductions. Approximately 85 percent of 2023 product sales in this category were at or below 227 g/L VOC (Rule 1107 limit of 275 g/L) and only about 15 percent of sales contained pCBtF and/or t-BAc. In addition, this category showed the highest prevalence of waterborne products, which accounted for between 55 and 92 percent of reported sales.

This shift toward waterborne formulations reflect industry efforts to produce coatings that comply with both Rule 1107 and Rule 1113. Coatings that meet the requirements of both rules allow end users to use a single product for shop applications (covered under Rule 1107) and field touch-ups (covered under Rule 1113), simplifying maintenance and improving consistency in coating performance. Because Rule 1113 generally imposes more stringent VOC limits than Rule 1107, it has driven broader adoption of waterborne technologies and encouraged manufacturers to develop lower-VOC products.

Manufacturers expressed strong interest in aligning VOC limits between Rule 1107 and Rule 1113 to streamline product development and compliance. Reformulating coatings, particularly without the use of pCBtF or t-BAc, requires significant time and investment. Aligning limits would reduce the need for duplicative reformulation, allowing manufacturers to focus on creating coatings that

are both low in VOCs and free of toxic exempt compounds. This coordinated approach would support broader environmental and public health benefits.

Rule 1113 is expected to be amended to phase out the use of pCBtF and t-BAc. Once that phase-out is complete, manufacturers will have clearer direction to develop compliant coatings across both rules. Deferring changes to VOC limits in Rule 1107 until after this phase-out will allow staff to reassess the most stringent and technically feasible VOC limit.

CHAPTER 3: PROPOSED AMENEDED RULE 1107

INTRODUCTION

PROPOSED AMENDED RULE STRUCTURE

PROPOSED AMENDED RULE 1107

INTRODUCTION

The main objective of PAR 1107 is to phase out the use of pCBtF and t-BAc as solvents in metal parts and products coatings due to toxicity and public health concerns.

The following information describes the structure of PAR 1107 and explains the provisions incorporated from other source-specific rules. New provisions and any modifications to provisions that have been incorporated are also explained. PAR 1107 also includes grammatical and editorial changes for clarity.

PROPOSED AMENDED RULE STRUCTURE

PAR 1107 will contain the following subdivisions:

a) Purpose
b) Applicability
c) Definitions
d) Requirements
e) Prohibitions
f) Methods of Analysis
g) Exemptions
h) Rule 442 Applicability
i) Alternative Emission Control Plan
j) Qualification for Classification as Extreme-Performance Coating
k) Recordkeeping
l) Emission Reduction Credits
m) Administrative Requirements

PROPOSED AMENDED RULE 1107

Subdivision (a) ─ Purpose and Subdivision (b) ─ Applicability

PAR 1107 separates the applicability from the purpose to be consistent with the current South Coast AQMD preferred rule structure.

Subdivision (c) ─ Definitions

To provide clarity, definitions used in PAR 1107 are capitalized as proper nouns to better distinguish defined terms from common terms. Refer to PAR 1107 for a complete list of definitions.

PAR 1107 includes the modification of existing definitions and the addition of one new definition. Key definition changes are referenced and discussed below.

- *CAMOUFLAGE COATING* is a Coating used, principally by the military, to conceal equipment from detection, and for purposes of this rule is considered a distinct category from Military Specification Coatings.

During rule development, a stakeholder raised concerns that the new requirement in paragraph (d)(8), which requires any coating represented as suitable for multiple categories to meet the lowest applicable VOC limit, could create ambiguity regarding applicable VOC limits for the military specification coating and camouflage coating categories. Camouflage coatings are often considered a subset of military specification coatings because many camouflage products are formulated to meet military approval requirements. This overlap risks subjecting camouflage coatings to the lower 340 g/L VOC limit for military specification coatings, instead of the 420 g/L VOC limit established to reflect their specialized function of concealing equipment.

To resolve this conflict, staff revised definitions to establish a clear separation between camouflage coatings and military specification coatings. Under the revised rule language, camouflage coatings are recognized as a distinct category and are not classified as military specification coatings. This clarification ensures that camouflage coatings remain subject to the 420 g/L VOC limit, while still allowing paragraph (d)(8) to apply in cases where camouflage coatings are marketed for multiple uses (e.g., camouflage and metallic). The updated definition ensures camouflage coatings retain their distinct functional role, and paragraph (d)(8) continues to operate as intended to prevent products from being marketed across multiple categories without complying with the most stringent applicable limit.

- *GENERAL MULTI-COMPONENT COATING* is a Coating that does not otherwise meet the definition of a specific category in Table 1 and requires the addition of a separate reactive resin, commonly known as a Catalyst or Hardener, before application to form an acceptable dry film.

Previously, general multi-component coatings were defined solely by the formulation, i.e., a coating requiring the addition of a reactive resin. Without further clarification, the definition would unintentionally apply to coatings that properly belong in more specific categories, which would be inconsistent with the intent of paragraph (d)(8) and risk nullifying VOC limits determined appropriate for specialty coating categories.

To address this issue, staff revised the definition of general multi-component coating to clarify that it is a distinct category, applying only to coatings that both require the addition of a reactive resin and do not meet the definition of any other specific category in Table 1. In addition, the name of the defined term is updated to be consistent with the references to the coating category in all PAR 1107 provisions.

- *GENERAL ONE-COMPONENT COATING* is a Coating that does not otherwise meet the definition of a specific category in Table 1 and is ready for application as it comes out of its container to form an acceptable dry film. A Thinner, necessary to reduce the viscosity, is not considered a component.

Please refer to the discussion of the *General Multi-Component Coating* definition for additional context, as the modifications to the *General One-Component Coating* definition serve the same purpose and intent.

- *GRAMS OF VOC PER LITER OF COATING LESS WATER AND LESS EXEMPT COMPOUNDS is the weight of VOC per combined volume of VOC and Coating solids and can be calculated by the following equation:*

  Grams of VOC per Liter of Coating Less Water and Less Exempt Compounds

$$= \frac{W_v - W_w - W_{ex}}{V_m - V_w - V_{ex}}$$

Where: Wv = weight of volatile compounds in grams
  - *Ww = weight of water in grams*
  - *Wex = weight of Exempt Compounds in grams*
  - *Vm = volume of material in liters*
  - *Vw = volume of water in liters*
  - *Vex = volume of Exempt Compounds in liters*

The definition is modified with updated subscripts for volatile compounds and exempt compounds. The changes are to be consistent with other coating rules and have no impact on the method of calculation or the resulting values calculated using the equation.

- *GRAMS OF VOC PER LITER OF MATERIAL is the weight of VOC per volume of material and can be calculated by the following equation:*

  Grams of VOC per Liter of Material

$$= \frac{W_v - W_w - W_{ex}}{V_m}$$

Where: Wv = weight of volatile compounds in grams
  - *Ww = weight of water in grams*
  - *Wex = weight of Exempt Compounds in grams*
  - *Vm = volume of material in liters*

The definition is modified with updated subscripts for volatile compounds and exempt compounds. The changes are to be consistent with the other coating rules and have no impact on the method of calculation or the resulting values calculated using the equation.

- *MILITARY SPECIFICATION COATING* is a Coating applied to Metal Parts and Products and which has a paint formulation approved by a United States Military Agency for use on military equipment, excluding Camouflage Coatings.

Please refer to the discussion of the *Camouflage Coating* definition for additional context, as the modifications to the *Military Specification Coating* definition serve the same purpose and intent.

- *REDUCER OR THINNER means any solvent specifically labeled and formulated to reduce the viscosity of Coatings.*

This is a definition from Rule 1151 that was modified to remove the specific reference to automotive coatings. The definition is added to provide clarity on general one-component coatings as well as which products are included in the storage and disposal provision in subparagraph (d)(4)(A).

Subdivision (d) ─ Requirements

VOC Content of Coatings – Paragraph (d)(2)
PAR 1107 prohibits the manufacture, supply, sale, offer for sale, marketing, blending, distribution, packaging, or repackaging any metal parts and products coating for use within South Coast AQMD jurisdiction that do not comply with the applicable VOC limits specified in Table 1. In addition, PAR 1107 prohibits the application or possession of non-compliant coatings at end-user facilities.

While the use of non-compliant products is restricted within South Coast AQMD, the rule does not prohibit the transport or storage of such products through or within South Coast AQMD, provided they are not applied or intended for use locally. For example, a coating regulated by Rule 1107 that contains VOCs in excess of the limits specified for the respective coating category in Table 1 may be stored or transported through South Coast AQMD as long as that product is not applied or intended for use with the bounds of South Coast AQMD jurisdiction.

Conversely, possession of such coatings at end-user sites (e.g., workshops or facilities) is prohibited, as their presence may lead to unintended application. The amendment is intended to close potential regulatory loopholes, which is specified as an emission reduction strategy in CTS-01 and is consistent with existing provisions in Rule 1113 and Rule 1130 – Graphic Arts.

PAR 1107 also includes a minor revision to paragraph (d)(2) to reference a new title for the table listing the Rule 1107 coating categories and their respective VOC limits. PAR 1107 does not include any changes to air-dried or baked VOC limits for any coating category.

Lowest Applicable VOC Limit – Paragraph (d)(8)
Paragraph (d)(8) is a new provision requiring any coating advertised to be suitable for use in multiple coating categories meet the lowest VOC limit listed in Table 1. For example, a coating that is advertised to be used as metallic (VOC limit of 420 g/L) and extreme high-gloss (VOC limit of 340 g/L) must comply with the lower of the two established limits in Table 1 on PAR 1107. In this scenario, the multi-use coating is required to have a VOC content of no more than 340 g/L. Paragraph (d)(8) is based on a provision in Rule 1113 and modified to reference the coating categories in PAR 1107.

Subdivision (e) ─ Prohibitions

Carcinogenic Materials and Exempt Compounds – Paragraph (e)(2)
PAR 1107 establishes upper concentration limits for cadmium, hexavalent chromium, Group II exempt compounds (except volatile methyl siloxanes), pCBtF, and t-BAc. The upper concentration

limits for cadmium and hexavalent chromium aligns with the limits established by U.S. EPA under the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. §§ 6901 *et seq*. RCRA concentration limits are not incorporated by reference to allow staff to evaluate if any future changes are appropriate for air quality regulations. This provision is based on a provision in Rule 1151 but modified to exclude volatile methyl siloxanes.

The proposed amendments prohibit the manufacturing, supply, sale, offer for sale, marketing, blending, distributing, packaging, or repackaging of metal parts and products coatings containing any of the compounds listed in paragraph (e)(2) with concentrations exceeding the specified limits, when such coatings are intended for use within South Coast AQMD jurisdiction. Additional detail on how this prohibition applies can be found in the discussion on the proposed changes to paragraph (d)(2) of PAR 1107.

The proposed prohibition language includes an upper concentration limit of 0.01 percent by weight to account for potential trace levels of Group II exempt compounds, pCBtF, and t-BAc. The upper concentration limit for Group II exempt compounds does not include volatile methyl siloxanes (VMS) due to the lack of conclusive toxicity data. Staff can reassess the use of VMS in Rule 1107 once U.S. EPA releases the Final Risk Evaluation.

To facilitate the prohibition of pCBtF and t-BAc, staff is proposing a phase out approach. Coatings that do not require additional time to reformulate to less than or equal to 0.01 percent by weight of pCBtF and/or t-BAc can continue to be manufactured until July 1, 2026. The compliance schedule accounts for time needed to work through existing inventory of coatings containing greater than 0.01 percent by weight of pCBtF and t-BAc as well as any inventory that has been ordered prior to rule amendment. Non-reformulation coatings manufactured on or prior to July 1, 2026, can continue to be sold until July 1, 2027. After July 1, 2027, the sale or redistribution for the purpose of sale for use within South Coast AQMD is strictly prohibited. The final step to phase out pCBtF and t-BAc is a two-year use-though timeline, which allows any owner or operator to use their existing inventory of coatings containing greater than 0.01 percent by weight of pCBtF and/or t-BAc, until July 1, 2029. After July 1, 2029, coatings containing greater than 0.01 percent by weight of pCBtF and/or t-BAc cannot be possessed or applied at any facility where metal parts and products subject to the provisions of this rule are coated in South Coast AQMD's jurisdiction, consistent with the prohibition in paragraph (d)(2). This prohibition does not restrict transport or storage of these coatings when they are not intended for use within the South Coast AQMD.

The proposed phase-out timeline does not exempt any owner or operator from complying with South Coast AQMD Rule 1401 – New Source Review of Toxic Air Contaminants (Rule 1401). If a health risk assessment is required under Rule 1401 due to the use of coatings containing pCBtF and/or t-BAc, the owner or operator remains subject to that requirement regardless of the compliance schedule in PAR 1107.

PAR 1107 provides approximately four years for manufacturers to reformulate metallic, general multi-component, and etching filler coatings without pCBtF and t-BAc. These three coating categories can continue to be manufactured with greater than 0.01 percent by weight of pCBtF and/or t-BAc until July 1, 2030. Any metallic, general multi-component, and etching filler coatings containing more than 0.01 percent by weight of pCBtF and/or t-BAc manufactured on or prior to

July 1, 2030 can continue to be sold until July 1, 2031, and continued to be used until July 1, 2033. The following Table 3-1 − pCBtF and t-BAc Prohibition Timeline provides a summary of the proposal.

Table 3-1 ─ pCBtF and t-BAc Prohibition Timeline

Coating Category	Final Manufacture Date	Final Sell-Through Date	Final Use-Through and Possession Date
Metallic	July 1, 2030	July 1, 2031	July 1, 2033
General Multi-Component			
Etching Filler			
All Other Categories	July 1, 2026	July 1, 2027	July 1, 2029

Subdivision (f) ─ Methods of Analysis

Exempt Perfluorocarbon Compounds Subparagraph (f)(1)(B)
This provision specifies the approved test methods to quantify amounts of exempt perfluorocarbon compounds. The structure and numbering are amended and streamlined for clarification; however, the intent of subparagraph (f)(1)(B) remains unchanged. The updated rule language of this provision is consistent with Rule 1151.

Subdivision (m) ─ Administrative Requirements

Manufacturer Labeling Requirements ─ Paragraph (m)(1)
Paragraph (m)(1) requires that all metal parts and products coatings, as well as coating components, be labeled in accordance with Rule 443.1 – Labeling of Materials Containing Organic Solvents before being sold or offered for sale. This new provision incorporates Rule 443.1 by reference and does not introduce any additional labeling requirements. It takes effect upon PAR 1107 adoption, as coatings regulated under Rule 1107 are already subject to the requirements of Rule 443.1.

Statement of Manufacturer Liability ─ Paragraph (m)(2)
Paragraph (m)(2) includes a provision of non-liability for manufacturers, distributors, or sellers of coatings regulated by PAR 1107. These parties shall not be held liable for non-compliant use of metal parts and products coatings, unless the manufacturer, distributor, or seller is aware or should have suspected that the coating would be used in a non-compliant manor. This is a provision from Rule 1113 that was modified to clarify its applicability under PAR 1107.

CHAPTER 4: IMPACT ASSESSMENTS

INTRODUCTION

Impact assessments will be conducted as part of PAR 1107 rule development to assess the environmental and socioeconomic implications. These impact assessments will include a socioeconomic impact assessment, and a California Environmental Quality Act (CEQA) analysis. Draft findings and comparative analyses were prepared pursuant to Health and Safety Code Sections 40727 and 40727.2, respectively.

EMISSION REDUCTIONS

PAR 1107 establishes a compliance schedule to phase out metal parts and products coatings containing greater than 0.01 percent by weight pCBtF and t-Bac, without changing the established VOC emission limits. Therefore, no increase or decrease in VOC emissions is expected as a result of the adoption of PAR 1107. However, there is potential for VOC emission reductions in PAR 1107 once pCBtF and t-BAc are phased out of Rule 1113. See Chapter 2 for details on the potential for future VOC emission reductions in Rule 1107.

COSTS

Reformulating metal parts and product coatings to phase out toxic exempt solvents, such as pCBtF or t-BAc, requires significant resources. These costs typically include both capital costs, which are one-time investments, such as research and development as well as recurring costs tied to raw materials, including solvents, resins, and additives.

While solvent cost represents only one component of the total raw material cost, they play a notable role in determining the price and competitiveness of compliant coatings. In particular, pCBtF is more expensive than traditional solvents like toluene or xylene due to its specialized production processes, limited supplier base, and VOC-exempt status. The higher raw material cost of pCBtF contributes directly to the overall higher price of compliant coatings[6].

Coatings formulated with pCBtF are often more expensive, meaning that reformulated coatings using lower-cost solvents may offer net cost savings once capital investments are recovered. However, upfront capital cost manufacturers incur to reformulate existing products must also be considered.

To estimate capital reformulation costs for PAR 1107, staff relied on assumptions developed during the 2022 amendment to Rule 1168 – Adhesive and Sealant Applications (Rule 1168). In the 2022 amendment to Rule 1168, staff used a cost estimate of approximately $515,000 per reformulation, which includes expenses related to research and development. PAR 1107 is estimated to require six total reformulations (four for general multi-component, one for etching filler, and one for metallic coatings), resulting in a total capital cost estimate of approximately $3,000,000.

[6] Draft Staff Report for Proposed Amended Rule 1168

To evaluate the potential for cost recovery, staff analyzed the impact of replacing pCBtF with a lower-cost solvent, ethyl acetate. Ethyl acetate is approximately 56 percent less expensive than pCBtF, based on current market prices ($30.66 vs. $69.77 per gallon). Using production volume data from the 2024 manufacturer survey, approximately 82,000 gallons annually, staff developed two cost recovery scenarios based on the range of solvent content reported in coatings:

- Low Solvent Content Scenario: Assumes solvents comprise 29 percent of the total coating volume, consistent with the lower end of pCBtF use reported across surveyed products. (See Table 4-1 – Scenario 1: Low Solvent Content)

- High Solvent Content Scenario: Assumes solvents comprise 75 percent of the total coating volume, reflecting the upper end of reported pCBtF content. (See Table 4-2 – Scenario 2: High Solvent Content)

Table 4-1 – Scenario 1: Low Solvent Content

Cost Element	Baseline Coating Cost Estimate	Reformulated Coating Cost Estimate
Solvent Cost per Gallon	$69.77	$30.66
29 Percent of Production Volume (gal)	23,700	23,7
Total Material Cost	$1,654,400	$727,100
Total Cost Reduction	N/A	$927,300
Reformulation Cost	N/A	$3,000,000
Years to Recover Cost	$3,000,000 / $927,300 = 3.3	

Table 4-2 – Scenario 2: High Solvent Content

Cost Element	Baseline Coating Cost Estimate	Reformulated Coating Cost Estimate
Solvent Cost per Gallon	$69.77	$30.66
75 Percent of Production volume (gal)	61,300	61,300
Total Material Cost	$4,278,600	$1,880,400
Total Cost Reduction	N/A	$2,398,300
Reformulation Cost	N/A	$3,000,000
Years to Recover Cost	$3,000,000 / $2,398,300 = 1.3	

These scenarios demonstrate that capital reformulation costs can be offset within approximately one to three years, depending on the solvent content of the coating formulation. The cost analysis also highlights that transitioning to lower-cost solvents can yield long-term raw material cost savings, particularly in high-solvent formulations. In addition, manufacturers may further reduce capital reformulation costs through economies of scale and knowledge transfer. Reformulation strategies developed for one coating category may be applied to others, reducing overall reformulation burdens.

It is important to note that the capital cost estimates described above are based on product categories and production volumes reported by manufacturers who participated in the 2024 manufacturer survey. While this dataset encapsulates reported sales volumes, it likely does not capture the entire scope of the Rule 1107 coating universe. As a result, the actual number of reformulation efforts conducted in response to PAR 1107 may be higher, due to limited manufacturer survey responses. However, while the total capital cost associated with reformulation would increase with additional manufacturers, there would also be a larger volume of coatings sold within South Coast AQMD. This increased sales volume would, in turn, result in greater raw material cost savings and could shorten the time needed to recover reformulation costs, even with a larger number of reformulation efforts.

SOCIOECONOMIC IMPACT ASSESSMENT

PAR 1107 will phase out the use of coatings formulated with pCBtF and/or t-BAc without imposing new emission limitations or significantly affecting air quality. Thus, a socioeconomic impact assessment is not required pursuant to the Health and Safety Code Sections 40440.8 and 40728.5. Potential replacement solvents, such as ethyl acetate, generally cost less than pCBtF and/or t-BAc. As a result, coatings reformulated with solvents other than pCBtF and/or t-BAc are expected to cost approximately the same as or less than the currently available coatings which contain pCBtF and/or t-BAc. For this reason, implementation of PAR 1107 is expected to result in minimal costs and socioeconomic impacts within the South Coast AQMD jurisdiction.

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, is reviewing the proposed project (PAR 1107) to determine if it will result in any potential adverse environmental impacts. Appropriate CEQA documentation will be prepared based on the analysis.

DRAFT FINDINGS UNDER HEALTH AND SAFETY CODE 40727

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, as defined in that section, based on relevant information presented at the Public Hearing, this written analysis, and the rulemaking record. The draft findings are as follows:

Necessity – PAR 1107 is needed to phase out pCBtF and t-BAc to reduce toxicity in metal parts and products coatings as specified by the 2022 AQMP Control Measure CTS-01.

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, 39650 *et. seq.*, 40000, 40001, 40440, 40702, 40725 through 40728, and 41508.

Clarity – The South Coast AQMD Governing Board has determined that PAR 1107 is written and displayed so that the meaning can be easily understood by persons directly affected by them.

Consistency – The South Coast AQMD Governing Board has determined that PAR 1107 is in harmony with, and not in conflict with or contradictory to, existing statutes, court decisions, federal or state regulations.

Non-Duplication – The South Coast AQMD Governing Board has determined that PAR 1107 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 adopting this regulation, the South Coast AQMD Governing Board references the following statutes, which the South Coast AQMD hereby implements, interprets, enforces, or makes specific: Health and Safety Code Section 40001, and 40702.

COMPARATIVE ANALYSIS

PAR 1107 does not impose a new or more stringent emissions limit or standard, or a new or more stringent monitoring, reporting, or recordkeeping requirement. Therefore, consistent with Health and Safety Code Section 40727.2 (g), no comparative analysis is required.