BOARD MEETING DATE: November 6, 2026 AGENDA NO. 31

PROPOSAL: Determine That Proposed Amended Rule 1106 – Marine and Pleasure Craft Coatings, Is Exempt from CEQA; Amend Rule 1106; and Submit for Inclusion Into State Implementation Plan

SYNOPSIS: Rule 1106 establishes VOC limits for marine and pleasure craft coatings. The California Office of Environmental Health Hazard Assessment determined that para-Chlorobenzotrifluoride (pCBtF) and tert-Butyl Acetate (t-BAc), which are used in certain marine and pleasure craft coatings, have carcinogenic health effects. Proposed Amended Rule 1106 includes a future effective prohibition for pCBtF and t-BAc and future effective lower VOC limits for certain marine and pleasure craft coating categories, with sell-through and use-through provisions.

COMMITTEE: Stationary Source, September 18, 2026, Reviewed

RECOMMENDED ACTIONS:
Adopt the attached Resolution:

1. Determining that Proposed Amended Rule 1106 – Marine and Pleasure Craft Coatings, is exempt from the requirements of the California Environmental Quality Act;
2. Amending Rule 1106 – Marine and Pleasure Craft Coatings; and
3. Directing staff to submit Proposed Amended Rule 1106 to CARB and U.S. EPA for inclusion into State Implementation Plan.

Wayne Nastri
Executive Officer

SR:MK:HF:SK:CB

Background

Rule 1106 – Marine and Pleasure Craft Coatings was originally adopted in 1988 to reduce VOC emissions from the application of coatings to marine vessels. Rule 1106.1 – Pleasure Craft Coating Operations was adopted in 1992 with the intent of reducing VOC emissions from coatings applied to pleasure craft vessels. Rule 1106 was amended in May 2019 to combine the requirements of Rule 1106 and Rule 1106.1 into one rule and to better align the requirements with the U.S. EPA Marine Coatings Control Techniques Guidelines (CTG) for Shipbuilding and Ship Repair Operations. Since its adoption, Rule 1106 has undergone nine amendments, with the most recent in 2023, to correct a SIP deficiency.

To meet the VOC limits in South Coast AQMD rules, manufacturers rely on the use of solvents that are exempt from the definition of a VOC. These exempt solvents have low photochemical reactivity and do not significantly contribute to the formation of ground-level ozone. In 2017, due to concerns regarding the potential toxicity of two exempt compounds, pCBtF and t-BAc, the Stationary Source Committee directed staff to prioritize lowering toxicity over reducing VOC emissions. In 2018 and 2020, respectively, the California Office of Environmental Health Hazard Assessment determined that t-BAc and pCBtF have carcinogenic endpoints, with cancer potency values comparable to, or exceeding, chemicals already restricted in coatings and solvents under existing South Coast AQMD rules. To better characterize exempt-solvent use in marine and pleasure craft coating operations, staff conducted a manufacturer survey, met with manufacturers, and visited local facilities conducting marine coating operations and determined that pCBtF and t-BAc are used in marine and pleasure craft coatings subject to Rule 1106.

Proposed Amendments

Proposed Amended Rule 1106 (PAR 1106) includes a future effective prohibition on the use of pCBtF and t-BAc in coatings used on marine vessels, pleasure craft, and marine structures, with varying phase-out timelines to reflect the extent the solvents are used and the reformulation challenges. The phase-out approach includes a one-year sell-through and a two-year use-through period following each respective final manufacturer date to address stranded assets in the supply chain and at local businesses.

Staff evaluated each coating category and their corresponding VOC content limit to determine if any limits were less stringent than the U.S. EPA Marine Coating CTG and other California Air District rules. Staff identified two marine coating categories with less stringent VOC content limits than the corresponding limit in the U.S. EPA Marine Coating CTG and therefore proposed lower VOC content limits for those categories. Staff identified five pleasure craft and marine structure coating categories with less stringent VOC content limits than the corresponding limits in other California Air District rules and therefore proposed lower VOC content limits for those categories. Additionally, staff restructured and consolidated coating categories to align with the U.S. EPA Marine Coating CTG and other California Air District rules.

PAR 1106 lowers the mass-based VOC content limits for wood coating categories to be consistent with those in Rules 1113 – Architectural Coatings and 1136 – Wood Products Coatings to facilitate coating reformulations to phase out pCBtF for coatings with overlap between the three rules. This change will also address potential rule circumvention that occurs when high-VOC marine wood coatings are purchased and applied to architectural structures. Current VOC content limits for wood coatings subject to Rule 1106 range from 490 to 780 g/L while Rules 1113 and 1136 limit the VOC levels to 275 g/L.

PAR 1106 raises the VOC content limit for pretreatment wash primers used for marine vessel application to be equivalent with the U.S. EPA Marine Coating CTG and with recent rule amendments for wood, autobody, and aerospace coatings. These coatings have very low use and rely on pCBtF to achieve the lower VOC limit. The anticipated VOC emission increase is estimated to be less than a pound per day.

PAR 1106 includes a few alternative, equivalent product weighted-maximum incremental reactivity (PW-MIR) VOC limit for categories with limited non-pCBtF based formulations. Traditional mass-based VOC limits treat all VOCs equally, excluding water and exempt compounds; however, different solvents have varying potential to form ground-level ozone. The Maximum Incremental Reactivity (MIR) scale measures the relative ozone-forming potential of VOCs, offering a more nuanced approach than traditional mass-based limits. PW-MIR VOC limits account for the differences in reactivity, ensuring that more reactive VOCs are more strictly regulated, while less reactive VOCs are afforded more flexibility. PW-MIR VOC limits provide an alternative compliance approach for coatings categories that are challenging to reformulate without pCBtF, that maintains coating performance while limiting ozone-formation. PAR 1106 includes alternative PW-MIR for wood coatings and pretreatment wash primers which rely heavily on pCBtF, consistent with recent rule amendments for wood, autobody, and aerospace coatings.

Additionally, PAR 1106 includes new and revised definitions, clarifies and streamlines applicability provisions, removes outdated language, and adds labeling requirements for the alternative PW-MIR compliance option.

Public Process

PAR 1106 was developed through a public process over the last 16 months. During that time, staff held three Working Group Meetings and one Public Workshop on August 28, 2026. The Working Group Meetings included a variety of stakeholders including coating manufacturers, public water utilities, industry associations, public agencies, and environmental and community groups. As part of this rule development process, staff also met with individual stakeholders and conducted site visits to facilities subject to this rule.

Emission Reductions
PAR 1106 will phase out the use of pCBtF and t-BAc while maintaining most mass-based VOC limits, increasing the VOC limit for pretreatment wash primers, a small niche coating category, and decreasing the VOC limit for seven coating categories. Overall, PAR 1106 is anticipated to reduce VOC emissions by 23.9 pounds per day.

Key Issues
Throughout the rule development process, staff worked with stakeholders to address, clarify, and resolve key issues, but two key issues remain: A stakeholder 1) opposes the removal of the definition for energy curable coatings; and 2) requests PAR 1106 include ASTM Test Method D7767-11 "Standard test Method to Measure Volatiles from Radiation Curable Acrylate Monomers, Oligomers and Blends and Thin Coatings Made from Them."

Key Issue #1: Energy Curable Coating Definition
An industry stakeholder is opposed to the removal of the definition for energy curable coatings; however, energy curable coatings are not referenced in the rule. It is standard practice to only define terms that are used in the rule for clarity. When a term is defined, a reader would assume that there are provisions or requirements for the defined term. Therefore, having a defined term that is not used within the rule would cause confusion. Rules are not intended to serve as a platform to advertise a particular technology; they are intended to clearly lay out the requirements for the regulated industry. Defining energy curable coatings when there are no requirements or mention of them in the rule is neither warranted nor necessary.

Key Issue #2: VOC Test Method for Thin-Film Energy Curable Materials
An industry stakeholder is opposed to the omission of ASTM Test Method 7767-11. However, ASTM International D7767-11 "Standard test Method to Measure Volatiles from Radiation Curable Acrylate Monomers, Oligomers and Blends and Thin Coatings Made from Them" is not a U.S. EPA approved test method and cannot be used to enforce a SIP approved rule and therefore will not be added to PAR 1106. Staff has included a description of acceptable methodologies that may be used to determine the VOC content of energy curable thin-film materials on the South Coast AQMD website as well as in the PAR 1106 Staff Report.

Energy curable coating applications are best conducted in a controlled environment and require the use of curing lamps. Marine and pleasure craft coating operations most often occur in open shipyards. Staff has never found any energy curable coatings used on marine vessels, pleasure craft, or marine structures. Further, staff is not aware of any type of marine or pleasure craft coating that involves a thin-film material. Marine and pleasure craft coatings are applied in thick layers to provide protection. Thin-film materials can be found in some printing operations, but not marine coating operations making the inclusion of the test method inappropriate.

California Environmental Quality Act (CEQA)
Pursuant to CEQA Guidelines Sections 15002(k) and 15061, the proposed project (PAR 1106) is exempt from CEQA pursuant to CEQA Guidelines Sections 15061(b)(3). A Notice of Exemption has been prepared pursuant to CEQA Guidelines Section 15062 and is included as Attachment H to this Board Letter. If the proposed project is approved, the Notice of Exemption will be filed with the county clerks of Los Angeles, Orange, Riverside, and San Bernardino counties, and with the State Clearinghouse of the Governor's Office of Land Use and Climate Innovation.

Socioeconomic Impact Assessment
Staff identified 37 facilities that use marine, pleasure craft, and/or marine structure coatings. Up to 29 of the 37 facilities may qualify as small businesses based on various small business definitions. Analysis of PAR 1106 indicates that most compliance costs are attributable to phasing out pCBtF and/or t-BAc and transitioning to lower VOC limits for the categories of clear/pigmented wood sealers and topcoats. The cost impacts are mainly expected to occur through price changes of these coatings sold within the South Coast AQMD jurisdiction. The total annual compliance cost of implementing PAR 1106 is estimated at approximately $32,918. The Final Socioeconomic Impact Assessment can be found within the Final Staff Report, which is included as Attachment G of this Board Letter.

AQMP and Legal Mandates
PAR 1106 partially implements the 2022 AQMP Control Measure CTS-01 by phasing out the use of pCBtF and t-BAc and reducing VOC emissions.

Implementation and Resource Impacts
Existing staff resources are adequate to implement the proposed amendments.

Attachments
A. Summary of Proposal
B. Key Issues and Responses
C. Rule Development Process
D. Key Contacts List
E. Resolution
F. Proposed Amended Rule 1106
G. Final Staff Report, with Final Socioeconomic Impact Assessment Included
H. Notice of Exemption from CEQA
I. Board Presentation

ATTACHMENT A

SUMMARY OF PROPOSAL

Proposed Amended Rule 1106 – Marine and Pleasure Craft Coatings

Subdivision (a) – Purpose

- Added reduction of "toxic emissions" to reflect the phasing out and prohibitions of toxic compounds, including Group II Exempt Compounds, pCBtF, and t-BAc.

Subdivision (b) – Applicability

- Capitalized defined terms
- Streamlined language for clarity
- Clarified rule applicability to dredges, marine structures, and colorants

Subdivision (c) – Definitions

- Added the 22 new definitions:
  - Appurtenance
  - Chemical Abstracts Service Registration Number (CAS RN)
  - Clear Wood Sealer
  - Clear Wood Topcoat
  - Coating
  - Colorant
  - Executive Officer
  - Marine Structure
  - Marine Structure Coating
  - Marine Vessel
  - Maximum Incremental Reactivity (MIR)
  - Navigational Aid
  - Person
  - Pigmented Wood Sealer
  - Pigmented Topcoat
  - Primer
  - Product-Weighted MIR (PW-MIR)
  - Resin
  - South Coast AQMD Test Method
  - Tie Coat
  - Thermoplastic Foul Deterrent Coating
  - Thermoplastic Resin
  - Vessel

- Wood Coating

- Revised 11 definitions to improve clarity, consistency, and enforceability:
  - Heat Resistant Coating
  - High-Gloss Coating
  - High Temperature Coating
  - Low-Solids Coating
  - Marine Coating
  - Pleasure Craft
  - Pleasure Craft Coating
  - Sealant for Wire-Sprayed Aluminum
  - Tack Coating
  - Transfer Efficiency
  - Wire-Sprayed Aluminum Coating

- Removed 4 definitions that are no longer applicable, including those associated with removed or modified provisions in rule and products or categories that are not used or being used in rule:
  - Clear Wood Coatings
  - Energy Curable Coatings
  - High-Build Primer Surfacers
  - Touch Up Coatings

<u>Subdivision (d) – Requirements</u>

- Emission Limits
  - Marine Coating Categories and VOC Limits
    - Revised coating categories and corresponding VOC limits to align with U.S. EPA Marine Coating Control Techniques Guidelines (Surface Coating)
  - Pleasure Craft and Marine Structure Coating Categories and VOC Limits
    - Revised coating categories and corresponding VOC limits to be no less stringent than similar rules in other California Air Districts
  - Low Solids Coatings
    - Streamlined provision to specify prohibition and manufacture, sale, and use of low-solids coating containing VOC higher than applicable VOC limit

- Product-Weighted Maximum Incremental Reactivity (PW-MIR) VOC Limits
  - Established alternative PW-MIR limits for wood coatings and pretreatment wash primers

Phase out of para-chlorobenzotrifluoride (pCBtF) and tert-butyl acetate (t-BAc):

- Phase out two exempt compounds that have been determined to have toxic endpoints

pCBtF and t-BAc Prohibition Schedule

- t-BAc identified in coating formulations, but to lesser extent than pCBtF
- pCBtF identified in coating formulations but not heavily relied on to comply with current VOC content limits
- *Antifoulant Coatings*
  - Prohibition effective date: January 1, 2031
  - Sell-through end date: January 1, 2032
  - Use-through end date: January 1, 2033
- *Colorants and Wood Coatings*
  - Prohibition effective date: January 1, 2030
  - Sell-through end date: January 1, 2031
  - Use-through end date: January 1, 2032
- *Primers*
  - Prohibition effective date: June 1, 2027
  - Sell-through end date: June 1, 2028
  - Use-through end date: June 1, 2029
- *All Other Coating Categories*
  - Prohibition effective date: January 1, 2028,
  - Sell-through end date: January 1, 2029
  - Use-through end date: January 1, 2030

Compliance Schedule

- *Consolidated Coating Categories with VOC Content Limit Reductions*
  - Effective January 1, 2029
    - Consecutive sell-through and use-through periods of one year following effective date for former higher-VOC coatings
- *"Any Other Coating Type"* for Pleasure Craft and/or Marine Structure use
  - Effective January 1, 2029
    - Consecutive sell-through and use-through periods of one year following effective date for former higher-VOC coatings

<u>Subdivision (g) – Administrative and Labeling Requirements for Coating Manufacturers</u>

- Effective January 1, 2028

- Included date of manufacture and PW-MIR labeling, if applicable, on container labels

Subdivision (f) – Prohibition of Possession, Specification and Sale

- Moved exempt compounds and carcinogenic material paragraph to subdivision (f)
- Added language prohibiting the possession, use, supply, or sale of coatings containing pCBtF or t-BAc, and a concentration limit for cyclic, branched, or linear, completely methylated siloxanes (VMS)
- Added subparagraph clarifying sell-through and use-through periods for marine coatings, pleasure craft, and marine structure coatings containing pCBtF or t-BAc
  - Included table to clarify and illustrate final manufacturer date for applicable coating categories

Subdivision (h) – Test Methods

- Added provision specifying approved test methods for gloss and viscosity determination of coatings
- Removed outdated test methods no longer used by South Coast AQMD laboratory
- Streamlined language

Subdivision (j) – Exemptions

- Clarified that coatings applied to piers, bridges, and above waterline portions of permanently docks vessels serving as a stationary business or structure are exempt from Rule 1106. Instead, Rule 1113 – Architectural Coatings applies
- Removed exemption for touch up coatings and replaced with similar but more narrow exemption for any Marine Coating, Pleasure Craft Coating, or Marine Structure Coating that is supplied, sold, offered for sale, marketed, manufactured, blended, packaged or repackaged for use within the South Coast AQMD in half pint or smaller containers and is applied by brush or air brush to cover minor imperfections or minor mechanical damage incurred after a Vessel is manufactured and prior to purchase and initial use
- Added exemption for coatings applied to test specimens in laboratories for purposes of research, development, quality control, and testing for production-related operations
- Added limited exemption for prohibition of possession and repackaging of coatings that are shipped into the South Coast AQMD for temporary storage, reformulation, or repackaging, provided the coatings will be sold and used outside of the South Coast AQMD

ATTACHMENT B

KEY ISSUES AND RESPONSES

Proposed Amended Rule 1106 – Marine and Pleasure Craft Coatings

Throughout the rule development process, staff worked with stakeholders to address, clarify, and resolve key issues, but two key issues remain: A stakeholder 1) opposes the removal of the definition for energy curable coatings; and 2) requests PAR 1106 include ASTM Test Method D7767-11 "Standard test Method to Measure Volatiles from Radiation Curable Acrylate Monomers, Oligomers and Blends and Thin Coatings Made from Them."

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ATTACHMENT C

RULE DEVELOPMENT PROCESS

Proposed Amended Rule 1106 –
Marine and Pleasure Craft Coatings



Sixteen (16) months spent in rule development
One (1) Public Workshop
One (1) Stationary Source Committee Meeting
Three (3) Working Group Meetings
Four (4) Stakeholder Meetings
Two (2) Site Visits

ATTACHMENT D

KEY CONTACTS LIST

Proposed Amended Rule 1106 –
Marine and Pleasure Craft Coatings

AkzoNobel

American Coatings Association (ACA)

Bill Pierce, The Boeing Company

California Department of Pesticide Regulation (CA DPR)

California Council for Environmental and Economic Balance (CCEEB)

Katy Wolf, Consultant

Metropolitan Water District (MWD)

Pettit Marine Paint

PPG Industries, Inc.

Rita Loof, RadTech

ATTACHMENT E

RESOLUTION NO. 26-_____

A Resolution of the Governing Board of the South Coast Air Quality Management District (South Coast AQMD) determining that Proposed Amended Rule 1106 – Marine and Pleasure Craft Coatings, is exempt from the requirements of the California Environmental Quality Act (CEQA).

A Resolution of the South Coast AQMD Governing Board amending Rule 1106 – Marine and Pleasure Craft Coatings.

A Resolution of the South Coast AQMD Governing Board directing staff to submit Proposed Amended Rule 1106 – Marine and Pleasure Craft Coatings, for inclusion into the State Implementation Plan.

WHEREAS, the South Coast AQMD Governing Board finds and determines that Proposed Amended Rule 1106 is considered a "project" as defined by CEQA; and

WHEREAS, the South Coast AQMD has had its regulatory program certified pursuant to Public Resources Code Section 21080.5 and CEQA Guidelines Section 15251(l), and has conducted a CEQA review and analysis of the proposed project pursuant to such program (South Coast AQMD Rule 110); and

WHEREAS, the South Coast AQMD Governing Board finds and determines that, after conducting a review of the proposed project in accordance with CEQA Guidelines Section 15002(k) – General Concepts, the three-step process for deciding which document to prepare for a project subject to CEQA, and CEQA Guidelines Section 15061 – Review for Exemption, procedures for determining if a project is exempt from CEQA, that Proposed Amended Rule 1106 is exempt from CEQA; and

WHEREAS, the South Coast AQMD Governing Board finds and determines that it can be seen with certainty that there is no possibility that Proposed Amended Rule 1106 may have a significant adverse effect on the environment because: (1) Proposed Amended Rule 1106 will benefit public health and ambient air quality by reducing VOC emissions and the risk of exposure to toxic compounds para-Chlorobenzotrifluoride (pCBtF) and tert-Butyl Acetate (t-BAc) without increasing ozone formation and without the need for physical modifications to existing equipment; (2) compliant formulations of some coating categories that do not contain pCBtF and/or t-BAc are commercially available; (3) additional time is provided for manufacturers to reformulate coatings, if needed; and (4) the sell-through and use-through provisions will prevent stranded assets and the generation of waste by ensuring that manufacturers, distributors, and end users have sufficient time to find suitable replacements. Therefore, the proposed project is exempt from CEQA pursuant to CEQA Guidelines Section 15061(b)(3) – Common Sense Exemption; and

WHEREAS, the South Coast AQMD staff has prepared a Notice of Exemption for the proposed project, that is completed in compliance with CEQA Guidelines Section 15062 – Notice of Exemption; and

WHEREAS, Proposed Amended Rule 1106 and supporting documentation, including but not limited to, the Notice of Exemption and the Final Staff Report, which includes the Final Socioeconomic Impact Assessment, were presented to the South Coast AQMD Governing Board and the South Coast AQMD Governing Board has reviewed and considered this information, as well as has taken and considered staff testimony and public comment prior to approving the project; and

WHEREAS, the South Coast AQMD Governing Board finds and determines, taking into consideration the factors in Section (d)(4)(D) of the Governing Board Procedures (Section 30.5(4)(D)(i) of the Administrative Code), that the modifications to Proposed Amended Rule 1106 since the Notice of Public Hearing was published are clarifications that meet the same air quality objective and are not so substantial as to significantly affect the meaning of Proposed Amended Rule 1106 within the meaning of Health and Safety Code Section 40726 because: (1) the addition of the definition of varnish is for clarification; (2) the addition of the listing of sealer and varnish in paragraph (d)(6) is for clarification and is not a new requirement; (3) the changes to clause (g)(2)(A)(iii) were made to correct a typo; (4) changes to definitions listed in paragraphs (c)(54) and (c)(55) are to correct an alphabetizing error; (5) the changes to paragraph (c)(16) and (d)(2) were made to correct a typo; (6) the changes to subparagraph (d)(9)(D) and paragraph (f)(3) were made to correct a typo, and: (a) the changes do not impact emission reductions, (b) the changes do not affect the number or type of sources regulated by the rule, (c) the changes are consistent with the information contained in the Notice of Public Hearing, and (d) the consideration of the range of CEQA alternatives is not applicable because the proposed project is exempt from CEQA; and

WHEREAS, Proposed Amended Rule 1106 will be submitted for inclusion into the State Implementation Plan; and

WHEREAS, the South Coast AQMD Governing Board determines that there is a problem that Proposed Amended Rule 1106 will alleviate, (i.e., the toxic risks posed by pCBtF, t-BAc, and cyclic, branched, or linear, completely methylated siloxanes (VMS)) and the proposed amendments will phase out and prohibit their use; and

WHEREAS, 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 Public Hearing and in the Final Staff Report; and

WHEREAS, the South Coast AQMD Governing Board has determined that a need exists to amend Rule 1106 to limit the use of pCBtF and t-BAc in marine, pleasure

craft, and marine structure coatings due to toxicity and public health concerns and to partially implement the 2022 AQMP Control Measure CTS-01; and

WHEREAS, the South Coast AQMD Governing Board has determined that a need exists to amend Rule 1106 to limit the use of VMS, which are Group II exempt compounds defined in Rule 102 – Definition of Terms and identified as potentially toxic but were previously excluded from the rule's Group II prohibition; and

WHEREAS, 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, 40441, 40702, and 40725 through 40728; and

WHEREAS, the South Coast AQMD Governing Board has determined that Proposed Amended Rule 1106 is written or displayed so that its meaning can be easily understood by the persons directly affected by it; and

WHEREAS, the South Coast AQMD Governing Board has determined that Proposed Amended Rule 1106 is in harmony with, and not in conflict with or contradictory to, existing statutes, court decision, or state or federal regulations; and

WHEREAS, the South Coast AQMD Governing Board has determined that Proposed Amended Rule 1106 does not impose the same requirements as any existing state or federal regulations, and the proposed amended rule is necessary and proper to execute the powers and duties granted to, and imposed upon, the South Coast AQMD; and

WHEREAS, the South Coast AQMD Governing Board, in amending Rule 1106, references the following statutes which the South Coast AQMD hereby implements, interprets, or makes specific: Health and Safety Code Sections 39002, 40001, 40702, 40440(a), 40725 through 40728.5, and federal Clean Air Act Sections 110, 172, and 182(e); and

WHEREAS, Health and Safety Code Section 40727.2 requires the South Coast AQMD to prepare a written analysis of existing federal air pollution control requirements applicable to the same source type being regulated whenever it adopts, or amends a rule, and that the South Coast AQMD's comparative analysis of Proposed Amended Rule 1106 is included in the Final Staff Report; and

WHEREAS, the South Coast AQMD Governing Board has determined that the Final Socioeconomic Impact Assessment, which is included in the Final Staff Report for Proposed Amended Rule 1106, is consistent with the March 17, 1989 Governing Board Socioeconomic Resolution for rule amendment; and

WHEREAS, the South Coast AQMD Governing Board has determined that the Final Socioeconomic Impact Assessment, which is included in the Final Staff Report

for Proposed Amended Rule 1106, is consistent with the provisions of Health and Safety Code Sections 40440.8 and 40728.5; and

WHEREAS, the South Coast AQMD Governing Board has determined that Proposed Amended Rule 1106 will result in increased costs to affected industries in the South Coast AQMD jurisdiction, yet such costs are considered to be reasonable, with a total annualized cost as specified in the Final Socioeconomic Impact Assessment, as presented in the Final Staff Report for Proposed Amended Rule 1106; and

WHEREAS, the South Coast AQMD Governing Board has actively considered the Final Socioeconomic Impact Assessment, which is included in the Final Staff Report for Proposed Amended Rule 1106, and has made a good faith effort to minimize any adverse socioeconomic impacts; and

WHEREAS, the South Coast AQMD staff conducted a Public Workshop regarding Proposed Amended Rule 1106 on August 28, 2026; and

WHEREAS, the Public Hearing has been properly noticed in accordance with all provisions of Health and Safety Code Sections 40725 and 40440.5; and

WHEREAS, the South Coast AQMD Governing Board has held a Public Hearing in accordance with all provisions of state and federal law; and

WHEREAS, the South Coast AQMD Governing Board specifies the Planning, Rule Development, and Implementation Manager overseeing the rule development for Proposed Amended Rule 1106 as the custodian of the documents or other materials which constitute the record of proceedings upon which the adoption of this proposed project is based, which are located at the South Coast Air Quality Management District, 21865 Copley Drive, Diamond Bar, California; and

NOW, THEREFORE, BE IT RESOLVED, that the South Coast AQMD Governing Board does hereby determine, pursuant to the authority granted by law, that Proposed Amended Rule 1106 is exempt from CEQA pursuant to CEQA Guidelines Section 15061(b)(3) – Common Sense Exemption. This information was presented to the South Coast AQMD Governing Board, whose members exercised their independent judgment and reviewed, considered, and approved the information therein prior to acting on the proposed project; and

BE IT FURTHER RESOLVED, the South Coast AQMD Governing Board directs staff to conduct a technology status update on the progress of the pCBtF and t-BAc phase-out and report to the Stationary Source Committee by January 1, 2029; and

BE IT FURTHER RESOLVED, that the South Coast AQMD Governing Board does hereby adopt, pursuant to the authority granted by law, Proposed Amended Rule 1106 as set forth in the attached, and incorporated herein by reference; and

BE IT FURTHER RESOLVED, that the South Coast AQMD Governing Board requests that Proposed Amended Rule 1106 be submitted for inclusion in the State Implementation Plan; and

BE IT FURTHER RESOLVED, that the Executive Officer is hereby directed to forward a copy of this Resolution and Proposed Amended Rule 1106 to the California Air Resources Board for approval and subsequent submittal to the United States Environmental Protection Agency for inclusion into the State Implementation Plan.

DATE: _____

CLERK OF THE BOARDS

(Adopted November 4, 1988)(Amended May 5, 1989)(Amended June 2, 1989)
(Amended March 2, 1990)(Amended November 2, 1990)(Amended December 7, 1990)
(Amended August 2, 1991)(Amended January 13, 1995)
(Amended May 3, 2019)(Amended January 6, 2023)
(Amended [*DATE OF RULE ADOPTION*])

[*RULE INDEX TO BE ADDED AFTER RULE ADOPTION*]

PROPOSED AMENDED RULE 1106. MARINE AND PLEASURE CRAFT COATINGS

(a) Purpose

The purpose of this rule is to reduce ~~emissions of~~ Volatile Organic Compounds (VOC) and toxic emissions from the application of ~~Marine~~ Coatings to Vessels and their Appurtenances, Navigational Aids, dredges, and ~~Pleasure Craft~~Marine Structures ~~Coatings~~.

(b) Applicability

This rule is applicable to any ~~person~~Person who supplies, sells, offers for sale, markets, manufactures, blends, packages, repackages, possesses or distributes any Marine Coating, ~~or~~ Pleasure Craft Coating, Marine Structure Coating, or Colorant, and any associated solvent, ~~used with a Marine or Pleasure Craft Coating~~ for use within the South Coast AQMD ~~Jurisdiction~~jurisdiction, as well as any ~~person~~Person who applies, stores at a worksite, or solicits the application of any Marine Coating, ~~or~~ Pleasure Craft Coating, Marine Structure Coating, or Colorant, and any associated solvent, ~~used~~ for purposes of coating Vessels and their Appurtenances, Marine Structures, Navigational Aids, or dredges, ~~with a Marine or Pleasure Craft Coating~~ within the South Coast AQMD ~~Jurisdiction~~.

(c) Definitions

~~For the purpose of this rule the following definitions shall apply:~~

(1) AEROSOL COATING PRODUCT ~~means~~is a pressurized ~~coating~~Coating product containing pigments, ~~resins~~Resins, and/or other ~~coating~~Coating solids that dispenses product ingredients by means of a propellant~~,~~ and is packaged in a disposable aerosol container for hand-held application.

(2) AIR DRIED COATING is any ~~coating~~Coating that is formulated by the manufacturer to be cured at a temperature below 90 degrees Celsius (°C) (194 degrees Fahrenheit (°F)).

(3) ANTENNA COATING is any ~~coating~~Coating applied to an ~~equipment and associated structural appurtenances~~Appurtenance ~~that are~~ used to receive or transmit electromagnetic signals.

(4) ANTIFOULANT COATING is any ~~c~~Coating applied to the underwater portion of ~~boats, ships, vessels~~Vessels~~, or pleasure craft~~ to prevent or reduce the attachment of biological organisms and ~~shall be~~is registered with the United States Environmental Protection Agency (~~"~~U.S. EPA~~"~~) as a pesticide under the Federal Insecticide, Fungicide, and Rodenticide Act (7 United States Code Section 136).

(5) APPURTENANCE means a fixed, structural, or semi-permanent attachment or accessory that extends beyond the hull or superstructure of a Vessel. Temporary equipment, including but not limited to, fishing nets, trailers, or portable generators, are not Appurtenances.

(~~5~~6) BAKED COATING is any ~~coating~~Coating that is formulated by the manufacturer to be cured at a temperature at or above 90 °C (194 °F).

(7) CHEMICAL ABSTRACTS SERVICE REGISTRATION NUMBER (CAS RN) is a unique numerical identifier assigned by the Chemical Abstract Service to a single chemical substance to ensure unambiguous identification.

~~(6) CLEAR WOOD COATINGS are clear and semi-transparent topcoats applied to wood substrates to provide a transparent or translucent film.~~

(8) CLEAR WOOD SEALER is a Coating containing Resins, but not opaque pigments, which seals wood prior to application of the subsequent Coatings.

(9) CLEAR WOOD TOPCOAT is a final Coating which contains Resins, but not opaque pigments, and is specifically formulated to form a transparent or semi-transparent solid protective film.

(10) COATING is a material that is applied to a surface and forms a film in order to beautify, preserve, repair, or protect such a surface.

(11) COLORANT is a solution of dyes or suspensions of pigments sold or supplied as a separate component that is mixed with Marine Coatings or Pleasure Craft and Marine Structure Coatings on site.

(~~7~~12) DISTRIBUTOR ~~means~~is any ~~person~~Person to whom a product is sold or supplied for the purposes of resale or distribution in commerce, except that manufacturers, retailers, and consumers are not ~~distributors~~Distributors.

~~(8) ENERGY CURABLE COATINGS are single-component reactive products that cure upon exposure to visible light, ultra-violet light or to an electron beam.~~

(13) EXECUTIVE OFFICER is as defined in Rule 102 – Definition of Terms.

(~~9~~14) EXEMPT COMPOUNDS are as defined in~~(See~~ Rule 102~~– Definition of Terms.)~~, including Group I and Group II Exempt Compounds.

(~~10~~15) EXTREME HIGH GLOSS COATING is any ~~coating~~Coating that ~~achieves at least~~registers a gloss of 95 units or greater ~~percent reflectance~~ on a 60 degree (°) meter ~~when tested by~~according to ASTM Test Method D-523~~-14 "~~ – Standard Test Method for Specular Gloss~~"~~.

(~~11~~16) FINISH PRIMER/SURFACER is any ~~coating~~Coating applied with a wet film thickness of less than 10 mils (one mil = 0.001 of an inch) and is applied prior to the application of a Marine Coating, ~~*or*~~ Pleasure Craft Coating, or Marine Structure Coating for the purpose of providing corrosion resistance, adhesion for subsequent ~~coatings~~Coatings, a moisture barrier, or promotes a uniform surface necessary for filling in surface imperfections.

(~~12~~17) GRAMS OF VOC PER LITER (g/L) OF COATING LESS WATER AND LESS EXEMPT COMPOUNDS ~~(~~or REGULATORY VOC~~)~~ is the weight of VOC per combined volume of VOC and ~~coating~~Coating solids and can be calculated by the following equation:

Regulatory VOC (g/L-Coating)

~~Grams of VOC per Liter of Coating, Less Water and Less Exempt Compounds~~ = $\frac{Ws\ W_v - W_w - Wes\ W_{ex}}{V_m - V_w - Ves V_{ex}}$

Where: W_{sv} = weight of volatile compounds in grams (includes water, Exempt Compounds, and VOCs);

W_w = weight of water in grams;

W_{esex} = weight of ~~exempt compounds~~Exempt Compounds in grams;

V_m = volume of material in liters;

V_w = volume of water in liters;

V_{esex} = volume of ~~exempt compounds~~Exempt Compounds in liters.

(~~13~~18) GRAMS OF VOC PER LITER OF MATERIAL ~~(~~or ACTUAL VOC~~)~~ is the weight of VOC per volume of material and shall be calculated by the following equation:

~~Grams of VOC per Liter of Material =~~

$$\text{Actual VOC (g/L-Material)} = \frac{W_{sV}\text{-}W_w\text{-}W_{esex}}{V_m}$$

Where: W_{sv} = weight of volatile compounds in grams (includes water, Exempt Compounds, and VOCs);

W_w = weight of water in grams;

W_{esex} = weight of ~~exempt compounds~~Exempt Compounds in grams;

V_m = volume of material in liters.

(~~14~~19) HEAT RESISTANT COATING is any ~~coating~~Coating that ~~during normal use~~ is formulated, labeled, and capable of ~~must~~ withstanding temperatures of at least 204 °C (400 °F).

(~~15~~20) HIGH GLOSS COATING is any ~~coating~~Coating that ~~achieves at least~~ registers a gloss of 85 ~~percent reflectance~~ units or greater on a 60° meter ~~when tested by~~ according to ASTM Test Method D-523 ~~14 "Standard Test Method for Specular Gloss"~~.

(~~16~~21) HIGH TEMPERATURE COATING is any ~~coating~~Coating that ~~during normal use~~ is formulated, labeled, and capable of ~~must~~ withstanding temperatures of at least 426 °C (800 °F).

~~(17) HIGH BUILD PRIMER/SURFACER is any coating applied with a wet film thickness of 10 mils or more (one mil = 0.001 of an inch) prior to the application of a topcoat for purposes of providing corrosion resistance, adhesion of subsequent coatings, a moisture barrier, or promoting a uniform surface necessary for filling in surface imperfections.~~

(~~18~~22) HIGH-VOLUME, LOW-PRESSURE (HVLP) means spray application equipment designed to atomize 100 percent by air pressure only and is operated between 0.1 and 10 pounds per square inch gauge ~~(psig),~~ when measuring air atomizing pressure ~~measured~~ dynamically at the center of the air cap and at the air horns.

(~~19~~23) INORGANIC ZINC COATING is a ~~coating~~Coating that contains 960 grams per liter or more elemental zinc incorporated into an inorganic silicate binder that is applied to steel to provide galvanic corrosion resistance.

(~~20~~24) LOW ACTIVATION INTERIOR COATING is any ~~coating~~Coating used on interior surfaces aboard ~~boats, ships, and vessels~~Vessels to minimize the activation of pigments on painted surfaces within a radiation environment.

(~~21~~25) LOW-SOLIDS COATING~~S~~ ~~are~~is a ~~coatings~~Coating containing one pound or less of solids per gallon of material, where the solids content is determined pursuant to ASTM Test Method D2369 – Standard Test Method for Volatile Content of Coatings.

(~~22~~26) MARINE COATING is any ~~coating~~ Coating applied, or intended for application to, ~~except unsaturated polyester resin (fiberglass) coatings, containing volatile organic materials and applied by any means to boats, ships, and vessels~~Marine Vessels and their ~~appurtenances~~Appurtenances, ~~and structures such as piers, docks, buoys~~ Navigational Aids, or dredges ~~and oil drilling rigs intended for the exposure to either a marine or fresh water environment~~.

(~~23~~27) MARINE DECK SEALANT PRIMER is any Primer intended to be applied to a substrates, prior to the application of a sealant, to enhance the bonding surface, which is ~~sealant primer intended by the manufacturer~~ formulated and labeled to be applied to wooden marine decks~~. A sealant primer is any product intended by the manufacturer to be applied to a substrate, prior to the application of a sealant, to enhance the bonding surface~~.

(28) MARINE STRUCTURE is a dock or offshore platform.

(29) MARINE STRUCTURE COATING is any Coating applied, or intended for application, to a Marine Structure.

(30) MARINE VESSEL is any Vessel that is not a Pleasure Craft.

(31) MAXIMUM INCREMENTAL REACTIVITY (MIR) is the measure of the photochemical reactivity of a VOC, which estimates the weight of ozone produced from a weight of VOC expressed as gram of ozone per gram of VOC (g O_3/g VOC). MIR for individual VOCs are specified in Title 17, California Code of Regulations, Sections 94700 and 94701.

(~~24~~32) MIST COATING is any low-~~-~~viscosity thin-~~-~~film epoxy ~~coating~~Coating applied to an inorganic zinc primer that penetrates the porous zinc primer and allows the occluded air to escape through the film prior to curing.

(33) NAVIGATIONAL AID is any external device, marker, or guidance equipment, such as a buoy or other U.S. Coast Guard waterway marker, that is used to aid in nautical navigation.

(~~25~~34) NAVIGATIONAL AID~~S~~ COATING is any ~~coating~~Coating ~~that is~~ applied to a Navigational Aid ~~buoys or other Coast Guard waterway markers~~ that ~~are~~is recoated ~~at their usage site aboard ship~~ and ~~immediately~~ returned to the water for navigational use.

(~~26~~35) NONSKID COATING means any ~~coating~~Coating applied to the horizontal surface of a ~~marine vessel~~Marine Vessel for the specific purpose of providing slip resistance for personnel.

(~~27~~36) ORGANIC ZINC COATING is a ~~coating~~Coating that contains 960 grams per liter or more elemental zinc incorporated into an organic silicate binder that is applied to steel to provide galvanic corrosion resistance.

(37) PERSON is as defined in Rule 102.

(38) PIGMENTED WOOD SEALER is an opaque Coating which contains Resins and colored pigments, and is formulated to provide a firm bond, level the wood surface, or seal the wood surface, which is applied prior to a Topcoat.

(39) PIGMENTED WOOD TOPCOAT is a final opaque Coating which contains Resins and colored pigments, and is formulated to hide or protect the wood surface and form a solid protective film.

(~~28~~40) PLEASURE CRAFT are ~~marine or fresh water vessels~~ Vessels ~~that are less than 20 meters in length and are~~ manufactured or operated primarily for recreational purposes, or are leased, rented, or chartered to a ~~person~~Person or business for recreational purposes. Pleasure Craft are also Vessels operated in amusement theme parks ~~in a fresh water environment~~ solely for the purpose of an amusement park attraction. ~~shall be considered pleasure craft vessels regardless of their length. The owner or operator of a pleasure craft vessel shall be responsible for certifying that the intended use is for recreational purposes.~~

(~~29~~41) PLEASURE CRAFT COATING is any ~~marine coating,~~Coating ~~except unsaturated polyester resin (fiberglass) coatings,~~ applied, or intended for application, ~~by brush, spray, roller, or other means~~ to ~~a pleasure craft~~Pleasure Crafts and their Appurtenances.

(~~30~~42) PRETREATMENT WASH PRIMER is a ~~coating~~Coating that contains a minimum of ~~1/2~~0.5 percent acid, by weight, applied directly to bare metal surfaces to provide necessary surface etching.

(43) PRIMER is any Coating specifically formulated, labeled, and applied to provide corrosion resistance, adhesion for subsequent Coatings, a moisture

barrier, or promotes a uniform surface necessary for filling in surface imperfections.

(44) PRODUCT-WEIGHTED MIR (PW-MIR) is the sum of all weighted-MIR for all ingredients in a Coating or material. The PW-MIR is the total product reactivity expressed to hundredths of a gram of ozone formed per gram of product (excluding container and packaging) and calculated according to the following equations:

Weighted MIR (Wtd-MIR) ingredient = MIR x Weight fraction ingredient, and,

$PW\text{-}MIR = (Wtd\text{-}MIR)_1 + (Wtd\text{-}MIR)_2 + \ldots + (WtdMIR)_n$

where,

MIR = ingredient MIR; and

1,2,3,...,n = each ingredient in the product up to the total n ingredients in the product.

(~~31~~45) REPAIR AND MAINTENANCE THERMOPLASTIC COATING is any ~~resin~~Resin-bearing ~~coating~~Coating, such as vinyl, chlorinated rubber, or bituminous ~~coatings~~Coatings, where the ~~resin~~Thermoplastic Resin becomes pliable with the application of heat~~,~~ and is used to recoat portions of a previously coated substrate that has sustained damage ~~to following the initial coating~~.

(46) RESIN is a non-volatile polymeric organic material which forms the surface film of a Coating.

(~~32~~47) SEALANT FOR WIRE-SPRAYED ALUMINUM COATING is a~~ny coating~~Coating ~~of up to one mil (one mil = 0.001 of an inch) in thickness of an epoxy material that is reduced for application with an equal part of an appropriate solvent (e.g. naphtha or ethylene glycol monoethyl ether)~~ formulated, labeled, and applied to seal pores, voids, and cracks in Wire-Sprayed Aluminum Coatings.

(~~33~~48) SEALER is a ~~coating~~Coating applied to bare wood to seal surface pores to prevent subsequent ~~coatings~~Coatings from being absorbed into the wood.

(~~34~~49) SOLVENT CLEANING is as defined in Rule 1171 - Solvent Cleaning Operations.

(50) SOUTH COAST AQMD TEST METHOD means a test method included in the manual of "Laboratory Methods of Analysis for Enforcement Samples," which can be found on the South Coast AQMD website and are referenced in subdivision (h).

(~~35~~51) SPECIAL MARKING COATING is any ~~coating~~Coating used for items such as flight decks, ~~vessel~~Vessel identification numbers, and other demarcations for safety or identification.

(~~36~~52) TACK COATING is an epoxy ~~coating~~Coating ~~of up to two mils (one mil = 0.001 of an inch) thick~~ applied to an existing epoxy ~~coating~~Coating that has aged beyond the time limit specified by the manufacturer.

(~~37~~53) TEAK PRIMER is a ~~coating~~Coating applied to teak wood or previously oiled teak wood decks in order to improve the adhesion of a seam sealer.

~~(54) THERMOPLASTIC RESIN is a Resin that cures through solvent evaporation and not chemical reaction.~~

(~~55~~54) THERMOPLASTIC FOUL DETERRENT COATING is a Coating formulated with a Thermoplastic Resin applied to the underwater portion of Vessels to prevent or reduce the attachment of biological organisms without the use of chemical substances such as pesticides or biocides.

(55) THERMOPLASTIC RESIN is a Resin that cures through solvent evaporation and not chemical reaction.

(~~38~~56) TOPCOAT is any final ~~coating~~Coating applied to the interior or exterior of a ~~marine or pleasure craft~~Vessel.

~~(39) TOUCH-UP COATING is any coating applied incidental to the main coating process but necessary to cover minor imperfections or minor mechanical damage incurred prior to use.~~

(~~40~~57) TRANSFER EFFICIENCY ~~means~~ is the ~~amount~~ ratio of the weight or volume of ~~coating~~Coating solids ~~adhering~~ that adheres to the object to the total weight or volume, respectively, ~~being coated divided by the total amount~~ of ~~coating~~Coating solids ~~sprayed~~ used in the application process, expressed as a percentage.

(~~41~~58) UNDERSEA WEAPONS SYSTEM COATING is any ~~coating~~Coating applied to any components of a weapons system intended for exposure to a marine environment and that is intended to be launched or fired undersea.

~~(42) VARNISHES are clear or pigmented wood topcoats formulated with various resins to dry by chemical reaction.~~

(59) VARNISHES are clear or pigmented wood topcoats formulated with various resins to dry by chemical reaction.

(~~59~~60) VESSEL is any watercraft exposed to a marine or freshwater environment, including, but not limited to, ships, boats, submersibles, or submarines.

(~~43~~60~~6~~1) VOLATILE ORGANIC COMPOUND (VOC) is as defined in Rule 102~~ – Definition of Terms~~.

(~~44~~61~~6~~2) WIRE-SPRAYED ALUMINUM COATING is ~~any~~ a protective molten ~~multi-~~aluminum ~~c~~Coating made by melting and atomizing aluminum wire that is applied to ~~a~~ steel substrates to protect from corrosion ~~using oxygen fueled combustion spray equipment~~.

(~~62~~63) WOOD COATING is any Coating applied to wood substrates. For the purpose of this rule Wood Coatings includes Clear Wood Sealers, Clear Wood Topcoats, Pigmented Wood Sealers, and Pigmented Wood Topcoats.

(d) Requirements

(1) VOC Content of Marine Coatings

~~Except as otherwise provided in this rule, a~~No ~~person~~Person shall ~~not~~ manufacture, supply, sell, offer for sale, market, blend, distribute, package, or repackage any Marine Coating for use within South Coast AQMD, nor shall any Person possess, store at a worksite, apply ~~,~~ or solicit the use of ~~a~~any ~~marine coating~~Marine Coating within ~~the~~ South Coast AQMD~~, jurisdiction with a~~ that contains VOC ~~content~~ in excess of the ~~following~~applicable limits ~~shown~~specified in ~~the~~ Table 1 – ~~Table of~~ Standards ~~I~~ for Marine Coatings. Compliance with the applicable VOC content limits shall be based on VOC content, including any material added to the original Marine Coating supplied by the manufacturer, ~~that are~~ expressed as grams of VOC per liter of coating, as applied, less water and ~~exempt solvents:~~Exempt Compounds.

Table 1 – Standards for Marine Coatings ~~**TABLE OF STANDARDS I**~~

~~MARINE COATING CATEGORY~~**Marine Coating Category**	**Regulatory VOC Content Limits (g/L-Coating)** ~~VOC LIMITS Less water and exempt compounds Grams per Liter (g/L)~~	
	~~BAKED~~ **Baked Coatings**	~~AIR DRIED~~ **Air Dried Coatings**
	~~CURRENT LIMIT~~	~~CURRENT LIMIT~~
Antenna Coating		340
Fouling Deterrent Coatings:		
Antifoulant Coatings~~:~~		400
Thermoplastic Foul Deterrent Coating		400
~~Aluminum Substrates~~		~~560~~
~~Other Substrates~~		~~400~~
Inorganic Zinc Coating		340
Low Activation Interior Coating		420
Mist Coating		610
Navigational Aids Coating		340
Nonskid Coating		340
Organic Zinc Coating		340
Undercoaters:		
Primer	275	340
~~Pre-Treatment~~ Pretreatment Wash Primer	420	~~420~~780
Repair and Maintenance Thermoplastic Coating		340
Sealant for Wire-Sprayed Aluminum Coating		610
Special Marking Coating		420
Specialty Coatings:		
Heat Resistant Coating	360	420
High Temperature Coating		500
Tack Coating		610
Topcoats:		
~~Extreme High-Gloss Coating~~	~~420~~	~~490~~
High Gloss Coating	275	340
Undersea Weapons Systems Coating	275	340
Any Other Coating Type	275	340

(2) VOC Content of Pleasure Craft and Marine Structure Coatings

~~Except as otherwise provided in this rule, a~~No ~~person~~Person shall ~~not~~ manufacture, supply, sell, offer for sale, market, blend, distribute, package, or repackage any Pleasure Craft ~~and~~or Marine Structure Coating for use within South Coast AQMD, nor shall any Person possess, store at a worksite, apply or solicit the use of ~~a~~any ~~pleasure craft coating~~Pleasure Craft ~~and~~or Marine Structure Coating, within ~~the~~ South Coast AQMD~~, jurisdiction with a~~ that contains VOC ~~content~~ in excess of the ~~following~~applicable limits ~~shown~~specified in ~~the~~ Table 2 – ~~Table of~~ Standards ~~II~~ for Pleasure Craft and Marine Structure Coatings. Compliance with the applicable VOC content limits shall be based on VOC content, including any material added to the original Pleasure Craft ~~and~~or Marine Structure Coating supplied by the manufacturer,~~that are~~ expressed as grams of VOC per liter of ~~coating~~Coating, as applied, less water and ~~exempt solvents:~~Exempt Compounds.

Table 2 – Standards for Pleasure Craft and Marine Structure Coatings

~~TABLE OF STANDARDS II~~

~~VOC LIMITS~~ ~~Less water and exempt compounds~~ ~~Grams per Liter (g/L)~~		
~~PLEASURE CRAFT COATING CATEGORY~~Pleasure Craft and Marine Structure Coating Category	**~~CURRENT LIMIT~~Regulatory VOC Content Limits (g/L-Coating)**	
	Current Limit[1]	**Effective Date 01/01/2029**
Fouling Deterrent Coatings:		
Antifoulant Coatings~~:~~	330	
Thermoplastic Foul Deterrent Coating	400	
~~Aluminum Substrate~~	~~560~~	
~~Other Substrate~~	~~330~~	
~~Clear~~ Wood Coatings:		
~~Sealers~~	~~550~~	
~~Varnishes~~	~~490~~	
Clear Wood Sealer	550	275
Pigmented Wood Sealer	550	275
Clear Wood Topcoat	490	275
Pigmented Wood Topcoat	490	275

~~VOC LIMITS~~ ~~Less water and exempt compounds~~ ~~Grams per Liter (g/L)~~		
~~**PLEASURE CRAFT COATING CATEGORY**~~**Pleasure Craft and Marine Structure Coating Category**	~~**CURRENT LIMIT**~~**Regulatory VOC Content Limits (g/L-Coating)**	
	Current Limit[1]	**Effective Date 01/01/2029**
~~Primer Coatings:~~Undercoaters:		
Primer	340	
~~Finish Primer/Surfacer~~	~~420~~	
~~High Build Primer/Surfacer~~	~~340~~	
~~Marine Deck Sealant Primer~~	~~760~~	
Pretreatment Wash Primer	780	
~~Teak Primer~~	~~775~~	
Topcoats:		
~~Extreme High Gloss Coating~~	~~490~~	
High Gloss Coating	420	
Any Other Coating Type	420	340

1. The specified Current Limit remains in effect unless there is a VOC limit listed in the Effective Date column, which goes into effect on January 1, 2029.

(3) VOC Content of Low-Solids Coatings

~~Except as otherwise provided in this rule, a~~No ~~person~~Person shall ~~not~~ manufacture, supply, sell, offer for sale, market, blend, distribute, package, or repackage any Marine Coating, Pleasure Craft Coating, or Marine Structure Coating for use within South Coast AQMD, nor shall any Person possess, store at a worksite, apply or solicit the use of ~~a~~any ~~marine coating~~Marine Coating, ~~or a pleasure craft coating~~Pleasure Craft Coating, or Marine Structure Coating, within ~~the~~ South Coast AQMD~~, jurisdiction with a~~ that contains VOC ~~content~~ in excess of the ~~following~~ limit ~~shown~~specified in ~~the~~Table 3 – ~~Table of~~ Standards ~~III~~ for Low-Solids Coatings. Compliance with the applicable VOC content limit shall be based on VOC content, including any material added to the original Coating supplied by the manufacturer, ~~that is~~ expressed as grams of VOC per liter of material of coating, or Actual VOC, as applied~~:~~.

Table 3 – Standards for Low-Solids Coatings

~~TABLE OF STANDARDS III~~

~~VOC LIMIT – MARINE & PLEASURE CRAFT COATINGS Grams per liter of material~~**Material (g/L) VOC**	
~~**COATING CATEGORY**~~**Coating Category**	~~**CURRENT LIMIT**~~**Actual VOC Content Limit (g/L-Material)**
Low-Solids Coating	120

(4) Alternative PW-MIR VOC Content Limits

In lieu of complying with the applicable Table 1 or 2 Regulatory VOC content limit:

(A) For Pretreatment Wash Primers, a Person may elect to manufacture, supply, sell, offer for sale, market, blend, distribute, possess, package, or repackage any Pretreatment Wash Primer for use within the South Coast AQMD, or apply a Pretreatment Wash Primer, provided it complies with the alternative PW-MIR VOC content limit in Table 4 – Alternative PW-MIR VOC Content Limits, as applied; or

(B) For Wood Coatings, a Person may elect to manufacture, supply, sell, offer for sale, market, blend, distribute, possess, package, or repackage a Wood Coating for use within the South Coast AQMD, or apply a Wood Coating, provided it complies with the alternative PW-MIR VOC content limits in Table 4, as applied.

Table 4 – Alternative PW-MIR VOC Content Limits

Coating Category	g O_3/g Product
Pretreatment Wash Primer	1.80
Wood Coatings:	
Clear Wood Sealer	0.53
Pigmented Wood Sealer	0.60
Clear Wood Topcoat	0.53
Pigmented Wood Topcoat	0.46

(5) Sell-Through and Use-Through for Coatings with VOC Limit Reductions

Any Pleasure Craft Coating or Marine Structure Coating that is manufactured prior to the future Effective Date of the applicable VOC content limit specified in Table 2, and that has a VOC content above that limit, but no more than the Current Limit, may be sold, supplied, or offered for sale for up to 12 months after the applicable Effective Date and used up to 24 months after the applicable Effective Date.

(6) Coatings Belonging to Former Coating Categories

Coatings belonging to the following Former Coating Categories listed in Table 5 – Former Coating Categories and Schedule that contain VOCs in excess of the applicable Consolidated Category VOC Limit listed in Table 5 may be supplied, sold, offered for sale, marketed, blended, distributed, packaged, or repackaged for use within South Coast AQMD, and may be possessed, stored at a worksite, applied or solicited for use in the South Coast AQMD until January 1, 2029, provided they do not contain VOC in excess of the Former VOC Limit listed in Table 5:

(A) Antifoulant Coatings formulated for application to aluminum substrates;

(B) Finish Primer/Surfacer;

(C) Extreme High Gloss Coating;

(D) Marine Deck Sealant Primer; ~~and~~

(E) Teak Primer~~.~~;

(F) Sealer; and

(G) Varnish.

(7) Sell-Through and Use-Through Periods for Coatings Belonging to Former Coating Categories

Any Coating belonging to any Former Coating Category listed in Table 5 that is manufactured prior to January 1, 2029, that contains VOCs below the Former VOC Limit (g/L-Coating) may be sold, supplied, or offered for sale until the Sell-Through End Date and used until the Use-Through End Date, after which the limits in Tables 1 and 2 apply.

Table 5: Former Coating Categories and Schedule

Former Coating Category	Consolidated Coating Category	Former VOC Limit (g/L-Coating)[1] *Effective Until January 1, 2029*	Sell-Through End Date[2]	Use-Through End Date[2]	Consolidated Category VOC Limit (g/L-Coating)[2] *Effective on and after January 1, 2029*
Marine Coatings					
Antifoulant Coatings for Aluminum Substrates	Antifoulant Coating	560	January 1, 2030	January 1, 2031	400
Extreme High Gloss Coating	High Gloss Coating	420			340
Pleasure Craft and Marine Structure Coatings					
Antifoulant Coatings for Aluminum Substrates	Antifoulant Coating	560	January 1, 2030	January 1, 2031	330
Extreme High Gloss Coating	High Gloss Coating	490			420
Finish Primer/ Surfacer	Primer	420			340
Marine Deck Sealant Primer	Clear or Pigmented Wood Sealer	760			275
Teak Primer		775			
Sealers		550			
Varnishes	Clear or Pigmented Wood Topcoat	490			275

1. The higher VOC limits allowed until January 1, 2029, are only applicable to the Former Coating Categories.

2. The specified sell-through and use-through periods are applicable to the coatings listed under the Former Coating Category column and which were manufactured prior to January 1, 2029.

(4~~8~~) Most Restrictive VOC Limit

If any representation or information on the container of any ~~coating~~Coating subject to this rule, or any label or sticker affixed to the container, or in any sales, advertising, or technical literature ~~that~~ indicates that ~~the coating~~a Marine Coating, Pleasure Craft Coating, or Marine Structure Coating meets the definition of, is recommended for use, or is suitable for use for more than one of the ~~marine coating~~ categories listed in ~~paragraph (d)(1)~~ Table 1 for Marine Coatings, or ~~the pleasure craft coating~~Table 2 for Pleasure Craft Coatings and Marine Structure Coatings, ~~categories listed in paragraph (d)(2), or the low-solids coatingcategory listed in paragraph (d)(3),~~ then the lowest VOC content limit in that Table shall apply.

~~(5) Alternative Emission Control Plan~~

~~A person may comply with the provisions of paragraphs (d)(1), (d)(2) and (d)(3) by means of an Alternative Emission Control Plan, pursuant to Rule 108 - Alternative Emissions Control Plans.~~

~~(6) Exempt Compounds~~

~~A person shall not manufacture, sell, offer for sale, distribute for use in the South Coast AQMD jurisdiction, or apply any marine or pleasure craft coating which contains any Group II Exempt Compounds listed in Rule 102 - Definition of Terms, in quantities greater than 0.1 percent by weight. Cyclic, branched, or linear, completely methylated siloxanes (VMS) are not subject to this provision.~~

~~(7) Carcinogenic Materials~~

~~A person shall not manufacture, sell, offer for sale, distribute for use in the South Coast AQMD jurisdiction, or apply any marine or pleasure craft coating which contains cadmium, nickel, lead or hexavalent chromium that was introduced as a pigment or as an agent to impart any property or characteristic to the marine or pleasure craft coatings during manufacturing, distribution, or use of applicable marine or pleasure craft coatings.~~

(8~~9~~) Coating Application Equipment Transfer Efficiency

~~(A) A person~~ Person shall ~~not~~ apply any ~~marine coating~~Marine Coating, ~~or pleasure craft coating~~Pleasure Craft Coating, or Marine Structure Coating using properly operating equipment, operated according to

procedures specified by the equipment manufacturer, and in compliance with the applicable permit conditions, if any, and by the use of ~~unless~~ one of the following methods ~~of coating transfer is used~~:

(~~i~~A) Electrostatic application; ~~or~~

(~~ii~~B) ~~High-volume, low-pressure~~High-Volume, Low-Pressure (HVLP) spray; ~~or~~

(~~iii~~C) Brush, dip, or roller; or

~~(iv) Spray gun application, provided the owner or operator demonstrates that the spray gun meets the HVLP definition in paragraph (c)(18) in design and use. A satisfactory demonstration must be based on the manufacturer's published technical material on the design of the spray gun and by a demonstration of the operation of the spray gun using an air pressure tip gauge from the manufacturer of the spray gun; or~~

(~~v~~D) Any such other ~~marine coating~~Marine Coating, ~~or pleasure craft coating~~Pleasure Craft Coating, or Marine Structure Coating application methods as demonstrated, in accordance with the provisions of paragraph (~~g~~)(h)(~~6~~5), to the Executive Officer to be capable of achieving equivalent or better ~~transfer efficiency~~Transfer Efficiency than the ~~marine coating~~Marine Coating, ~~*or* pleasure craft coating~~Pleasure Craft Coating, ~~and~~or Marine Structure Coating application method listed in ~~clause (d)(8)(A)(ii)~~subparagraph (d)(9)(B), provided written approval is obtained from the Executive Officer prior to use.

~~(B) A person shall not apply any marine coatingMarine Coating or pleasure craft coatingPleasure Craft Coating by any of the methods listed in subparagraph (d)(8)(A) unless such coating is applied with properly operating equipment, operated according to procedures recommended by the manufacturer and in compliance with applicable permit conditions, if any.~~

(~~9~~10) Solvent Cleaning, Storage and Disposal of VOC-containing Materials

Solvent cleaning of application equipment, parts, products, tools, machinery, equipment, general work areas, and the storage and disposal of VOC-containing materials used in solvent cleaning activities shall be carried out pursuant to ~~South Coast AQMD~~ Rule 1171 ~~– Solvent Cleaning Operations~~.

(e) Alternative Emission Control Plan

(1) A Person may comply with the provisions of paragraphs (d)(1), (d)(2), (d)(3), and (d)(6) by means of an Alternative Emission Control Plan pursuant to Rule 108 – Alternative Emissions Control Plans.

(2) A Person may supply, sell, or offer for sale Marine Coatings, Pleasure Craft Coatings, or Marine Structure Coatings that exceed the VOC content limits in paragraphs (d)(1), (d)(2), (d)(3), and (d)(6) to a Person complying with paragraph (e)(1) provided that the supplier, seller, or offeror is provided with written documentation stating that the Person purchasing the Coatings is complying with an approved Alternative Emission Control Plan pursuant to paragraph (e)(1).

(~~e~~f) Prohibition of Possession, Specification and Sale

(1) No ~~For the purpose of this rule, no person~~Person shall supply, sell, market, blend, distribute, package, repackage, possess, apply, or solicit for use any ~~store at a worksite any marine coating~~Marine Coating, ~~or pleasure craft coating~~Pleasure Craft Coating, Marine Structure Coating, or Colorant ~~subject to this rule~~for use within ~~the~~ South Coast AQMD, ~~jurisdiction that is not in compliance with the requirements shown in the Tables of Standards of paragraphs (d)(1), (d)(2), and (d)(3) unless the following condition applies:~~ that contains any of the following chemicals in concentrations greater than the limits indicated below:

~~(A) The marine or pleasure craft coating is for use at a facility that operates in compliance with an approved Alternative Emissions Control Plan pursuant to paragraph (d)(5), and the marine or pleasure craft coating is specified in the plan.~~

(A) 0.01 percent by weight of Group II Exempt Compounds, except for cyclic, branched, or linear, completely methylated siloxanes (VMS);

(B) 0.1 percent by weight of any VMS; or

(C) 0.01 percent by weight of para-Chlorobenzotrifluoride (pCBtF, CAS RN 98-56-5) or *tert*-Butyl Acetate (t-BAc, CAS RN 540-88-5) that was manufactured after the applicable Final Manufacture Date in Table 6 – pCBtF and t-BAc Prohibition Timelines, including any VOC-containing materials added to the original Marine Coating, Pleasure Craft Coating, Marine Structure Coating, or Colorant.

(2) Sell-Through and Use-Through Provisions

Any Marine Coating, Pleasure Craft Coating, Marine Structure Coating, or Colorant that is manufactured prior to the applicable Table 6 Final Manufacture Date, that contains more than 0.01 percent by weight of pCBtF and/or t-BAc, may be sold, supplied, or offered for sale until the applicable Table 6 Sell-Through Date and may be possessed, used, or solicited for use until the applicable Table 6 Use-Through Date.

Table 6: pCBtF and t-BAc Prohibition Timelines

Category[1]	Final Manufacture Date	Sell-Through End Date	Use-Through End Date
Antifoulant Coatings	January 1, 2031	January 1, 2032	January 1, 2033
Colorants and Wood Coatings	January 1, 2030	January 1, 2031	January 1, 2032
Primers	June 1, 2027	June 1, 2028	June 1, 2029
All Other Coating Categories	January 1, 2028	January 1, 2029	January 1, 2030

1. The specified Final Manufacture Dates are applicable to the Coating categories listed in Tables 1 and 2.

(3) No Person shall supply, sell, market, blend, distribute, package, repackage, possess, apply, or solicit for use any Marine Coating, Pleasure Craft Coating, ~~and~~or Marine Structure Coating, or Colorant for use within South Coast AQMD, that contains cadmium, nickel, lead or hexavalent chromium that was introduced as a pigment or as an agent to impart any property or characteristic to the Coating or Colorant during manufacturing, distribution, or use.

~~(2) For the purpose of this rule, no person shall solicit from, specify, or require any other person to use in the South Coast AQMD jurisdiction any marine or pleasure craft coating that does not meet the following:~~

~~(A) Applicable VOC limits required by paragraph (d)(1), (d)(2) or (d)(3) for the specific application unless:~~

~~(i) The marine or pleasure craft coating is located at a facility that operates in compliance with an approved Alternative~~

~~Emissions Control Plan pursuant to paragraph (d)(5), and the marine or pleasure craft coating is specified in the plan.~~

~~(B) The requirements of paragraphs (d)(6) and (d)(7).~~

~~(3) For the purpose of this rule, no person shall supply, sell, offer for sale, market, blend, package, repackage or distribute any marine or pleasure craft coating for use within the South Coast AQMD jurisdiction subject to the provisions in this rule that does not meet the:~~

~~(A) Applicable VOC limits required by paragraphs (d)(1), (d)(2) and (d)(3) for the specific application, unless:~~

~~(i) The marine or pleasure craft coating is for use at a facility that operates in accordance with an approved Alternative Emissions Control Plan pursuant to paragraph (d)(6), and the marine or pleasure craft coating is specified in the plan; and,~~

~~(B) The requirements of paragraphs (d)(6) and (d)(7).~~

(4) For the purpose of this rule, no ~~person~~Person shall solicit from, specify, require, offer for sale, sell, or distribute to any other ~~person~~Person for use in the South Coast AQMD jurisdiction any ~~marine~~Marine Coating, ~~or pleasure craft coating~~Pleasure Craft Coating, or Marine Structure Coating application equipment that does not meet the requirements of subparagraph (d)(9~~8~~)~~(A)~~.

(5) For the purpose of this rule, no ~~person~~Person shall offer for sale, sell, supply, market, offer for sale or distribute an HVLP spray gun for use within the South Coast AQMD unless said ~~person~~Person provides accurate information to the spray gun recipient. Such accurate information shall include the maximum inlet air pressure to the spray gun that would result in a maximum air pressure of 10 pounds per square inch gauge ~~(psig)~~ air pressure, measured dynamically at the center of the air cap and at the air horns, based on the manufacturer's published technical material on the design of the spray application equipment, and by a demonstration of the operation of the spray application equipment using an air pressure tip gauge from the manufacturer of the gun. The information shall either be permanently marked on the gun, ~~or~~ provided on the company's letterhead, or in the form of technical literature that clearly identifies the spray gun manufacturer, the seller, or the ~~distributor~~Distributor.

~~(6) Paragraphs (d)(1), (d)(2) and (d)(3) shall not apply to marine coatings or pleasure craft coatings that are sold, offered for sale, or solicited, for~~

~~shipment or use outside of the South Coast AQMD jurisdiction, or for shipment to other manufacturers for repackaging provided such coatings are sold, offered for sale, or solicited, for shipment or use outside the South Coast AQMD jurisdiction.~~

~~(f)~~(g) Administrative and Recordkeeping Requirements

(1) Recordkeeping for VOC Emissions

Notwithstanding the provisions of subdivision ~~(i)~~(j), records of ~~marine coating~~Marine Coating, ~~usage and pleasure craft coating~~Pleasure Craft Coating, and Marine Structure Coating usage, as applicable, shall be maintained pursuant to ~~South Coast AQMD~~ Rule 109 - Recordkeeping for Volatile Organic Compound Emissions, ~~and shall be made available to the Executive Officer upon request.~~ and shall at a minimum include the following information:

(A) Coating or Colorant name and manufacturer;

(B) Whether the product is intended for use as a Marine Coating, Pleasure Craft Coating, Marine Structure Coating, or any combination thereof, as well as the Applicable Coating category; and

(C) Purchase records identifying the purchase date, Coating or Colorant name, total volume of Coating or Colorant purchased, and company name of seller from which each Marine Coating, Pleasure Craft Coating, Marine Structure Coating, or Colorant was purchased.

(2) Labeling Requirements

Notwithstanding the provisions of subdivision (j), Marine Coatings, Pleasure Craft Coatings, Marine Structure Coatings, and Colorants shall comply with the labeling provisions of Rule 443.1 – Labeling of Materials Containing Organic Solvents, and the manufacturer of any Marine Coating, Pleasure Craft Coating, Marine Structure Coatings, or Colorants shall include the following information on all product containers:

(A) The VOC content of each material, as applied, as applicable:

(i) The Regulatory VOC content;

(ii) The Actual VOC content of a Low-Solids Coating; or

(iii) The PW-MIR VOC content of a Pretreatment Wash Primer or Wood Coating if the manufacturer of a Pretreatment Wash Primer or Wood Coating elects to comply with any of the

alternative PW-MIR VOC content limits in paragraph (d)(4)~~.~~; and

(B) Date of manufacture of the Coating or Colorant, or a code indicating the date of manufacture. The manufacturer shall file an explanation of each code with the Executive Officer.

~~(g)~~(h) Test Methods

(1) Determination of VOC Content:

The VOC content of ~~coatings~~Coatings~~,~~ subject to the provisions of this rule shall be determined by the following methods:

(A) United States Environmental Protection Agency (U.S. EPA) Reference Test Method 24 – ~~(~~Determination of Volatile Matter Content, Water Content, Volume Solids and Weight Solids of Surface Coatings, Title 40, Code of Federal Regulations, ~~Title 40,~~ Part 60, Appendix A-7~~)~~. The ~~exempt compounds'~~Exempt Compounds' content shall be determined by South Coast AQMD ~~Laboratory~~ Test Method 303 – ~~(~~Determination of Exempt Compounds~~) contained in the South Coast AQMD "Laboratory Methods of Analysis for Enforcement Samples" manual~~; ~~or,~~

(B) South Coast AQMD Method 304 – ~~[~~Determination of Volatile Organic Compounds (VOCs) in Various Materials~~] contained in the South Coast AQMD "Laboratory Methods of Analysis for Enforcement Samples" manual~~; or~~,~~

(C) South Coast AQMD Method 313 – ~~[~~Determination of Volatile Organic Compounds (VOC) by Gas Chromatography~~-~~/Mass Spectrometry~~]~~/Flame Ionization Detection (GC/MS/FID)~~ in the South Coast AQMD's "Laboratory Methods of Analysis for Enforcement Samples" manual~~.

(2) VOC content determined to exceed the limits established by this rule through the use of any of the above-referenced test methods shall constitute a violation of this rule.

(3) Exempt Perfluorocarbon Compounds

The following classes of compounds shall be analyzed as Exempt Compounds for compliance with subdivision (d), only at such time as manufacturers specify which individual compounds are used in the formulation of the Coatings subject to this rule and identify the test methods,

which have been approved by the U.S. EPA, California Air Resources Board (CARB) and the Executive Officer prior to such analysis, that can be used to quantify amounts of each Exempt Compound:

(A) Cyclic, branched, or linear, completely fluorinated alkanes;

(B) Cyclic, branched, or linear, completely fluorinated ethers with no unsaturations;

(C) Cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations; and

(D) Sulfur-containing perfluorocarbons with no unsaturations and with sulfur bonds only to carbon and fluorine~~,~~

~~shall be analyzed as exempt compounds for compliance with subdivision (d), only at such time as manufacturers specify which individual compounds are used in the formulation of the coatings subject to this rule. In addition, prior to any such analysis, the manufacturers shall also identify the test methods approved by the U.S. EPA, California Air Resources Board (CARB), and the South Coast AQMD that will be used to quantify the amount of each exempt compound~~.

~~(4) Determination of Iridescent Particles in Metallic/Iridescent Coatings~~

~~The metal and silicon content in metallic/iridescent coatings subject to the provisions of this rule shall be determined by the South Coast AQMD Method 311 (Determination of Percent Metal in Metallic Coatings by Spectrographic Method) contained in the South Coast AQMD "Laboratory Methods of Analysis for Enforcement Samples" manual.~~

(~~5~~4) Determination of Acid Content in Marine Coatings, ~~and~~ Pleasure Craft Coatings, and Marine Structure Coatings

The acid content of any ~~coating~~Coating subject to the provisions of this rule shall be determined by ASTM Test Method D-1613~~-06 (2012) (~~ – Standard Test Method for Acidity in Volatile Solvents and Chemical Intermediates Used in Paint, Varnish, Lacquer, and Related Products~~)~~.

(~~6~~5) Determination of Transfer Efficiency of Application Equipment

The ~~transfer efficiency~~Transfer Efficiency of alternative ~~marine coating~~Marine Coating, ~~and pleasure craft coating~~Pleasure Craft Coating, and Marine Structure Coating application methods, as defined by ~~clause (d)(8)(A)(v)~~paragraph (c)(57), shall be determined in accordance with the most current versions of the South Coast AQMD method:

(A) ~~–~~"Spray Equipment Transfer Efficiency Test Procedure for Equipment User~~, May 24, 1989,~~;" and

(B) ~~South Coast AQMD~~ "Guidelines for Demonstrating Equivalency With ~~South Coast AQMD~~District Approved Transfer ~~Efficiency~~Efficient Spray Guns ~~September 26, 2002~~."

(6) Gloss Determination

The gloss of Marine Coatings, Pleasure Craft Coatings, and Marine Structure Coatings shall be determined by ASTM Test Method D523.

(7) Viscosity Determination

The viscosity of Marine Coatings, Pleasure Craft Coatings, and Marine Structure Coatings shall be determined by ASTM Test Method D1200 – Standard Test Method for Viscosity by Ford Viscosity Cup or ASTM Test Method D5125 – Standard Test Method for Viscosity of Paints and Related Materials by ISO Flow Cups.

(8) Solids Determination

The weight percent solids content of Marine Coatings, Pleasure Craft Coatings, and Marine Structure Coatings shall be determined by ASTM Test Method D2369.

(~~7~~9) Multiple Test Methods

When more than one test method or set of test methods are specified for any testing, a violation of any requirement of this rule may be established by any one of the specified test methods ~~shall constitute a violation of the rule~~.

(10) Equivalent Test Methods

Other test methods may be used provided they are determined to be equivalent and approved in writing by the U.S. EPA, CARB, and the South Coast AQMD Executive Officer.

(~~8~~11) All test methods referenced in this section shall be the most recently approved version.

~~(h)~~(i) Rule 442 Applicability

Any Marine Coating, ~~or~~ Pleasure Craft Coating, Marine Structure Coating, or any ~~facility~~Person that is exempt pursuant to subdivision ~~(i)~~(j) from all or a portion of the VOC limits of subdivision (d) shall comply with the provisions of Rule 442 - Usage of Solvents.

~~(i)~~(j) Exemptions

(1) With the exception of ~~paragraphs (d)(6) and (d)(7)~~ subdivisions (f) and (h), the provisions of this rule shall not apply to~~:~~

~~(1)~~ Marine Coatings, ~~or pleasure craft coatings~~Pleasure Craft Coatings, and Marine Structure Coatings that have a VOC content of 50 g/L or less, or its equivalent, less water and exempt compounds, as applied.

(2) The provisions of paragraphs (d)(1), (d)(2), (d)(3), and (d)(6) shall not apply to:

~~(2)~~(A) Marine ~~coatings~~ Coatings applied to interior surfaces of potable water containers~~.~~;

~~(3)~~(B) ~~Touch-up coatings, as defined by paragraph (c)(39) of this rule.~~Any Marine Coating, Pleasure Craft Coating, or Marine Structure Coating that is supplied, sold, offered for sale, marketed, manufactured, blended, packaged or repackaged for use within the South Coast AQMD in half pint or smaller containers and is applied by brush or air brush to cover minor imperfections or minor mechanical damage incurred after a Vessel is manufactured and prior to purchase and initial use;

(C) Marine Coatings, Pleasure Craft Coatings, or Marine Structure Coatings which are applied to test specimens in laboratories for purposes of research, development, quality control, and testing for production-related operations; or

~~(4) Any aerosol coating product.~~

~~(5) The provisions of paragraph (d)(8) shall not apply to marine or pleasure craft coatings with a viscosity of 650 centipoise or greater, as applied.~~

(~~6~~D) ~~The provisions of paragraphs (d)(1), (d)(2), and (d)(3) shall not apply to marine coatings~~ Marine Coatings that are used for ~~vessels~~Vessels that are intended to submerge to at least 500 feet below the surface of the water provided that the total combined usage of such ~~coatings~~Coatings does not exceed 12 gallons per calendar year and such ~~coatings~~Coatings are in compliance with the VOC limits in the U.S. EPA National Emission Standards for Hazardous Air Pollutants (NESHAP) for Shipbuilding and Ship Repair (Surface Coatings).

(3) The provisions of paragraph (d)(9) shall not apply to Marine Coatings, Pleasure Craft Coatings, or Marine Structure Coatings with a viscosity of

650 centipoise or greater, as applied, as determined pursuant to paragraph (h)(7).

(4) The provisions of this rule shall not apply to:

(A) Aerosol Coating Products;

(B) Unsaturated polyester Resin or fiberglass Coatings, which are subject to Rule 1162 – Polyester Resin Operations; or

(C) Coatings applied to piers, bridges, and above the waterline portions of permanently docked Vessels serving as a stationary business or structure, which are subject to Rule 1113 – Architectural Coatings.

(5) The prohibitions of possessing and repackaging Marine Coatings, Pleasure Craft Coatings, and Marine Structure Coatings in paragraphs (d)(1), (d)(2), (d)(3), and (d)(6) shall not apply to Coatings that are shipped into the South Coast AQMD for temporarily storage, reformulation, or repackaging, provided the Coatings will be sold and used outside of the South Coast AQMD.

ATTACHMENT G

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Final Staff Report

Proposed Amended Rule 1106 – Marine and Pleasure Craft Coatings

November 2026

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EXECUTIVE SUMMARY

Rule 1106 – Marine and Pleasure Craft Coatings (Rule 1106) was adopted in November 1988 to limit Volatile Organic Compound (VOC) emissions from marine coatings formulated for use in the marine environment. Since its adoption, the rule has been amended multiple times to lower VOC content limits, expand rule applicability and coating categories, update definitions and test methods, and support the South Coast Air Quality Management District's (South Coast AQMD) ongoing efforts to reduce VOC emissions from marine and pleasure craft coatings. Rule 1106 was last amended in January 2023 to correct a State Implementation Plan (SIP) deficiency. Prior to the January 2023 amendment, Rule 1106 was amended in May 2019 to combine the requirements of Rule 1106 and Rule 1106.1 – Pleasure Craft Coating Operations (Rule 1106.1) into one rule and rescind Rule 1106.1, and to align with the U.S. Environmental Protection Agency (U.S. EPA) Marine Coatings Control Techniques Guidelines (CTG) for Shipbuilding and Ship Repair Operations (Surface Coating), which will be referred to as the U.S. EPA Marine Coating CTG in this staff report. Rule 1106 regulates marine coatings applied to boats, ships, and vessels, their appurtenances, and structures such as piers, docks, buoys and oil drillings rigs intended for the marine environment, and for pleasure craft.

As manufacturers reformulated coatings to comply with increasingly stringent VOC requirements, many transitioned to the use of VOC-exempt solvents such as para-Chlorobenzotrifluoride (pCBtF; Chemical Abstracts Service Registration Number (CAS RN): 98-56-6) and tert-Butyl Acetate (t-BAc; CAS RN: 540-88-5). Subsequent toxicological evaluations conducted by the California Office of Environmental Health Hazard Assessment (OEHHA) identified toxic endpoints for these compounds, including cancer potency values comparable to or exceeding those of chemicals already restricted under other South Coast AQMD rules. In response to these findings, the South Coast AQMD staff has been assessing pCBtF and t-BAc usage within the South Coast AQMD to develop an approach to reduce exposure to these compounds. PAR 1106 also partially implements 2022 Air Quality Management Plan (AQMP) Control Measure CTS-01 – Further Emission Reductions from Coatings, Solvents, Adhesives, and Lubricants.

To better understand the scope of the industry's pCBtF and t-BAc usage for coatings sold within South Coast AQMD, staff distributed a survey to coating manufacturers. Due to the relatively small volume of marine and pleasure craft coatings sold for use within the South Coast AQMD, staff received only a few responses. Survey responses identified a number of coating categories that currently rely on pCBtF and/or t-BAc to varying extents in their formulations. Survey responses appeared to indicate that the marine and pleasure craft coating industry rely on pCBtF and t-BAc to a much lesser extent compared to other coating industries and indicated potential for VOC limit decreases in a number of coating categories.

Staff's proposed changes have two primary goals: 1) provide a timeline for prohibition and a phase-out of pCBtF and t-BAc, and 2) reduce VOC emissions where feasible. The proposed amendments to the rule include:

- Prohibiting the sale and use of coatings containing pCBtF and t-BAc within South Coast AQMD with future effective prohibition dates that vary by coating category;
- Prohibiting the sale and use of any cyclic, branched, or linear, completely methylated siloxane (VMS);
- Revising name of "pleasure craft coatings" to include "marine structure" for clarity;

- Prohibiting the possession of non-compliant marine coatings, pleasure craft, and marine structure coatings;
- Alternative Product Weighted-Maximum Incremental Reactivity (PW-MIR) VOC limits for pretreatment wash primers and wood coatings;
- Basic recordkeeping and labeling requirements;
- Updating rule structure, adding new definitions, and removing outdated rule provisions;
- Consolidation of Marine Coating categories to align with U.S EPA's Marine Coating CTG and other South Coast AQMD Rules;
- Revision of Pleasure Craft and Marine Structure coating categories to align with other California Air District rules; and
- Addition of new biocide-free antifoulant category.

The pCBtF and t-BAc prohibition is expected to occur by January 1, 2027, for most coatings, with four additional years allowed for antifoulant coatings. The expected emissions reductions for the rule are approximately 23.9 pounds per day of VOC.

CHAPTER 1: BACKGROUND

INTRODUCTION
REGULATORY HISTORY
2022 AIR QUALITY MANAGEMENT PLAN
AFFECTED INDUSTRIES
PUBLIC PROCESS

Introduction

Rule 1106 – Marine and Pleasure Craft Coatings is a source-specific rule adopted on November 4, 1988, to reduce VOC emissions from the use of marine and pleasure craft coatings formulated for use in the marine environment. Rule 1106 establishes VOC content limits, coating application restrictions, and recordkeeping requirements. The rule applies to any person or facility that manufactures, supplies, sells, solicits, or applies marine and/or pleasure craft coatings within South Coast AQMD.

Later rule amendments expanded the scope of the rule to apply to pleasure craft coatings, which were previously regulated under Rule 1106.1. Rule 1106 was amended in May 2019 to combine the requirements of Rule 1106 and Rule 1106.1 into one rule and rescind Rule 1106.1 to align with the U.S. EPA Marine Coatings CTG. Rule 1106 regulates marine coatings applied to boats, ships, and vessels, their appurtenances, and structures such as piers, docks, buoys and oil drillings rigs intended for the marine environment, and for pleasure craft, within South Coast AQMD.

As VOC limits became more stringent, coating manufacturers increasingly relied on exempt and partially exempt solvents, most notably pCBtF, and t-BAc, because their use does not contribute to the calculated total VOC content of a coating. In April 2017, the South Coast AQMD Stationary Source Committee recommended a precautionary approach when considering exempt compounds with potential toxic endpoints, prioritizing reductions in toxic exposure over further reductions in VOC emissions. OEHHA has identified toxic endpoints for both pCBtF and t-BAc. In response, South Coast AQMD has been working to phase out or minimize the use of these exempt compounds across all VOC rules. For Rule 1106, the current rule development has two primary goals: (1) phase out the use of pCBtF and t-BAc in marine and pleasure craft coatings, and (2) reduce VOC emissions where feasible.

2022 Air Quality Management Plan

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 includes 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. PAR 1106 partially implements the 2022 AQMP Control Measure CTS-01 by prohibiting the use of marine and pleasure craft coatings that contain pCBtF and t-BAc.

U.S. EPA Marine Coatings CTG for Shipbuilding and Ship Repair Operations (Surface Coating)

The Federal Clean Air Act (CAA) requires areas designated as being in non-attainment with federal ozone National Ambient Air Quality Standards (NAAQS) to adopt reasonably available control measures (RACM), including reasonably available control technology (RACT), to achieve emission reductions. RACT is defined as the lowest emission limit that a source is capable of meeting by using reasonably available technology.

The U.S. EPA develops CTGs that are used to determine RACT level of controls. The CAA requires states to submit RACT regulations for sources of VOC emissions that are covered by a CTG that was issued after the amendment of the CAA in 1990, but prior to the time of attainment.

States that have existing marine coating regulations must be at least as stringent as the CTG limits or otherwise must be determined to meet RACT. The U.S. EPA has issued a CTG for control of VOC emissions from surface coating operations in the shipbuilding and ship repair industry to assist states in analyzing and determining RACT for the industry.

Regulatory History

Rule 1106 was adopted on November 4, 1988, and has since been amended nine times. The rule was initially adopted to limit VOC emissions from marine coatings applied on vessels used for commercial purposes and national defense, and their appurtenances, and to buoys and oil drilling rigs intended for the marine environment.

Rule 1106.1 was adopted on May 1, 1992, to limit VOC emissions from coatings applied to pleasure craft, or their parts and components, for the purpose of refinishing, repairing, modifying, or manufacturing such craft. The rule defined pleasure craft as any vessel manufactured or operated primarily for recreational purposes, or leased, rented, or chartered to a person or business for recreational purposes. Many of the then-existing coating categories in Rule 1106 were not representative of the pleasure craft coating industry. Consequently, South Coast AQMD adopted Rule 1106.1 with the intent of identifying the special categories of coatings applied to pleasure craft.

One of the key objectives of the 2019 amendment to Rule 1106 was to combine the requirements of Rule 1106 and Rule 1106.1 into one rule and rescind Rule 1106.1. This was done to alleviate industry confusion regarding the applicability of each rule and to be consistent with other California air districts. The second key objective was to align VOC content limits and establish marine coating categories consistent with the U.S. EPA Marine Coatings CTG.

Rule 1106 was most recently amended in January 2023 to correct a California SIP deficiency raised by the U.S. EPA. The basis of the deficiency was the reference to 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). U.S. EPA stated that because ASTM D7767 was not a U.S. EPA-approved test method, it could not be used to enforce a SIP-approved rule. U.S. EPA also recommended removing two product categories to improve Rule 1106, as those categories are not listed in the 1996 U.S. EPA Marine Coatings CTG. The amendment removed "Elastomeric Adhesives," which are now subject to Rule 1168 – Adhesives and Sealants, and "Metallic Heat Resistant Coatings," which are now subject to the "Heat Resistant Coating" VOC limit.

Background on pCBtF and t-BAc

In 1994, the U.S. EPA exempted pCBtF from the federal definition of a VOC due to its negligible photochemical reactivity. South Coast AQMD mirrored this exemption in 1995 by adding pCBtF to the list of exempt VOC compounds established in Rule 102 – Definition of Terms (Rule 102). When a compound is listed as exempt, the compound is not considered a VOC for any application in the South Coast AQMD unless otherwise specified in a South Coast AQMD rule.

In 2004, the U.S. EPA exempted t-BAc from the federal definition of a VOC; however, South Coast AQMD did not grant a full exemption under Rule 102 due to toxicity concerns. Instead, t-BAc was granted limited exemptions through source-specific Rules 1113 and 1151; t-BAc has never been granted a VOC exemption for marine and pleasure craft coatings subject to Rule 1106.

In 2013, the Rule 1113 amendment included a resolution that directed staff to review the limited exemption for t-BAc due to renewed toxicity concerns. In 2017, staff drafted a white paper study regarding the toxicity and limited exemption of t-BAc and presented the preliminary findings to the South Coast AQMD Stationary Source Committee (SSC), who in turn directed staff to remove the limited exemptions for t-BAc following the completion and results of OEHHA's health risk assessment of t-BAc.

OEHHA finalized their health risk assessment of t-BAc in 2018, concluding that its cancer risk is higher than previously estimated. Based on OEHHA's findings and staff recommendations, the SSC directed staff to remove existing t-BAc exemptions in Rules 1113 and 1151 when those rules are amended and request OEHHA to review the potential toxicity of pCBtF and remove the exemption if pCBtF is deemed a potential carcinogen. In 2020, OEHHA finalized their health risk assessment of pCBtF and concluded that pCBtF is a potential carcinogen.

The SSC recommended a precautionary approach to prioritize reducing the use of compounds with a known or suspected toxic endpoint over reducing VOC emissions. Based on that recommendation, staff is working to amend each VOC rule by considering each category and the best approach to reduce the toxicity of coatings and solvents used within the South Coast AQMD. Staff has taken action to phase out and prohibit the use of t-BAc and pCBtF through amendments to Rule 1168 in 2022, Rule 1151 in 2024, Rules 1171 and 1107 in 2025, and Rules 1124, 1136, and 1144 in 2026 and in the rule development process for Rules 1113, 1143, and 1130 to address pCBtF and t-BAc.

Background on Rule 102 Group II Exempt Compounds

When the U.S. EPA exempts compounds from the federal definition of a VOC, they only consider the photochemical reactivity, they do not consider other potential adverse factors such as toxicity. When the South Coast AQMD considers exempting compounds, considerations such as toxicity, potentially toxicity, or other environmental impacts are evaluated. Compounds are then categorized in Rule 102 as Group I compounds, which are not restricted from use, or Group II compounds, which are restricted or will be restricted in the future due to toxicity, potentially toxicity, or other environmental impacts.

Since the 1990s, Rules 1106 and 1106.1 included prohibitions for the use of certain Group II exempt compounds, the compounds prohibited changed with different amendments. A trace level of 0.1 weight percent was established in the 2019 amendment to provide certainty to manufacturers formulating coatings and for the South Coast AQMD laboratory when they test for the prohibited compounds. Staff changed the trace levels allowance for prohibited compounds from 0.1 to 0.01 weight percent during the 2022 amendment to Rule 1168 – Adhesives and Sealants to be consistent with the California Air Resources Board Consumer Product Regulation and provides more realistic indication of a trace level contaminant. That change has been mirrored in other VOC rule amendments and staff proposes to include that lower level in PAR 1106.

Another change regarding Group II exempt compounds involves VMS, which was included as Group II exempt compounds in the 1995 amendment to Rule 102. OEHHA has identified non-cancer chronic toxic endpoint for VMS, specifically impacting the liver and spleen and the U.S. EPA preliminary evaluation on a type of VMS indicated unreasonable risk to workers in manufacturing and industrial use and to consumers through certain conditions of use.

Small, but non-negligible, quantities of VMS can be found in certain types of silicone-based coatings. VMS are not intentionally added to the coatings but can be found as an impurity in certain coating types. To address this, many recent VOC coatings rules have been amended to include a prohibition of VMS, but at a higher level of 0.1 weight percent. Staff is proposing to mirror that change in PAR 1106.

Affected Industries

Rule 1106 is applicable to any person who supplies, sells, offers for sale, markets, manufactures, blends, packages, repackages, possesses or distributes any Marine or Pleasure Craft Coating, and any associated solvent used with a Marine or Pleasure Craft Coating for use within the South Coast AQMD jurisdiction, as well as any person who uses, stores at a worksite, or solicits the application of any Marine or Pleasure Craft Coating and any associated solvent used with a Marine or Pleasure Craft Coating within the South Coast AQMD jurisdiction. The affected industries include shipyards, docks, boatyards, marinas, repair and refinishing facilities.

These facilities range from small family-owned facilities to large operations. Staff identified thirty-seven facilities with active permits subject to Rule 1106.

Process Description

Rule 1106 is intended to apply to operations that manufacture, refinish, or maintain marine vessels and/or pleasure craft and their appurtenances, as well as docks, buoys, and oil drilling rigs exposed to marine or freshwater environments using marine and/or pleasure craft coatings. Marine and pleasure craft coatings perform essential functions, such as marine fouling prevention, sealing, priming, filling, and finishing to achieve required aesthetic and fouling resistance characteristics. Marine and pleasure craft coatings are formulated to meet performance needs including adhesion, hardness, clarity, durability, minimal fuel efficiency impact, and resistance to marine fouling.

Below is a general overview of the coating types and application methods:

Coatings for Vessels**:**

Water-going vessels have coatings specifically designed for the two main portions: top side and bottom side. With the vessel at rest, anything above the waterline is considered top side and anything below the waterline is considered bottom side.

Top Side:

The top side of the vessel is the visual portion from the waterline up. Coatings applied to the top side not only protect the substrate in a marine environment but also have aesthetic purposes. The substrates can include wood of various types, fiberglass and composites, steel, stainless steel, aluminum, brass, and bronze. These coatings can be applied by hand, usually with a paint brush or roller, or using atomized spray equipment. There are several top-side coating categories which are included in Rule 1106 such as wood finishes, primers, and topcoats.

Bottom Side:

The bottom side of the vessel is the portion below the waterline (the “hull”). The most common types of coatings applied to the bottom side of a vessel are primers and antifoulant coatings. A vessel that is docked or moored in both freshwater and seawater is susceptible to marine fouling, which is the growth of biological organisms on water-immersed surfaces. Marine fouling is

typically broken down into hard growth such as barnacles, mussels, or shipworms, and soft growth such as algae and grass. If unabated, this growth would continue and cause excessive drag on the vessel during operation. It could also cause severe damage to the hull substrate via corrosion of steel and aluminum hulls and shipworms boring into wooden hulls. Finally, fouling also poses a potential threat to the environment by transporting harmful marine organisms to other waterways. The solution to fouling is an antifoulant coating, which is used to inhibit the growth of foulant and/or prevent foulant from adhering to the bottom of the boat. There are two different categories for antifoulant coatings: a hard bottom paint and an ablative bottom paint.

Hard Antifoulant Coatings:

Hard antifoulant coatings are generally epoxy-type coatings formulated with copper, organotin compounds (an organic compound with one or more tin atoms in its molecules), and other biocides and pesticides. Copper is used to deter hard growth such as mussels and barnacles, whereas biocides and pesticides are used to control soft growth such as algae and other marine organisms like ship worms. Most hard antifoulant coatings control marine growth by releasing substances slowly from the pores of the coating while in the water; other types of hard antifoulant coatings utilize Teflon® and silicone which make the coating surface too slick for adherence of marine growth. Hard antifoulant coatings are typically used for vessels that spend long periods of time at rest in the water. These coatings are regulated in Rule 1106 as "Antifoulant Coatings."

Ablative Antifoulant Coatings:

Ablative antifoulant coatings are specially formulated as a partly sacrificial coating that slowly wears away during a vessel's operation. As the coating wears, it exposes a new layer with fresh antifoulant compounds. This process is similar to hand washing, where the bar of soap continuously erodes during each washing operation while remaining effective in subsequent washings. These coatings are regulated in Rule 1106 as "Any Other Coating Type" as they are not formulated with biocides or pesticides.

Metal-free Antifoulant Coatings:

Metal-free antifoulant coatings can be ablative or hard, but without copper, organotin, or metal compounds to prevent fouling. Metal-free antifoulant coatings can prevent fouling by instead using hydrogel polymers. These polymers absorb water and create a hydrated, slippery surface that mimics natural, biological anti-adhesive surfaces in nature (e.g., fish mucus). Metal-free antifoulants can also prevent fouling with non-metal biocides, such as Tralopyril (ECONEA™), a pharmaceutical grade biocide that creates a living surface similar to the mucoprotein protective slime-coat that covers the scales and skin of a fish. These coatings are regulated in Rule 1106 as "Antifoulant Coatings."

Biocide-free Antifoulant Coatings:

Biocide-free antifoulant coatings can be ablative or hard, but without biocides, copper, or organotin compounds in their formulations. Biocide-free antifoulant coatings can prevent fouling using hydrogel polymers. These polymers absorb water and create a hydrated, slippery surface that mimics natural, biological anti-adhesive surfaces in nature (e.g. fish mucus). These coatings are

regulated in Rule 1106 as "Any Other Coating Type" as they are not formulated with biocides or pesticides.

Thermoplastic Foul Deterrent Coating:

Thermoplastic foul deterrent coating. a subset of Biocide-free antifoulant coatings, is a newly proposed category, that requires slightly higher VOC limits because of the thermoplastic resin system.

Application Methods:

HVLP Spray Equipment:

Sprayed coatings are applied using high-volume, low-pressure (HVLP) spray equipment. HVLP spray equipment is defined as "spray application equipment designed to atomize 100 percent by air pressure only and is operated between 0.1 and 10 pounds per square inch gauge when measuring air atomizing pressure dynamically at the center of the air cap and at the air horns." HVLP spray guns have a transfer efficiency of 65%, meaning 65% of the paint that is sprayed will adhere to the intended substrate. For comparison, standard non-HVLP spray guns are typically high pressure and, due to the excessive spraying pressure, result in paint bounce-back: a condition where the paint hits the target and a large percent bounces back off the target and into the atmosphere. These types of spray guns can have a transfer efficiency as low as 25%.

Other Application Methods:

Brush and roller coatings are applied directly from the paintbrush bristles or the roller to the substrate and have a very high coating-to-substrate transfer efficiency. Dip coatings are applied by dipping an object into a container filled with a coating, providing very high coating-to-substrate transfer efficiency. Brush, roller, and dip coating processes can have efficiencies of up to 100%, not allowing for spillage.

Marine and Pleasure Craft Coatings and VOC Control

Marine and pleasure craft coatings generally rely on solvent-based formulations. During application and curing, various solvents evaporate and emit VOCs. Therefore, marine and pleasure craft coating operations are a source of VOC emissions within South Coast AQMD and are subject to regulatory requirements.

Rule 1106 primarily controls emissions by establishing VOC content limits for marine and pleasure craft coatings. While some source categories regulated under other rules require add-on air pollution control equipment, compliance with Rule 1106 has been achieved predominantly through material reformulation, improved application practices, and the use of compliant coating technologies.

As VOC limits under Rule 1106, and now-rescinded Rule 1106.1, became more stringent through successive amendments, coating manufacturers reformulated products to maintain performance while reducing regulated VOC content. With limited exemption in other District rules, t-BAc is not considered an exempt compound for Rule 1106 and therefore is counted toward the VOC content of the coating of marine and pleasure craft coatings. However, t-BAc is fully exempted by the U.S. EPA and is still used in some marine and pleasure craft coating formulations.

VOC emissions resulting from the application of marine and pleasure craft coatings are primarily controlled by two methods. First, the end-user can improve work practices (e.g., keeping coating containers tightly sealed or by properly cleaning coating application equipment). Second, the chemistry of the coatings can be modified to reduce the VOC content. This second approach is generally performed at the manufacturer or supplier level. VOC content of marine and pleasure craft coatings can be reduced via reformulation by transitioning to a high-solids formulation, manufacturing with low-VOC solvent mixtures, or utilizing exempt solvents. The predominant method for controlling VOC emissions from marine and pleasure craft coatings is to formulate with exempt compounds or solvents, such as acetone or pCBtF, since they do not count towards the VOC content the coating.

While the use of exempt solvents facilitated compliance with mass-based VOC limits, subsequent toxicological evaluations determined that pCBtF and t-BAc are potent carcinogens. These findings prompted a shift in regulatory focus from solely controlling ozone precursor emissions to also addressing potential toxic exposure risks associated with exempt solvent use.

Marine and Pleasure Craft Coating Operations

Based on previous staff reports and industry feedback, the majority of the operators in the marine coating and pleasure craft coating industry are non-permitted facilities and therefore not inspected as frequently by South Coast AQMD inspectors.

Staff visited two marina boatyards to gather information on the type of work facilities perform and the types of coatings used. During these visits, staff observed that both mechanical repair and refinishing services were offered. Mechanical repair services typically included engine work, drive unit work, and work that did not include the application of coatings. Refinishing services included preparation of substrates for coating and the application of coatings to marine and pleasure craft vessels. Coatings applied by the marinas are formulated for both top-side and bottom-side application. Staff found only a small number of marinas offering top-side coating services. Marinas without top-side coating services sub-contract to persons who perform the coating services at the site. Most marinas offer bottom-side coating services, typically involving antifoulant coatings. The average vessel is re-coated with antifoulant coatings every two years, and requires two rolled-on coats with a third coat applied only along the waterline level of the hull. South Coast AQMD staff found application of antifoulant coatings to be the main coating operation conducted at the marina boatyards.

Public Process

The rule amendment process began in July 2025. Staff conducted three working group meetings and multiple individual meetings with industry stakeholders and representatives. Table 1-1 summarizes the key topics discussed at each of the Working Group Meetings and included presentations that are posted on the South Coast AQMD's website.[1]

[1] https://www.aqmd.gov/home/rules-compliance/rules/scaqmd-rule-book/proposed-rules/rule-1106

Table 1-1: Summary of Public Meetings

Meeting title	Date	Highlights
Working Group Meeting #1	August 12, 2025	• Rule background • Key amendment objectives • Exempt solvent background • Preliminary technology assessments
Working Group Meeting #2	March 19, 2026	• Summary of WGM #1 • Amendment progress update • Rule background • Manufacturer survey summary • Initial rule concepts
Working Group Meeting #3	June 2, 2026	• Summary of WGM#2 • Amendment progress update • Rule Concepts
Public Workshop	August 28, 2026	• Rule background • Proposed Rule Amendments • Draft Rule Language • Emissions Impact • Socioeconomic Impact Assessment • CEQA

CHAPTER 2: TECHNOLOGY ASSESSMENT

TECHNOLOGY ASSESSMENT FOR MARINE AND PLEASURE CRAFT COATINGS

REFORMULATION COST ASSESSMENT

MARINE AND PLEASURE CRAFT PCBTF AND T-BAC PROHIBITION AND PHASE OUT TIMELINE

pCBtF and t-BAc Use in Marine and Pleasure Craft Coatings

The main objective of PAR 1106 is to phase out the use of exempt and partially exempt compounds that have been determined to have toxic endpoints: pCBtF and t-BAc. Rule 1106 regulates sixteen main categories of marine coatings, four main categories of pleasure craft coatings, and various related sub-categories. Staff assessed seven coating categories, which includes main categories and sub-categories, reportedly sold for use in South Coast AQMD. Staff ~~and~~ concluded that~~,~~ because the reported coatings contained low concentrations of pCBtF and t-BAc, and many coatings were formulated below the existing VOC content limits, there is potential for VOC limit decreases in some coating categories. Furthermore, staff concluded that a prohibition of pCBtF and t-BAc can take effect relatively quickly due to the relatively low levels of pCBtF and t-BAc and availability of lower-VOC coatings that do not contain pCBtF or t-BAc.

Marine and Pleasure Craft Coating Manufacturer pCBtF and t-BAc Survey

During development for PAR 1106, in August 2025, staff conducted a survey of marine and pleasure craft coating manufacturers to further understand the extent of pCBtF and t-BAc usage in coating formulations sold within the South Coast AQMD. Staff used the survey results to evaluate VOC content limits, VOC emissions, and possible prohibition timelines for coatings containing pCBtF and/or t-BAc. The following table lists the main survey questions.

Table 2-1: August 2025 Coating Manufacturer Survey Questions

	Requested Information
1.	Company name, contact person, and an email address
2.	Product name and code
3.	Product category and application type (marine or pleasure craft)
4.	VOC content (regulatory and actual)
5.	Percent content by weight of pCBtF and t-BAc
6.	Annual volume sold of each reported product

In total, less than five marine and pleasure craft coating manufacturers responded to the survey. The following summarizes the main findings of the survey:

- Seven total coating categories and subcategories reported;
- 39 percent of the reported coatings contain pCBtF;
- 14 percent of the reported coatings contain t-BAc;
- Three percent of the reported coatings contain both pCBtF and t-BAc;
- 44 percent of the reported coatings do not contain pCBtF or t-BAc;
- All but one of the reported coatings are solvent-based;
- Products in four of the seven reported coating categories contain pCBtF;
- Products in two of the seven reported coating categories contain t-BAc;
- Three of the seven reported coating categories as a whole do not contain pCBtF or t-BAc;

- Reported pCBtF and t-BAc contents ranged from approximately one to ten percent by weight, depending on coating category and formulation;
- The remaining categories were not reported in the survey.

Based on survey data submitted, pCBtF is used in the following three coating categories:

- Antifoulant coatings (formulated for application to Non-Aluminum substrates)
- Finish Primer Surfacers (included in Any Other Coating Type category for Marine use)
- High Gloss Topcoats

Based on survey data submitted, t-BAc is used in the following three coating categories:

- Antifoulant coatings (formulated for application to Non-Aluminum substrates)
- Antifoulant coatings (formulated for application to Aluminum substrates)
- Finish Primer Surfacers (included in Any Other Coating Type category for Marine use)

These categories represent most of the reported product sales and form the basis for staff's evaluation of reformulation feasibility under PAR 1106.

The following tables display the manufacturer-reported coating categories in Tables 1 and 2 of Rule 1106, and indicate which coating categories were reported to contain pCBtF and/or t-BAc. Please note, since t-BAc is not considered as an exempt solvent for marine and pleasure craft coatings in Rule 1106, any t-BAc that is used or in the reported coatings would be included in the VOC content of the coating. Thus, replacing t-BAc with a similar solvent would not impact the overall VOC content of the coating.

Table 2-2: Marine Coatings Survey Data Summary

Coating Category	VOC Content Limits (Less Water and Exempts)		Survey Response Data		
	Baked (g/L)	Air Dried (g/L)	Reported (Y/N)	pCBtF Reported	t-BAc Reported
Antenna Coating		340	N		
Antifoulant Coatings:					
Aluminum Substrates		560	Y		✓
Other Substrates		400	Y	✓	✓
Inorganic Zinc Coating		340	N		
Low Activation Interior Coating		420	N		
Mist Coating		610	N		
Navigational Aids Coating		340	N		
Nonskid Coating		340	N		
Organic Zinc Coating		340	N		
Pretreatment Wash Primer	420	420	N		
Repair and Maintenance Thermoplastic Coating		340	N		
Sealant for Wire-Sprayed Aluminum		610	N		
Special Marking Coating		420	N		
Specialty Coatings:			N		
Heat Resistant Coating	360	420	N		
High Temperature Coating		500	N		
Tack Coating		610	N		
Topcoats:					
Extreme High Gloss Coating	420	490	N		
High Gloss Coating	275	340	Y	✓	
Undersea Weapons Systems Coating	275	340	N		
Any Other Coating Type	275	340	Y	✓	

Table 2-3~~2-3~~: Pleasure Craft Coatings Survey Data Summary

Coating Category	Survey Response Data			
	VOC Content Limit (g/L)	Reported (Y/N)	pCBtF Reported	t-BAc Reported
Antifoulant Coatings:				
Aluminum Substrates	560	Y		✓
Other Substrates	330	Y	✓	✓
Clear Wood Coatings:				
Sealers	550	N		
Varnishes	490	Y		
Primers:				
Finish Primer Surfacer	420	Y	✓	✓
High Build Primer Surfacer	340	Y		
Marine Deck Sealant Primer	760	Y		
Pretreatment Wash Primer	780	N		
Teak Primer	775	N		
Topcoats:				
Extreme High Gloss Coating	490	N		
High Gloss Coating	420	Y	✓	
Any Other Coating Type	420	N		

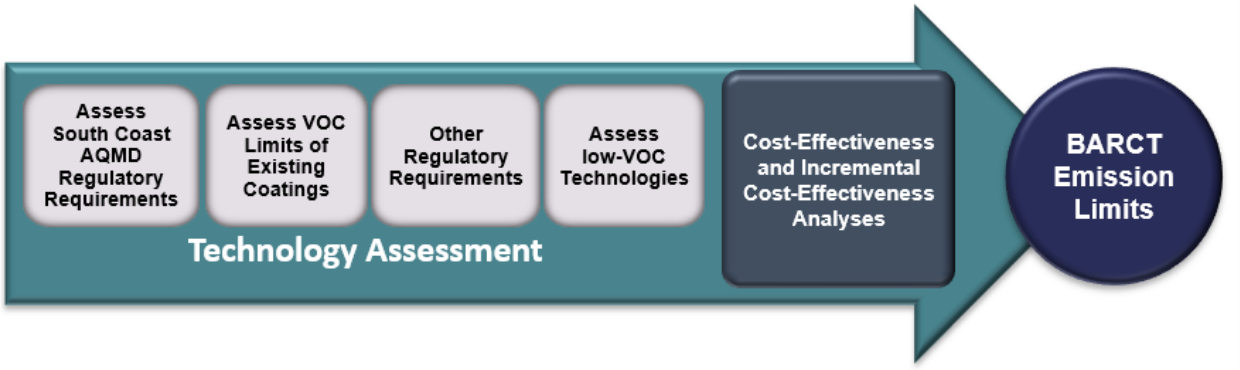
BARCT Assessments Approach

In addition to the pCBtF and t-BAc phase out, staff identified several coatings where there is potential for VOC limit reductions, which require a best available retrofit control technology (BARCT) assessment. The purpose of a BARCT assessment is to assess potential VOC control options to establish future-effective emission limits for each marine and pleasure craft coating category. Under Health and Safety Code Section 40406, BARCT is defined as:

> "an emission limitation that is based on the maximum degree of reduction achievable, taking into account environmental, energy, and economic impacts by each class or category of source."

The BARCT assessment follows a framework through the rule development process and includes public participation. Figure 2-1 shows the overall BARCT assessment approach.

Figure 2-1: BARCT Assessment Approach



21**Technology Assessment**

Staff conducted a BARCT assessment to evaluate the marine coating categories that are proposed to have a VOC limit reduction. This consists of four steps: the assessment of South Coast AQMD requirements, a complete assessment of emission limits of existing coatings, review of other regulatory requirements, and assessment of available VOC control technologies. The purpose of the BARCT assessment focuses on establishing that the proposed limits are achievable given coatings currently on the market and with reformulation timelines. Here, staff focused on three coating categories identified as having potential for lower VOC limits: 1) Antifoulant Coatings, 2) Primer/Finishers, and 3) Wood Coatings. The assessment also considers the categorization and subcategorization of the coatings. The BARCT assessment will be detailed below for each applicable coating category.



Cost-Effectiveness and Incremental Cost-Effectiveness Analysis

As the final step of the BARCT assessment, the South Coast AQMD conducts cost-effectiveness analyses that result in the reduction of criteria pollutants (NOx, SOx, VOC, PM, and CO). The analysis is used as a measure of relative effectiveness of a proposal. It is generally used to compare and rank rules, control measures, or alternative means of emission controls relating to the cost of purchasing, installing, and operating control equipment to achieve the projected emission reductions. The major components of the cost-effectiveness analysis are the initial capital investments, recurring cost, discount rate, present value factor, emission reductions, and equipment life.

- Initial Capital Investments: Increased capital investment is the increased cost to transition to lower-VOC coating formulations or, more simply, the cost difference between the higher- and lower-VOC coatings. Due to the availability of existing lower-VOC coatings, staff anticipates that marine and pleasure craft coating operations will transition from higher- to lower-VOC coatings. Therefore, the analysis will identify the initial capital investment between the existing higher- and lower-VOC coatings by evaluating the cost difference per gallon of coating multiplied by the annual gallons of coating used for each coating category.

- Recurring Cost: Recurring cost is the associated annual cost over the lifetime of the control technology, such as recurring operation and maintenance costs. Since the proposed amended rule does not require changes to coating equipment or affect coating service life staff does not anticipate any difference in recurring costs associated with using higher VOC coatings compared with the lower VOC coatings. Therefore, staff will assume zero recurring cost associated with the transition from higher to lower VOC products.
- Discount rate: The discount rate uses a real interest rate of four percent to calculate the present value factor. The discount rate should not be confused with an interest rate, which represents the percentage charged or earned on money over time. The discount rate is used to determine the present value of future cash flows and takes into account the average real interest rate in the U.S. over the last thirty years and its fluctuation over time. For this evaluation, the discount rate will be zero because there are no recurring annual costs associated with using higher VOC coatings compared with the lower VOC coatings.
- Present Value Factor (PVF): The formula, as described below, is a function of the time of the coating and discount rate used. For this evaluation, the PVF will be zero because there are no recurring annual costs associated with using higher VOC coatings compared with the lower VOC coatings.
- Emission Reduction: Emission reduction is the total VOC reduction from the higher VOC limit to the lower VOC limit over the lifetime of the coating. The emission reduction will be realized once the operator switches to the lower VOC coatings.
- Equipment life: Equipment life is the timeframe at which the cost difference between the higher VOC coatings and lower VOC coatings and emission reductions are evaluated. For this evaluation, staff is considering annual costs with no recurring costs, so the cost effectiveness will be based on annual emission reductions.

The cost-effectiveness for PAR 1106 was completed using the discounted cash flow method, as explained in the next section.

Discounted Cash Flow (DCF)

The DCF method converts all present and future costs required to comply with the proposed rule, to present value. Conceptually, it is as if calculating the number of funds that would be needed at the beginning of the initial year to finance the initial capital investments and would be set aside to pay off the annual costs as they occur in the future. The funds that are set aside are assumed to be invested and generates a rate of return at the discount rate chosen. The final cost-effective measure is derived by dividing the present value of total costs by the total emissions reduced over the equipment life or timeframe. The following equation is used for calculating cost-effectiveness with DCF:

$$Cost - effectiveness = \frac{Initial\ Capital\ Investments\ +\ (Annual\ O\&M\ Costs\ \times\ PVF)}{Annual\ Emission\ Reductions\ \times\ Years\ of\ Equipment\ Life}$$

Where:

$$PVF = \frac{(1+r)^N - 1}{r * (1+r)^{(N-1)}}$$

Where

r = real interest rate (discount rate); and
N = years of equipment life.

The present-value factor (PVF) converts a constant stream of payments made for N years into its single present-value equivalent.

Based on the assumptions stated earlier, there are no anticipated changes in annual recurring costs for the transition to a lower VOC coating; therefore, the cost-effectiveness equation can be simplified to the following equation.

Simplified cost effectiveness calculation for coating reformulations:

$$Cost - effectiveness = \frac{\text{~~Annual~~}Initial\ Capital\ Investments}{Annual\ Emission\ Reductions}$$

The annual capital investment in the above equation is the cost difference between the higher VOC coating and the lower VOC coating based on current price for similar sized containers. The annual emission reduction is the emission reductions from transitioning from the higher VOC coating to the lower VOC coating based on the estimated annual volume reported or sold for the specific coating category. The annual volumes are estimated based on the emission inventory estimates in the section.

Finally, Health and Safety Code Section 40920.6(a)(3) states that an incremental cost-effectiveness assessment shall be performed on one or more identified potential control options that meet emission reduction objectives. To determine the incremental cost-effectiveness under this paragraph, South Coast AQMD calculates the difference in the dollar costs divided by the difference in the emission reduction potentials between each progressively more stringent potential control option as compared to the next less expensive control option. Once the BARCT assessment is complete and VOC limits are established, staff considers incrementally more stringent options to demonstrate that the VOC limit represents the "maximum degree of reduction achievable by each class or category." The equation for incremental cost-effectiveness is as follows:

$$\text{I} - CE\left(\$/_{tons\ VOC\ reduced}\right) = \frac{Incremental\ Difference\ in\ Cost\ (Present\ Worth\ Value)}{Incremental\ Difference\ in\ Emission\ Reductions\ (Lifetime\ Reductions)}$$

Summary of Cost-Effectiveness Analysis and Incremental Cost-Effectiveness Analysis

To determine cost-effectiveness for the proposed lower VOC limits for the three categories, cost information and estimates for existing coatings were obtained. Staff conducted online searches and met with multiple coating manufacturers, vendors, distributors, and stakeholders to gather cost data and estimates for various types of coatings. The cost difference between the higher VOC and lower VOC products will be used in the cost-effectiveness analysis. The South Coast AQMD Governing Board established a cost screening threshold of $36,000 per ton of VOC removed in the 2022 Air Quality Management Plan. That value increases with the Consumer Price Index and is currently $42,675 in 2025 dollars per ton of VOC emissions reduced.

Emission Inventory

To estimate the VOC emissions inventory for PAR 1106, staff reviewed the Standard Industrial Classification (SIC) codes and Emissions Inventory Categories (EIC) codes related to marine and pleasure craft coating operations within South Coast AQMD included in the emission inventory for facilities within South Coast AQMD. Three SIC facility types were evaluated: boat building and repairing facilities, marina boatyard facilities, and boat dealership facilities. EIC codes are associated with emissions from marine coatings and related process solvents. The facilities evaluated are primarily engaged in building and repairing boats, operating marinas, performing incidental repairs, and transportation. Staff then ran a query of Annual Emissions Reporting (AER) SIP inventory for compliance year 2025 using the SIC and EIC codes. Based on the evaluation, PAR 1106 area sources account for approximately 0.142 tons per day. Manufacturer survey data indicates that both pCBtF and t-BAc are commonly used in marine and pleasure craft coating formulation, and that pCBtF is relied on, though not heavily relative to other coating industries, to meet current VOC content limits in a number of coating categories. Less than five coating manufacturers responded to the distributed survey, in which a total of 95 products were reported. Approximately half of the reported coatings contain pCBtF and/or t-BAc, with a large majority of the volume of coatings sold for use within South Coast AQMD containing pCBtF. However, the concentration of pCBtF in the coatings was relatively low (less than 10 percent). Based on the data submitted in the surveys, the following six categories reported had the highest usage volumes: 1) antifoulants for aluminum substrates, 2) antifoulant coatings for aluminum and non-aluminum substrates, 3) finish primers surfacers, 4) high-build primer surfacers, 5) high gloss topcoats, and 6) clear wood varnish. Total volume reported was approximately 11,500 gallons which equates to approximately 17.7 tons per year or 0.0485 tons per day, with antifoulants coatings accounting for approximately 60 percent of all marine and pleasure craft coatings. A comparison of the emissions from the survey and SIP inventory indicates that the volumes of coatings reported in the survey were 33 percent underreported of the total SIP baseline of 0.142 tons per day. As a result, staff adjusted the reported volumes in the survey by a factor of three to reflect actual potential VOC emissions from marine and pleasure crafts. The six categories reported accounted for approximately 95 percent of the total volume whereas the remaining coating categories only accounted for 5 percent or approximately 1,600 pounds of VOC.

Table 2-4: Coating Category Percentage of Total Emissions and Adjusted Estimated VOC Annual Emissions

Category	Coating Category Percentage of Total VOC Emissions	Adjusted Estimated VOC Annual Emissions (lbs)
Aluminum Antifoulant	5	~1,800
Non-Aluminum Antifoulant	55	~18,000
Finish Primer/Surfacer	20	~8,000
High-Build Primer/Surfacer	6	~1,900
High-Gloss Topcoat	3	~1,000
Clear Wood Varnish	4	~1,200
Other Coating Categories	5	~1,600

Proposed Emission Reductions

As part of the BARCT assessment, staff will evaluate the cost-effectiveness for coatings that will be consolidated into similar categories which will either maintain the lower VOC limit of the categories being combined or be subject to a lower proposed BARCT limit based on similar coating types currently available on the market. For marine coatings, staff is proposing to align the limits with the U.S. EPA Marine Coatings CTG for Shipbuilding and Ship Repair Operations to ensure the marine coating VOC limits in PAR 1106 align with RACT requirements. Aligning VOC limits with RACT will not require a cost-effectiveness analysis since those VOC limits are currently achievable with available coatings. For all other categories where the limits are proposed to be lowered, staff will conduct a cost-effectiveness analysis by comparing the cost of the higher VOC coating with the cost of the lower VOC coating. In addition, any marine or pleasure craft coating category reliant on pCBtF or t-BAc will be analyzed for potential cost impacts due to reformulation efforts due to the prohibition and phase-out of pCBtF or t-BAc. There are currently 10 categories that will be consolidated into five categories, with two categories for marine coatings and eight categories for pleasure crafts. The following table summarizes the category consolidation and associated limits along with whether the coating contains pCBtF or t-BAc based on the manufacturer submitted survey.

Table 2-5: Consolidated Categories and Limits

Original Coating Category	Consolidated Coating Category	VOC Content Limits (g/L)		Contains pCBtF or t-BAc
		Original VOC Limit	Proposed BARCT Limit	
Marine Coatings				
Aluminum Substrate Antifoulant Coating	Antifoulant	560	400 (RACT)	N/A*
Extreme High Gloss	High Gloss	420(baked)/ 490(air)	275(baked)/ 340 (air)	N/A*
Pleasure Craft Coatings				
Aluminum Substrate	Antifoulant	560	330	Y
Extreme High Gloss	High Gloss	490	420	N/A*
Finish Primer/Surfacer	Primer	420	275	Y
High Build Primer/Surfacer	Primer	340	275	N
Marine Deck Sealant Primer	Wood Sealers	760	275	N
Teak Primer	Wood Sealers	775	275	N/A*
Sealers	Wood Sealers	550	275	N/A*
Varnishes	Wood Topcoats	490	275	N

*Not reported in the manufacturer survey.

Antifoulant Coatings

Rule 1106 subcategorizes antifoulant coatings, for both marine and pleasure craft application, based on the substrate they are formulated to be applied to: aluminum or non-aluminum substrates. Staff received coating manufacturer survey data for both substrate formulations. All reported antifoulant coatings formulated for non-aluminum substrates were reported for pleasure craft application and all contain either pCBtF or t-BAc. The applicable pleasure craft VOC limit for these coatings is 330 g/L. The reported coatings contain VOC ranging from 300 to 330 g/L and

appear to rely on pCBtF to comply with the applicable pleasure craft VOC limit. All reported antifoulant coatings formulated for aluminum substrates were also reported for pleasure craft application. None of the reported coatings contain pCBtF; however, a number did contain t-BAc which is considered a VOC for these coatings. The current VOC limit for both marine and pleasure craft application is 560 g/L and the reported coatings contain VOC ranging from 374 to 379 g/L. Antifoulant coatings formulated for aluminum substrates were given a high VOC limit in the past due to greater solvent needs at the time resulting from zinc-containing resin systems needed to adhere to aluminum substrates. However, resin system and formulation advances since then allow for the development of antifoulant coatings that are suitable for application to a wider range of multiple substrate materials, including aluminum, while complying with the more stringent VOC limit applicable to non-aluminum antifoulant coatings. Reported antifoulant coatings formulated for aluminum substrates do not appear to rely on pCBtF to comply with the applicable VOC content limit. Antifoulants account for approximately 60 percent of the total VOC emissions at approximately 20,000 pounds of VOC per year, ~~which is~~ equivalent to approximately 60 percent of the total volume of marine and pleasure craft coatings sold in South Coast. Aluminum substrate-based antifoulants account for less than 5 percent of all antifoulants sold with total emissions of approximately 1,800 pounds of VOC per year.

As stated in Chapter 1, because ~~our region~~the South Coast Air Basin is designated as an extreme nonattainment area ~~of~~for certain air quality standards, South Coast AQMD must adopt limits that represent RACT/RACM. The marine coatings CTG represents RACT and does not include a higher VOC limit for antifoulant coatings applied to aluminum substrates; therefore, Rule 1106 cannot include a higher VOC limit. Staff is proposing to collapse the two antifoulant coating subcategories into one category, removing the aluminum-substrate antifoulant coating subcategory which currently has a higher VOC limit. Aluminum-substrate antifoulant coatings with higher VOC content will be allowed until a future effective date of January 1, 2031, to align with the pCBtF phase out date, with sell-through and use-through periods allowed for coatings manufactured prior to that date. This will allow time for the coatings to be reformulated without pCBtF and transition to the lower VOC limit.

Staff is also proposing to add a category for non-biocide foulant deterrent coatings, with a VOC limit aligned with the CTG for both marine vessels and pleasure craft titled Thermoplastic Foulant Deterrent Coatings. The marine coating industry expressed interest in moving away from biocide-containing antifoulant coatings to protect marine life and water quality. The VOC limit for the new subcategory aligns with the CTG, and therefore represents RACT. Further, ~~, and~~ the slightly higher VOC limit for this new subcategory within pleasure craft and marine structure coatings, ~~than~~ as compared to the proposed limit for traditional, biocide-containing antifoulant coatings, will help the industry to transition to coatings more protective of marine life and improve water quality.

Removing the aluminum antifoulant category for marine coatings is needed to demonstrate RACT and align with the U.S. EPA Marine Coatings CTG for Shipbuilding and Ship Repair Operation.

However, staff will need to demonstrate that lowering the VOC limits for aluminum antifoulants formulated for pleasure craft to align it with non-aluminum antifoulants represents BARCT.

BARCT Assessment for Pleasure Craft Antifoulant Coatings

Assess South Coast AQMD Regulatory Requirements

Assessment of South Coast AQMD Regulatory Requirements

Staff reviewed existing South Coast AQMD VOC coating regulations for similar categories and to assess potential technology transfer. Antifoulant coatings are unique coatings; there are no applicable coatings that can compare to marine coatings applied to the bottom-side of a boat to prevent growth of algae or other marine organisms. The only comparable categories are the other substrate types of antifoulant coatings in Rule 1106. As demonstrated in Table 2-6; the VOC limits range from 560 – 330 g/L with the 330 g/L limit being for pleasure crafts that are not uniquely formulated for aluminum substrates. Based on staff's evaluation, nothing precludes the non-aluminum antifoulant from being applied to aluminum pleasure craft. At the federal level, the marine coatings CTG does not include a higher limit for aluminum substrates.~~;~~ T~~t~~herefore, antifoulant coatings for aluminum vessels do not necessarily need a higher VOC limit to properly function.

Assess VOC Limits of Existing Coatings

Assess VOC Limits of Existing Coatings

The manufacturer-submitted survey data was used to evaluate existing VOC levels for each coating category. Based on the survey, the reported antifoulants for aluminum coatings contain VOC ranging from 374 to 379 g/L and do not appear to rely on pCBtF to comply with the applicable VOC content limit. The VOC content is well below the 560 g/L VOC limit currently in the rule. The following table summarizes the VOC levels of the reported coatings.

Table 2-6:VOC Levels of Reported Pleasure Craft Antifoulant Coatings

Category	VOC limit (g/L-Regulatory)	Coating VOC Range Reported (g/L-Regulatory)
Aluminum	560	374 - 379
Non-Aluminum	330	300 - 330

The table highlights that existing coatings are below proposed 400 g/L VOC content limit for marine coatings and the proposed 330 g/L VOC content limit for pleasure craft coatings, thus indicating that regardless of substrate type, lower VOC antifoulant coatings are readily available or can be formulated to meet the proposed limit of 330 g/L. Staff found no real differences between marine antifoulants and pleasure craft antifoulants in the market.

Other Regulatory Requirements

Other Regulatory Requirements

This step of the BARCT assessment identifies and compares other regulatory requirements for the same source type or category. The evaluation ensures that the proposed requirements are consistent with, conform to, or are more stringent than existing standards. The assessment evaluated California air districts that have similar marine coatings rules and the U.S. EPA Marine

Coatings CTG for Shipbuilding and Ship Repair Operations. The comparison includes both marine and pleasure craft coatings.; Hhowever, the BARCT assessment is only for reducing the VOC limit for aluminum antifoulant coatings applied to pleasure craft coatings. For marine coatings, staff is merely consolidating the categories into one category while retaining the lower VOC limit of 400 g/L. Reducing the VOC limit for aluminum antifoulant coatings for marine vessels is based on RACT.

Table 2-7: Other Antifoulant Coating Limits

Category	South Coast AQMD Rule 1106 (g/L)	CTG (g/L)	Bay Area AQMD – Rule 43 (g/L)	San Diego County APCD – Rule 67.18 (g/L)	San Joaquin Valley APCD – Rule 4603 (g/L)	Ventura County APCD[1] (g/L)
Antifoulant Marine Coatings						
Aluminum	560	400	400	N/A	N/A	560
Non-Aluminum	400	400	400	400	N/A	400
Antifoulant Pleasure Craft Coatings						
Aluminum	560	N/A	N/A	N/A	560	560
Non-Aluminum	330	N/A	N/A	N/A	330	330

1. Rule 74.24 - Marine Coating Operations and Rule 74.24.1 - Pleasure Craft Coating and Commercial Boatyard Operations.

The table shows that ~~many~~ some other air districts include a higher VOC limit for aluminum antifoulant coatings.; Hhowever, San Diego County APCD does not include a higher VOC limit for those coatings. San Diego County has a significant number of marine and pleasure craft coating operations, demonstrating the lower VOC limit is technically feasible.



Assess Low-VOC Technologies

The next step of the BARCT assessment is researching commercially available low VOC control technologies and seeking information on any emerging VOC control technology. As part of this assessment, staff met with several of the major marine and pleasure craft coating manufacturers to discuss the status and development of low VOC products. Manufacturers currently offer lower VOC antifoulant coatings that are formulated for a wide variety of substrates, including aluminum. During individual meetings, marine and pleasure craft coating manufacturers said they prefer to formulate antifoulant coatings that can be used on a wide variety of substrates, instead of more narrowly for aluminum substrate-based vessels. The following table lists VOC content of several antifoulant coatings and their associated substrates. The information in the table was compiled from the manufacturer survey and staff's research.

Table 2-8: Low VOC Antifoulant Coatings Currently Available

Antifoulant Coating	Substrates	VOC Content (g/L)
Sea Hawk Islands 44 TF[1]	Non-Aluminum	308-316
Pettit Black Widow[1]	Non-Aluminum	330
Pettit Odyssey HD	Non-Aluminum	327
Pettit Odyssey Triton[1]	Non-Aluminum	330
Pettit Trinidad	Non-Aluminum	324-330
Pettit Vivid[1]	Non-Aluminum	327-330
Pettit Colorkote	Aluminum	338-342
Interlux Micron CSC	Non-Aluminum	370
Interlux Trilux 33	Aluminum	390
Interlux Ultra	Non-Aluminum	327
Sea Hawk Cukote[1]	Non-Aluminum	330
Sea Hawk Smart Solution[1]	Aluminum	328

1. Formulated for application to non-aluminum substrates, but safe to apply to aluminum substrates with proper primer.

The table demonstrates it is technically feasible for antifoulant coatings, formulated for multiple substrates, to meet the proposed limits of 400 g/L and 330 g/L.

Cost-Effectiveness and Incremental Cost-Effectiveness Analyses

Cost-Effectiveness and Incremental Cost-Effectiveness

The lower VOC antifoulant coatings identified are all existing products offered for sale. To determine the cost effectiveness, staff evaluated the cost of the higher VOC antifoulant coatings formulated for aluminum only compared to the lower VOC antifoulant coatings formulated for any substrate. Staff evaluated the respective unit cost of various antifoulant coatings formulated for application to aluminum and non-aluminum substrates. Staff found commercially available antifoulant coatings that were formulated primarily for non-aluminum substrates but are also safe to be applied to aluminum substrates as long as the proper primers are applied beforehand. This is consistent with manufacturer feedback received during discussions held during the rule development process.

Staff also found the coatings that are suitable for application to aluminum substrates have an average cost of $390 per gallon, while those that are only suitable for application to non-aluminum substrates to have an average cost of $325 per gallon. The following table lists antifoulant coatings and typical cost based on a one-gallon container size~~;~~ with several coatings classified as safe for both aluminum and non-aluminum substrates which are denoted below. The corresponding price

per gallon is provided to evaluate the potential cost impacts associated with transitioning to lower VOC formulations. Staff determined that the lower VOC formulations are not expected to result in increased costs to end-user as the costs for lower VOC products were nearly equivalent or slightly lower in cost than the higher VOC formulations. Therefore, consolidating the antifoulant category into a single category while retaining the lower VOC limit of 330 g/L pleasure craft coatings is cost-effective. An incremental cost-effectiveness was not conducted because staff could not identify additional stringent low VOC technologies for pleasure craft antifoulant coatings.

Table 2-9: Cost Comparison Summary

Coating	Substrate	VOC Content (g/L)	Cost ($/gal)
Sea Hawk Islands 44 TF	Non-Aluminum	308-316	$425
Pettit Black Widow[1]	Non-Aluminum	330	$410
Pettit Odyssey HD	Non-Aluminum	327	$300
Pettit Odyssey Triton[1]	Non-Aluminum	330	$460
Pettit Trinidad	Non-Aluminum	324-330	$300
Pettit Vivid[1]	Non-Aluminum	327-330	$370
Pettit Colorkote	Aluminum	338-342	$410
Interlux Micron CSC	Non-Aluminum	370	$350
Interlux Trilux 33	Aluminum	390	$390
Interlux Ultra	Non-Aluminum	327	$260
Sea Hawk Cukote	Non-Aluminum	330	$310
Sea Hawk Smart Solution	Aluminum	328	$295

1. Formulated for application to non-aluminum substrates, but safe to apply to aluminum substrates with proper primer.

The following table summarizes the RACT and BARCT assessment for antifoulant coatings:

Table 2-10: Antifoulant Coating Summary and Proposed Limits

Category	Current VOC Limit (g/L-Coatings)		Proposed VOC Limits (g/L-Coatings)	
	Pleasure Craft	Marine Vessels	Pleasure Craft	Marine Vessels
Aluminum	560	560	BARCT	RACT
Non-Aluminum	330	400	330	400

The proposed VOC content limit of 400 g/L for marine antifoulant coatings is based on RACT which is currently being achieved, and replacement products are commercially available. Since staff is maintaining the lower of the two limits which aligns with U.S. EPA's CTG for marine operations, a cost-effectiveness evaluation for the lower VOC limit of 400 g/L marine antifoulant coatings is not required. However, for pleasure craft antifoulant coatings, staff evaluated the cost-effectiveness of the proposed lower 330 g/L VOC limit. The average cost of an antifoulant coating formulated only for aluminum substrates was approximately $390 per gallon, and a more general antifoulant coating formulated for multiple substrates, including aluminum, is approximately $325 per gallon. This equates to a cost savings of $65 per gallon of coating for the reformulated lower-VOC general antifoulant coating. Since the cost of the general antifoulant coatings are equivalent or less, staff determined that it is cost-effective to lower the VOC limit to 330 g/L. The estimates emission reduction for the category is 1.4 pounds per day. Therefore, staff determined the proposed VOC content limit of 330 g/L for the consolidated antifoulant pleasure craft coating category to be cost-effective at a cost of $0 per ton of VOC emissions reduced.

Since some antifoulant coatings contain pCBtF in their formulations, staff anticipates the manufacturer will need to reformulate their coatings and any potential reformulation costs will be passed onto end-users and increase product prices by approximately ten percent. The average unit price for aluminum-substrate formulate antifoulants would increase the cost by approximately forty dollars per gallon. Since many of the cost of low VOC antifoulant coatings identified are below the cost of the higher VOC antifoulants, the price impact should be equivalent to current prices. The reformulation cost is discussed later in the reformulation section.

Similar to the proposal for marine aluminum antifoulant coatings, pleasure craft aluminum-substrate antifoulant coatings with a higher VOC content will be allowed until a future effective date of January 1, 2031, to align with the pCBtF phase out date, with an additional one year sell-through and use-through periods allowed for coatings manufactured prior to the prohibition effective date, to allow time for the coatings to transition to the lower limit.

Primers

Primers are applied for the purpose of providing corrosion resistance, adhesion for subsequent coatings, a moisture barrier, or promoting a uniform surface necessary for filling in surface imperfections. Primers can be applied to both the top side and bottom side of a vessel. Finish primer surfacers were reported in the coating manufacturer survey for both marine and pleasure craft application. Rule 1106 currently subcategorizes primer surfacers for pleasure craft application into finish primer surfacers and high-build primer surfacers, which only differ in definition based on the applied wet film thickness. Because finish primer surfacers and high-build primer surfacers have differing VOC content limits, enforcement of these limits would require measurement of applied *wet* film thickness which poses a significant enforcement challenge. Furthermore, staff confirmed that many technical data sheets for primer surfacers marketed for pleasure craft use recommend ranges of applied wet film thickness that span both defined thickness ranges. Therefore, staff no longer finds the distinction between the coating subcategories to be valid. Almost all reported finish primer surfacers contain pCBtF, and a small number contain t-BAc. The average VOC content of the reported finish primer surfacers for marine vessel application was 250 g/L. Rule 1106 currently does not have an established coating category or subcategories for primers for marine application. Therefore, all primers used for marine application fall under the "All Other Coating Type" category and are subject to a VOC content

limit of 340 g/L. Finish primer surfacers used for pleasure craft application have a VOC content limit of 420 g/L. High build primer surfacers used for pleasure craft application also have a VOC content limit of 340 g/L. Based on the survey responses received, it is unclear whether finish primer surfacers rely on pCBtF to comply with the applicable VOC content limits and to what extent.~~;~~ H~~h~~owever, pCBtF is commonly used in finish primer surfacer formulations. High build primer surfacers were only reported in the coating manufacturer survey for pleasure craft application. None of the reported primers contain pCBtF or t-BAc. Based on manufacturer reported survey data, primers account for approximately 26 percent of the total VOC emissions.

Staff is proposing to add a marine coating category for "Primers" with a VOC limit consistent with the "All Other Coating Type" VOC limit of 340 g/L. This new category would be for clarification purposes and intended to reduce confusion regarding applicable VOC limits by end users. Staff is also proposing to collapse the pleasure craft coating subcategories "Finish Primer Surfacers" and "High Build Primer Surfacers" into a more general "Primer" category. The difference between finish surfacer primers and high build surface primers is that the former is applied at less than 10 mils and the latter at greater than 10 mils. Based on the survey data and online searches, marine and pleasure craft primers application instructions do not specify applying less than or greater than 10 mils. The distinction no longer appears valid. Staff is proposing to collapse the categories into a new category for Primers with a VOC limit of 340 g/L.



Assessment of South Coast AQMD Regulatory Requirements

Staff reviewed existing South Coast AQMD VOC coating regulations for similar categories and to assess potential technology transfer. Primer surfacers are commonly used across various industries and serve similar purposes. The following table lists comparable primer coating categories in different rules which include similar primer categories.

Table 2-11: Other South Coast AQMD VOC Limits for Primers

Rule Number	Name	Category	VOC limit (g/L-Coating)
1106	Marine and Pleasure Craft Coatings	Finish primer surfacers	420
		High build primer surfacers	340
1124	Aerospace Assembly and Component Manufacturing Operations	General Primers	350
1151	Motor Vehicle and Mobile Equipment Non-Assembly Line Coating Operation	Primer Sealers and Primer Surfacers	250
		Epoxy Primers	340

The majority of marine and pleasure craft primers are epoxy formulations, making the epoxy primer category in Rule 1151 the most similar to those in Rule 1106. A comparison of other South Coast AQMD rules also shows the 420 g/L VOC limit to be an outlier.

Assess VOC Limits of Existing Coatings

Assess VOC Limits of Existing Coatings

The manufacturer-submitted survey data was used to evaluate existing VOC levels for each coating category. Based on the survey, the reported primers for pleasure craft application contain VOC ranging from 298 to 486 g/L and appear to rely on pCBtF to comply with the applicable VOC content limits. The 486 g/L coating reported in the manufacturer survey may be incorrect since it is higher than the Rule 1106 VOC limit for primers; staff is following up with the manufacturer to verify.

Table 2-12: VOC Levels of Existing Pleasure Craft Primers

Category	VOC limit (g/L-Regulatory)	Coating VOC Range Reported (g/L-Regulatory)
Finish Primer Surfacer	420	330 - 486
High-Build Primer Surfacer	340	298 -422

The survey data indicates that there are existing finish primer surfacers that meet the lower VOC limit of the high build primer surfacer category.

Other Regulatory Requirements

Other Regulatory Requirements

The assessment evaluated California air districts that have similar marine and pleasure craft coatings rules, and the U.S. EPA Marine Coatings CTG for Shipbuilding and Ship Repair Operations. The comparison includes both marine and pleasure craft coatings; however, the BARCT assessment is only for reducing the VOC limit of finish primer surfacers applied to pleasure craft vessels. The following table shows a comparison of the VOC limit for primers.

Table 2-13: Other Primer Surfacer Limits

Category	South Coast AQMD Rule 1106 (g/L)	CTG	Bay Area AQMD – Rule 43 (g/L)	San Diego County APCD – Rule 67.18 (g/L)	San Joaquin Valley APCD – Rule 4603 (g/L)	Ventura County APCD[1] (g/L)
Marine						
Finish Primer Surfacer	275 (Baked)/ 340 (Air Dry)[2]	340	340	340	N/A	340
High-Build Primer Surfacer	275 (Baked)/ 340 (Air Dry)[2]	340	340	340	N/A	340
Pleasure Craft						
Finish Primer Surfacer	420	N/A	N/A	N/A	420	420
High-Build Primer Surfacer	340	N/A	N/A	N/A	340	340

1. Rule 74.24 - Marine Coating Operations and Rule 74.24.1 - Pleasure Craft Coating and Commercial Boatyard Operations.
2. VOC Limits listed are for Any Other Coating type as Rule 1106 currently does not include a VOC limit for primers.

The comparison shows that for other jurisdictions with rules that limit the VOC emissions of Finish Primer Surfacer used for pleasure craft, those limits align with Rule 1106. However, primers used for marine vessels (Finish Primer Surfacer and High-Build Primer Surfacer) have similar properties and performance requirements and other jurisdictions' VOC limits for primers used on marine vessels align with the proposed 340 g/L VOC limit for primers.



Assess Low-VOC Technologies

The next step is to research the commercially available low VOC control technologies and seek information on any emerging VOC control technology. As part of this assessment, staff met with several of the major marine and pleasure craft coating manufacturers to discuss the status and development of low VOC products. Manufacturers stated that there are no fundamental formulation needs or differences with respect to VOC content between what are currently categorized as high-build primer surfacers and finish primer surfacers. Staff confirmed the following finish primer surfacers that meet the lower VOC content limit of 340 g/L without the use of pCBtF to be commercially available.

Table 2-14: Low VOC Finish Primer Surfacers Currently Available

Finish Primer Surfacer	VOC Content (g/L)
Axalta 18513S Epoxy Primer	323
Cardinal 7760-GRE15955 Epoxy Primer	334
Cardinal 7M60-10 Epoxy Primer	335



Cost-Effectiveness and Incremental Cost-Effectiveness

The lower VOC finish primer surfacers identified are all existing products being offered for sale and currently available. To determine the cost effectiveness, staff assessed the cost of the higher VOC finish primer surfacers and compared to the lower VOC finish primer surfacers. The products in the following table are representative of primer surfacers regulated under Rule 1106. The corresponding price per gallon is provided to evaluate the potential cost impacts associated with transitioning to lower VOC formulations.

Table 2-15: Cost Comparison Summary

Primer Name	Type	Price ($/gal)	VOC Content (g/L)
Pettit Rustlok 6980	Finish	$160	475
Pettit Aluma Protect 4400	Finish	$150	486
Pettit EZ Prime 6149	High-Build	$130	422
Pettit Protect 4800	High-Build	$150	304
Interlux Interprotect HS YPA401	High-Build	$160	289

Staff found that the cost for the identified primers that meet the proposed VOC content limit of 340 g/L without pCBtF or t-BAc were similar in cost to the primer surfacers complying with the current VOC limit 420 g/L. The costs in the table above are rounded to the nearest whole dollar and the actual cost difference between them is less than five dollars.~~;~~ T~~t~~he actual cost for the lower VOC product was slightly cheaper, resulting in cost savings. The lower VOC formulations are not expected to result in a significant impact to the end-user costs. Since ~~the lower~~the lower VOC primer options meet the proposed 340 g/L limit, are commercially available,~~.~~ and are sold at slightly lower cost of approximately five dollars less, staff determined that the proposed 340 g/L limit for all pleasure craft primers to be cost-effective. An incremental cost-effectiveness was not conducted because staff could not identify additional stringent low VOC technologies for pleasure craft finish primer surfacer coatings.

The proposed VOC content limit of 340 g/L for the subsumed primer coating category is technologically feasible based on the BARCT assessment conducted. Staff is proposing a future effective date of January 1, 2029, to allow time for the market to adjust and/or reformulate coatings to comply with the proposed VOC content limit. Based on online research, staff found the average price per gallon of the higher-VOC containing finish primer surfacers to be approximately $160, and the average price per gallon of the lower-VOC containing high-build primer surfacers to be about $155 per gallon. The estimated emission reduction for the primer category is 17 pounds per day. Therefore, staff determined the proposed VOC content limits of 340 g/L for the subsumed primer coating category to be cost-effective at a cost of $0 per ton of VOC emissions reduced.

High-Gloss and Extreme High-Gloss Coatings

High-gloss coatings are generally applied to the top side of a vessel and are used to protect the substrate in a marine environment and for aesthetic purposes. High-gloss coatings are a subcategory of Topcoats in Rule 1106, for both marine and pleasure craft coatings, along with Extreme High-Gloss coatings. High-Gloss coatings were reported in the coating manufacturer survey for both marine and pleasure craft application, while no extreme high-gloss coatings were reported. These coatings differ by a measure of reflectance, with extreme high-gloss coatings having a greater reflectance than high-gloss coatings. The current pleasure craft coating VOC limits for these coatings are 490 g/L and 420 g/L for extreme high-gloss coatings and high-gloss coatings respectively. The reported coatings contain VOC ranging from 369 to 412 g/L and do *not* appear to rely on pCBtF to comply with the applicable VOC content limits. The current marine coating VOC limits for these coatings are 340 g/L and 490 g/L for high-gloss coatings and extreme high-gloss coatings respectively. The reported high-gloss coatings for marine vessel application contain an average VOC content of 340 g/L and appear to rely on pCBtF to comply with the applicable VOC content limit.

As previously stated, because our region is designated as an extreme nonattainment area of air quality standards, South Coast AQMD must adopt limits that represent RACT/RACM. The marine CTG represents RACT and does not include a higher VOC limit for extreme high-gloss coatings. Therefore, Rule 1106 cannot include a higher VOC limit. Staff is proposing to collapse the two coating subcategories into one category, removing the extreme high-gloss coating subcategory which currently has a higher VOC limit. Extreme high-gloss coatings with higher VOC content will be allowed until a future effective date of January 1, 2029, with sell-through and use-through periods allowed for coatings manufactured prior to that date; this will allow time for the coatings to be reformulated without pCBtF and transition to the lower VOC limit.

Removing the extreme high-gloss coating category for marine coatings is needed to demonstrate RACT and align with the U.S. EPA Marine Coatings CTG for Shipbuilding and Ship Repair Operations. However, staff will need to demonstrate that lowering the VOC limits for extreme high-gloss coatings formulated for pleasure craft application to align it with high-gloss coatings represents BARCT, as evidenced in the sections below.

Assess South Coast AQMD Regulatory Requirements

Assessment of South Coast AQMD Regulatory Requirements

Staff reviewed existing South Coast AQMD VOC coating regulations for similar categories and to assess potential technology transfer. High-gloss and extreme high-gloss topcoats are commonly used across various industries and serve similar purposes. The following table lists comparable gloss coating categories in different rules which include similar coating categories:

Table 2-16: Other South Coast AQMD VOC Limits for Gloss Coatings

Rule Number	Name	Category	VOC limit (g/L-Coating)
1106	Marine and Pleasure Craft Coatings	High-Gloss Coatings	340 & 420
		Extreme High-Gloss Coatings	490
1107	Coating of Metal Parts and Products	Extreme High-Gloss Coatings	340
1151	Motor Vehicle and Mobile Equipment Non-Assembly Line Coating Operation	Clear Coatings	250

The proposed limits for gloss coatings would also align Rule 1106 with similar categories in other rules. A comparison of other South Coast AQMD rules also shows the 490 g/L VOC limit to be an outlier.

Assess VOC Limits of Existing Coatings

Assess VOC Limits of Existing Coatings

The manufacturer-submitted survey data was used to evaluate existing VOC levels for each coating category. Based on the survey, the reported high-gloss coatings for marine vessel application contain an average VOC content of 340 g/L and appear to rely on pCBtF to comply with the applicable VOC content limit, while reported high-gloss coatings for pleasure craft application contain VOC ranging from 369 to 412 g/L and do *not* appear to rely on pCBtF to comply with the applicable VOC content limits. Extreme h~~H~~igh-g~~G~~loss products were not reported in the survey or identified in online searches. No extreme high-gloss coatings were reported in the coating manufacturer survey. However, staff confirmed that there are existing extreme high-gloss coatings that are commercially available that meet the lower VOC limit for high-gloss pleasure craft coatings. Therefore, the category is proposed to be removed from PAR 1106 and combined with the High-Gloss Category.

Table 2-17: VOC Levels of Existing Pleasure Craft Gloss Topcoats

Category	VOC limit (g/L-Regulatory)	Coating VOC Range Reported (g/L)
Extreme High-Gloss Coating	490	N/A
High--Gloss Coating	420	369 - 412

The survey data indicates that extreme high-gloss coatings may not have been sold for use within South Coast AQMD during the previous calendar year. However, staff confirmed that extreme high-gloss coatings are commercially available for use within South Coast AQMD. See the following table for product information:

Table 2-18: VOC Levels of Existing Pleasure Craft Extreme High-Gloss Topcoats

Coating	Category	VOC limit (g/L-Regulatory)	Coating VOC Range Reported (g/L)	pCBtF and/or t-BAc?
Pro-Line 4600	Extreme High Gloss Coating	490	<420	N/N

The confirmed commercially available extreme high-gloss coating indicates that there are existing extreme high-gloss coatings that meet the lower VOC limit of the high-gloss coating category.



Other Regulatory Requirements

This step of the BARCT assessment identifies and compares other regulatory requirements for the same source type or category. The evaluation ensures that the proposed requirements are consistent with, conform to, or are more stringent than existing standards. The assessment evaluated California Air Districts that have similar marine and pleasure craft coatings rules, and the U.S. EPA Marine Coatings CTG for Shipbuilding and Ship Repair Operations. The comparison includes both marine and pleasure craft coatings; however, the BARCT assessment is only for reducing the VOC limit for high-gloss topcoats applied to pleasure craft vessels. Consolidating the higher VOC limit for extreme high-gloss topcoats with high--gloss coating for marine coatings is based on RACT.

Table 2-19: Other Gloss Topcoat Limits

Category	South Coast AQMD Rule 1106 (g/L)	CTG	Bay Area AQMD – Rule 45 (g/L)	San Diego County APCD – Rule 67.18 (g/L)	San Joaquin Valley APCD – Rule 4603 (g/L)	Ventura County APCD[1] (g/L)
Marine						
Extreme High-Gloss Coating	420 (Baked)/ 490 (Air dry)	N/A	490	N/A	N/A	N/A
High-Gloss Coating	275 (Baked)/ 340 (Air Dry)	420	340	420	N/A	420
Pleasure Craft						
Extreme High-Gloss Coating	490	N/A	N/A	N/A	490	490
High-Gloss Coating	420	N/A	N/A	N/A	420	420

1. Rule 74.24 - Marine Coating Operations and Rule 74.24.1 - Pleasure Craft Coating and Commercial Boatyard Operations.



Cost-Effectiveness and Incremental Cost-Effectiveness

The lower VOC gloss topcoats identified all are existing products being offered for sale and currently available. To determine the cost effectiveness, staff evaluated the cost of extreme high- gloss transitioning to the lower VOC limit of high--gloss coatings. However, extreme high-gloss coatings serve the same purpose as high gloss coatings but with a higher VOC limit. The U.S. EPA CTG does not include a higher VOC limit carve out for extreme high--gloss coatings applied to marine vessels, therefore staff is proposing to consolidate the extreme high--gloss with the high--gloss coating into a single high--gloss category while maintaining the lower 340 g/L limit of the two limits for the consolidated category. Staff is also proposing to also remove the higher VOC carve out for extreme high--gloss coatings applied to pleasure craft and maintain the lower high--gloss coating limit of 420 g/L.

High--gloss coatings were reported in the coating manufacturer survey for both marine and pleasure craft applications. Those reported for marine application all contain pCBtF and appear to rely on pCBtF to comply with the applicable VOC content limit of 340 g/L. Those reported for

pleasure craft application do not contain pCBtF and therefore do not appear to rely on pCBtF to comply with the applicable VOC content limit of 420 g/L.

The following table shows representative gloss topcoats regulated under Rule 1106. The corresponding price per gallon is provided to evaluate the potential cost impacts associated with transitioning to lower VOC formulations. Staff determined that the lower VOC formulations are not expected to result in significant increases to end-user costs.

Table 2-20: Cost Comparison Summary

Gloss Topcoat Name	Type	Price ($/gal)	VOC Content (g/L)
Pettit EZpoxy	High-Gloss Coating	$200	369-412
Interlux Yacht Enamel	High-Gloss Coating	$120	412
Pettit EZBilge	High-Gloss Coating	$150	388
Pro-Line 4600	Extreme High-Gloss Coating	$120	<420

Staff found that the cost for the identified gloss topcoats that meet the proposed pleasure craft coating VOC content limit of 420 g/L without pCBtF or t-BAc were similar in cost to the extreme high-gloss coating complying with the current VOC limit of 420 g/L. The costs in the table above are rounded to the nearest whole dollar. Notably, the cost of the extreme high-gloss coating that complies with the proposed lower VOC limit is slightly cheaper. The lower VOC formulations are not expected to result in a significant impact to the end-user costs. Since the lower VOC extreme high-gloss coating meets the proposed 420 g/L limit and is commercially available and at slightly lower cost, staff determined that the proposed 420 g/L limit for all pleasure craft gloss topcoats to be cost-effective. An incremental cost-effectiveness analysis was not conducted because staff could not identify additional stringent low VOC technologies for pleasure craft gloss topcoats.

Based on the BARCT assessment conducted, staff confirmed that the proposed VOC content limit of 340 g/L and 420 g/L for the subsumed high-gloss coating category is technologically feasible, with a future effective date of January 1, 2029. Reformulated coatings were assumed to comply at the new proposed limit of 340 g/L for marine coatings and 420 g/L for pleasure craft coatings. However, staff identified comparable high-gloss products with VOC contents at or below the proposed limit. Staff does not anticipate any impacts to emissions as staff is not aware of any existing, commercially available extreme high-gloss coatings sold for use in South Coast AQMD. An incremental cost-effectiveness was not conducted because staff could not identify additional stringent low VOC technologies for pleasure craft high-gloss coatings.

The proposed removal of the higher VOC content limit for extreme high-gloss coatings applied to marine vessels is based on RACT which is currently being achieved and replacement products are commercially available. Staff is just maintaining the lower of the two limits which aligns with U.S. EPA's CTG for marine operations; therefore, a cost-effectiveness analysis for the lower VOC limit of marine extreme high-gloss coatings is not required. However, for the pleasure craft extreme

high-gloss coatings, staff evaluated the cost-effectiveness of the proposed lower 420 g/L VOC limit. The average cost of extreme high-gloss coating for application to pleasure craft was approximately $120 per gallon, and high-gloss coatings is approximately $160 per gallon. This equates to a cost savings of $40 per gallon of coating for the lower VOC extreme high-gloss coating. Since the cost of the gloss topcoats are equivalent or less, staff determined that it is cost-effective to lower VOC limit to 420 g/L. The estimates emission reduction for the category is 0.81 pounds per day. Therefore, staff determined the proposed VOC content limits of 420 g/L for the subsumed high-gloss coating category to be cost-effective at a cost of $0 per ton of VOC emissions reduced.

Since some gloss topcoats contain pCBtF in their formulations, staff anticipates the manufacturer will need to reformulate their coatings and any potential reformulation costs will be passed onto end-users and increase product prices by approximately ten percent. The average unit price for extreme high-gloss coatings would increase the cost by approximately twelve dollars per gallon. Since the extreme high-gloss coating identified is below the cost of the high-gloss coatings, the price impacts and resulting higher unit price should be equivalent or similar to current prices of gloss topcoats. The reformulation cost is discussed later in the reformulation section.

Similar to the proposal for other subsumed coating categories, extreme high-gloss coatings with a higher VOC content will be allowed until a future effective date of January 1, 2029, with an additional one year sell-through and two year use-through periods allowed for coatings manufactured prior to the prohibition effective date, to allow time for the coatings to transition to the lower limits.

Clear Wood Coatings

Clear wood coatings are used to provide a transparent or translucent film on wood substrates. Varnishes are a type of wood coating that can be clear or pigmented and are applied for aesthetic purposes and protect against water, heat, abrasion, and UV damage. Marine deck sealant primers are used to enhance the bonding surface for sealants applied to wooden marine decks. Teak primers are used specifically on teak wood, which are intended to enhance the bonding surface for sealants applied to wooden marine decks. No teak primers were reported in the coating manufacturer survey responses received. In the manufacturer survey, all wood coatings were reported as clear wood varnishes and marine deck sealant primers for pleasure craft applications. Marine deck sealant primers accounted for less than one percent of all wood coatings reported in the survey, with clear wood varnishes accounting for the majority of reported wood related coatings. In addition, none of the reported clear wood varnishes or marine deck sealant primers reported contain pCBtF or t-BAc, and clear marine varnishes did not contain VOC greater than 420 g/L which is below the VOC content limit of 490 g/L. Similarly, the reported VOC content for marine deck sealant primer is 35 g/L, well below the applicable VOC content limit of 760 g/L. No products for the clear wood sealers category were reported in the manufacturer survey. Since the reported wood coatings do not appear to rely on pCBtF or t-BAc to comply with the applicable VOC content limits, there appears to be potential for a VOC content limit reduction. Staff is proposing to restructure and align the clear wood coating category with similar wood coating categories in other South Coast AQMD rules, such as Rule 1136 – Wood Coating Operations and Rule 1113 – Architectural Coatings. Both Rule 1136 and Rule 1113 limit clear wood topcoats coatings and clear wood sealers to a maximum VOC content of 275 g/L. As part of the restructuring, staff is also proposing to

lower the VOC limit for wood sealers and varnishes in Rule 1106 from 550 /L and 490 g/L to 275 g/L.

Staff is proposing to restructure the clear wood coatings category by subcategorizing into four new proposed subcategories: clear wood sealers, pigmented wood sealers, clear wood topcoats, and pigmented wood topcoats. Rule 1106 sealers and varnishes are defined as topcoats and would fall under the topcoat subcategory based on whether it is clear or pigmented, with a new subcategory included to address wood primers/sealers. Coating manufacturers have requested that South Coast AQMD align VOC limits for different substrates across rules for ease of reformulation. Aligning the VOC limits also removes the potential for rule circumvention where marine varnishes are used for architectural applications.



Assessment of South Coast AQMD Regulatory Requirements

Staff reviewed existing South Coast AQMD VOC coating regulations for similar categories and to assess potential technology transfer. Clear Wood Coatings and Varnishes are commonly used across various industries and serve similar purposes. The following table lists comparable gloss coating categories in different rules which include similar coating categories:

Table 2-21: Other South Coast AQMD VOC Limits for Wood Topcoats

Rule Number	Name	Category	VOC limit (g/L-Coating)
1136	Wood Products and Coatings	Clear Topcoats	275
1113	Architectural Coatings	Clear Topcoats	275

The proposed limits for the newly restructured Wood Sealers and Topcoats coating category are consistent with similar categories in other rules and would align Rule 1106 with similar categories in other rules. A comparison of other South Coast AQMD rules shows Rule 1106's current VOC limits to be outliers.



Assess VOC Limits of Existing Coatings

The manufacturer-submitted survey data was used to evaluate existing VOC levels for each coating category. Based on the survey, the reported Clear Wood Topcoats coatings for pleasure craft application contain an average VOC content of 401 g/L. While ~~limited~~few products are under the proposed limit of 275 g/L, similar wood coatings in Rules 1136 and 1113 are ~~found to be~~ under the proposed limit. The proposed alternative MIR limit for Clear Topcoats would also provide flexibility when reformulating to the proposed limit of 275 g/L. A similar process was done for the remaining Wood Coating categories: Pigmented Wood Topcoats, Clear Wood Sealers and Pigmented Wood Sealers.

Staff conducted an online search of Marine Deck Sealant Primers and similar wood coating types from Rule 1136 and Rule 1113. Staff found the following products:

Table 2-22: Marine Wood Coatings and Similar Wood Coating from Other South Coast AQMD Rules VOC and Exempts Content

Coating	VOC Content (g/L-Regulatory)	Contains pCBtF	Contains t-BAc
Awlgrip Awlwood Clear Primer	500	No	No
Awlgrip 545 Epoxy Primer	519	No	No
Sea Hawk Tuff Stuff Low VOC Primer	280	Yes	No
Pettit Protect High-Build Epoxy Primer	340	No	No
Rust-Oleum Marine Wood & Fiberglass Primer	457	No	No
Pacific Polymers Deck-Thane Primer	59	No	No
Interlux Primekote Epoxy Primer	407	No	No
McCloskey Man O_War Marine Spar Varnish Semi-Gloss	212	No	No
Bona Mega ONE Extra Matte	120	No	No
Cabot Gold	229	No	No
DuraSeal Fast Dry Sanding Sealer	63	No	No
Luster Lac Water White Lacquer Sanding Sealer	275	No	No
Finisher's Choice Clear Lacquer Sealer	203	No	No

Many of the current marine and pleasure craft coatings are higher than the proposed limit of 275 g/L; however, similar coatings for wood substrates subject to Rule 1136 and Rule 1113 are formulated at or below the proposed limit of 275 g/L. Manufacturers will likely have to reformulate to meet the lower proposed limits of 275 g/L and to remove the pCBtF. However, they are currently reformulating to phase out of pCBtF for Rule 1136 and soon will have to reformulate Rule 1113 wood coatings and requested consistency amongst rules with similar coating types. The cost-effectiveness will be based on expected reformulation cost.

Other Regulatory Requirements

Other Regulatory Requirements

Staff reviewed the VOC limits for Clear Wood Coatings and Varnishes in other California air district marine and pleasure craft rules and found that most limits in other air districts are lower than the current VOC limit of 550 g/L for wood sealers and 490 g/L for wood topcoats. In the larger air districts, many of the wood coatings fall under the default category with a VOC limit of 340 g/L which is higher than the proposed limit of 275 g/L. However, wood sealers and topcoats subject to Rule 1113 – Architectural Coatings can comply with the 275 g/L VOC content limit.

Table 2-23: Wood Coating VOC Limits

Air District	Rule	Category	Limit (g/L-Regulatory)
Bay Area Air District	8 – 43 – Surface Preparation and coating of Marine Vessels	Default	340 (Air Dry)
San Diego County APCD	Rule 67.18 - Marine Coating Operations	Default	340 (Air Dry)
South Coast AQMD	1106 – Marine and Pleasure Craft	Clear Wood Coatings Sealers	550
		Varnishes	490
	1113 – Architectural Coatings	Wood Coatings	275
	Rule 1136 – Wood Coatings	Clear and Pigmented Topcoats and Primers	275

The VOC limits for wood coatings in Rule 1106 are high outliers. Due to technology transfer, staff believe the lower-VOC wood coating technology and formulations can be applied to Rule 1106 wood coatings.



Cost-Effectiveness and Incremental Cost-Effectiveness

To determine the cost effectiveness, staff evaluated the cost of the higher VOC woods sealers and topcoats and compared to the lower VOC counterparts to determine cost-effectiveness of similar wood coating categories. Staff determined the cost by using the submitted manufacturer surveys and reviewing available product data sheets of similar wood coating categories in South Coast AQMD rules. Staff adjusted sales volume according to estimated use at marina boat yards throughout South Coast. The adjustment to sales volume was also determined using the VOC emission baseline for the category in Rule 1106.

The following products represent wood coatings regulated under other South Coast AQMD rules that serve similar applications. The corresponding price per gallon is provided to evaluate the potential cost impacts associated with transitioning to lower VOC formulations. Staff determined that the lower VOC formulations are not expected to result in increase in costs. Many of the similar coatings from Rule 1136 and Rule 1113 were lower in cost than those specially labeled for marine applications. The cost of similar lower VOC wood substrate coatings were approximately $50 to $60 cheaper than their marine counterparts. Staff identified one marine wood varnish or topcoat

coating that was reported under Rule 1113 that had a VOC limit below the proposed 275 g/L limit.; Tthat marine wood coating was also lower in cost than higher-VOC marine and pleasure craft wood coatings. Therefore, it is technically feasible and cost-effective to achieve the proposed limit of 275 g/L. However, since some identified wood coatings for marine and pleasure craft applications do not currently comply with proposed 275 g/L VOC limit, some manufacturers will need to undergo some reformulation efforts. Staff acknowledge that reformulation activities may increase the cost of the final reformulated product. For the purpose of the cost effectiveness analysis and, based on manufacturer feedback, staff assumed a ten percent increase in the price per gallon to the current 1106 products to account for reformulation costs.

Table 2-24: Clear Wood Coatings Products Comparative Analysis

Product	Comparable 1106 Coating Category	Applicable South Coast AQMD Rule	VOC Content (g/L)	Average Price per Gallon
McCloskey Man O_War Marine Spar Varnish Semi-Gloss	Clear Wood Topcoats	1113	212	$150
Bona Mega ONE Extra Matte	Clear Wood Topcoats	1113	120	$90
Cabot Gold	Clear Wood Topcoats	1113	229	$65
DuraSeal Fast Dry Sanding Sealer	Clear Wood Sealers	1113	63	$59
Luster Lac Water White Lacquer Sanding Sealer	Clear Wood Sealers	1136	275	$50
Finisher's Choice Clear Lacquer Sealer	Clear Wood Sealers	1136	203	$133

Staff estimated the cost-effectiveness for the coating categories subject to lower VOC content limits by comparing the sales-weighted average cost and VOC content of reported coatings with estimated values for reformulated compliant coatings. The estimated reformulation cost assumes the ten percent increase in product cost, while compliant coatings were assumed to be reformulated to the VOC content limit of 275 g/L. As shown in the following tables, the estimated cost-effectiveness for reformulating clear and pigmented wood sealers and wood topcoats is approximately $32,001 per ton and $40,936 per ton of VOC reduced, respectively.

Table 2-25: Estimated Cost per Ton of VOC Reduced – Clear and Pigmented Wood Sealers

Coating Category	Wood Sealers
Average Cost of Reported Coatings (per gal)	$168
Average Cost of Reformulated Coating (per gal)	$185
Sales Weighted Average VOC of Current	401 g/L
Estimated Weighted Average VOC of Compliant	275 g/L
Estimated Emissions Reductions (pounds per day)	0.80
Cost per ton	**$32,001**

Table 2-26: Estimated Cost per Ton of VOC Reduced – Clear and Pigmented Wood Topcoats

Coating Category	Wood Topcoats
Average Cost of Reported Coatings (per gal)	$215
Average Cost of Reformulated Coating (per gal)	$237
Sales Weighted Average VOC of Current	399 g/L
Estimated Weighted Average VOC of Compliant	275 g/L
Estimated Emissions Reductions (pounds per day)	3.78
Cost per ton	**$40,936**

Based on the technical assessment, it was determined that transitioning wood sealers from a VOC content limit of 550 g/L and wood topcoats from 490 g/L to 275 g/L is cost-effective and technically feasible. The cost-effectiveness for both categories are well below the cost-effectiveness threshold of $42,675 in 2025 dollars per ton of VOC emissions reduced. An incremental cost-effectiveness was not conducted because staff did not identify more stringent VOC technology.

The South Coast AQMD is in extreme nonattainment and cannot have VOC limits higher than other California air districts. Further, having higher VOC limits in Rule 1106 and Rule 1113 leads to rule circumvention where a homeowner or contractor can purchase high-VOC wood coatings from a marine shop to use on their home. Manufacturers have also asked to align the VOC limits whenever possible. As such, staff recommends aligning the VOC limits in Rule 1106 with Rule 1113 and include the alternative Product Weighted Maximum Incremental Reactivity VOC limits that were recently adopted for Rule 1136. The following table lists the proposed PW-MIR limits for the restructured wood sealers and topcoats category.

Table 2-27: Proposed Alternative PW-MIR VOC Content Limits

Coating Category	g O_3/g Product
Wood Coatings	
Clear Wood Sealers	0.53
Pigmented Wood Sealers	0.60
Clear Wood Topcoats	0.53
Pigmented Wood Topcoats	0.46

Any Other Coatings

Both Tables 1 and 2 in Rule 1106 contain a "catch-all" coating category for any coatings used that meet either the definition of a marine coating or a pleasure craft coating, but do not meet the definition of any of the defined coating categories of either table. This category also serves the purpose of limiting emissions from any commercially available coatings that staff may not be aware of, that meet the definition of marine and/or pleasure craft coating and are subject to Rule 1106, but do not meet the definition of any established marine and/or pleasure craft coating category. The catch-all category for marine coatings in Table 1 has a VOC content limit of 340 g/L while the pleasure craft counterpart in Table 2 has a VOC content limit of 420 g/L.

Staff did not identify any reported coatings that would continue to fall under a catch-all category in the proposed amendments to Rule 1106. Further, staff has not identified any technical justification for having a higher "catch-all" VOC limit for pleasure craft coatings than marine coatings. Therefore, staff is proposing to align the "catch-all" VOC limits for both marine and pleasure craft coatings to 340 g/L.

Summary of Cost-Effectiveness and Incremental Cost-Effectiveness

Many marine and pleasure craft coatings that meet the proposed VOC limits identified by staff generally have a lower cost or are equivalent in cost to existing coatings that meet the current limits. As a result, the cost-effectiveness for antifoulants, primers, and wood sealers and topcoats are cost-effective and below the cost-effectiveness threshold of $42,675 in 2025 dollars. For categories where the VOC limits are being aligned with U.S. EPA's CTG or other air district with lower VOC limits for the same category, a cost-effective analysis was not conducted since those coatings should be commercially available for purchase. However, staff ~~does~~ acknowledges that there will be some reformulation efforts needed to meet the proposed lower VOC limits. As such,~~;~~ staff will provide additional time to address the reformulation efforts. The reformulation process will have some associated cost which can potentially be passed on to the end user in the form of a price increase for the respective coating.~~;~~ ~~staff~~ an estimated~~s~~ ~~the increase to be approximately~~ 10 percent increase of the current coating price per container. On the other hand, because traditional solvents are generally cheaper than pCBtF and t-BAc, reformulating marine, pleasure craft, and marine structure coatings without pCBtF or t-BAc is expected to result in a recurring cost savings for the manufacturers, which will offset, in whole or in part, the upfront reformulation costs.

The overall emission reduction expected for PAR 1106 is approximately 23.9 pounds per day. Staff ~~does not~~ anticipates ~~a~~minimal VOC emissions increase ~~or impact~~ from raising the VOC limit for the pretreatment wash primer category, estimated at less than a pound of VOC per day as~~. No~~ no pretreatment wash primers were reported in the manufacturer submitted survey. The VOC limit was raised to align with other recently adopted South Coast AQMD rules and U.S. EPA CTG for the coating category. Raising the VOC limit also ensures pCBtF and t-BAc free formulations are not introduced into the region. A summary of the cost-effectiveness and expected emissions impact is shown in the following table.

Table 2-28: Cost-Effectiveness Summary and Emissions Impact

Category	Current VOC Limit (g/L-Regulatory)	Proposed VOC Limit (g/L-Regulatory)	Cost-Effectiveness ($ per ton)[2]	Emissions Impact (pounds per day)
Antifoulant Coatings (Marine)	560	400	RACT	0
Aluminum Substrate Antifoulant Coatings (Pleasure Craft)	560	330	$0	(1.47)
Primers (Pleasure Craft)	340/420	340	$0	(17.11)
Extreme High Gloss Coating (Marine)	490	340	$0	(0.80)
Extreme High Gloss Coating (Pleasure Craft)	490	420	$0	0
Clear/Pigmented Wood Topcoats	550	275	$32,001	(0.8)
Clear/Pigmented Wood Topcoats	490	275	$40,936	(3.78)
Any Other Coating Type[1] (Pleasure Craft)	420	340	$0	0
Overall Emission Reduction	23.9 pounds per day			

1. Staff not aware of any pleasure craft coating which fall into category "Any Other Coating Type"
2. Cost effectiveness is based on cost of low-VOC coatings versus high-VOC coatings. For each category evaluated, Staff identified ~~the~~ lower-VOC coatings that are currently available for purchase and ~~were~~also lower in cost; therefore, staff zeroed out the costs. Staff is considering formulations costs for the phase out of pCBtF which is evaluated below.

Reformulation Costs Associated with Transitioning from pCBtF and t-BAc

Reformulating coatings to phase out pCBtF and t-BAc is expected to require manufacturer resources primarily associated with research and development, formulation adjustments, product

testing, validation, and qualification activities. These costs may include both initial reformulation efforts and follow-up adjustments as products are optimized to meet performance specifications and compliance requirements. Similar to other South Coast AQMD VOC rules that phased out pCBtF and t-BAc, reformulation costs are expected to vary depending on coating category, existing formulations, and the extent to which pCBtF and t-BAc are currently used. Survey responses indicated that t-BAc is used in antifoulant coatings and finish primer surfacers applied to pleasure craft, while pCBtF was reported in high-gloss coatings and finish primer surfacers for marine vessel application, as well as finish primer surfacers applied to pleasure craft and antifoulant coatings formulated for non-aluminum substrates applied to pleasure craft.

For the cost assessment and impacts of reformulation, based on manufacturer feedback, staff estimated that reformulation activities would increase final product costs by ten percent. Reformulated coatings were assumed to comply with the new proposed VOC limits for their respective categories; however, staff identified many comparable products with VOC contents at or below the proposed limits. The difficulty and cost of reformulations are anticipated to differ among coating categories.

Furthermore, based on manufacturer feedback, reformulation time and cost may be lower when working towards complying with the alternative PW-MIR VOC limits. The additional formulation flexibility provided by the PW-MIR compliance option, combined with the lower cost of traditional solvents compared to pCBtF, could substantially reduce or offset potential increases in products costs. Proposed category consolidation provisions are also expected to reduce and simplify reformulation efforts for manufacturers and simplify rule implementation for similar coating categories.

Based on prior experience with VOC rule amendments, staff anticipate that compliance costs associated with PAR 1106 will be incurred primarily by coating manufacturers, most of which are located outside the South Coast AQMD jurisdiction, and that these costs will be recovered over time through product sales. Staff estimated the cost impacts for each subject coating category by comparing the average sales cost and VOC content of reported coatings with estimated cost for reformulated compliant coatings which assumes a 10 percent increase in product cost. Despite these reformulation costs, staff identified several lower-VOC products that comply with the proposed lower VOC limits and are comparable in performance to products currently complying with the higher VOC limits. In addition, the costs of the lower VOC comparable products are typically lower than the higher VOC products, therefore, staff expects the overall reformulation cost associated with PAR 1106 to have minimal overall impacts. Furthermore, based on manufacturer feedback, reformulation time and cost may be lower when working towards complying with the alternative PW-MIR VOC limits. The additional formulation flexibility provided by the PW-MIR compliance option, combined with the lower cost of traditional solvents compared to pCBtF, could substantially reduce or offset potential increases in products costs. The lower VOC formulations are not expected to result in significant increases to the end-user costs.

In general, coatings formulated with relatively low concentrations of pCBtF or t-BAc are expected to require less reformulation efforts and lower associated costs than coatings containing larger quantities of these solvents. Staff also expects that reformulation costs may decrease over time as manufacturers gain experience transitioning away from pCBtF and t-BAc and take advantage of

economies of scale. Additionally, transitioning from pCBtF to lower-cost solvents can yield long-term cost savings, particularly in high-solvent formulations. The following Table summarizes the estimated cost impacts from reformulation.

Table 2-29: Estimated Reformulation Cost Increase Per Gallon by Category

Category	pCBtF or t-BAc Percentage Reported in Survey	Percentage of Marine Coatings	pCBtF or t-BAc Reformulation Needed	Estimated Reformulation Cost Increase per Gallon ($/gal)
Antifoulant Coatings (Marine)	N/A	Not Reported	YES	N/A*
Aluminum substrate Antifoulant Coatings (Pleasure Craft)	~5.8-6.5%	~12%	YES	$40
Primers (Pleasure Craft)	~3-22%	~5%	YES	$13
High Gloss Coating (Marine)	~11%	~4%	YES	$13
High Gloss Coating (Pleasure Craft)	0%	~1%	NO	$0
Clear/Pigmented Wood Sealers	N/A	N/A	NO	$17
Clear/Pigmented Wood Topcoats	0%	<1%	YES	$22
Average Overall Estimated Reformulation Cost Increase per Gallon				**$17.5**

Additionally, PAR 1106 includes sell-through and use-through allowances for products that contain pCBtF and/or t-BAc that were manufactured prior to the prohibition effective date. The sell-through and use-through provisions are expected to minimize stranded inventory concerns and allow manufacturers, distributors, and end users sufficient time to transition to coatings that do not contain pCBtF and/or t-BAc. This will also help minimize cost impacts to the end-user.

Marine and Pleasure Craft Coating pCBtF and t-BAc Prohibition and Phase Out Timeline

The use of pCBtF in marine and pleasure craft coatings is common.~~;~~ H~~h~~owever, its use is to a considerably lesser extent compared to other industries and coatings regulated under separate but

similar South Coast AQMD rules. t-BAc is not exempted under South Coast AQMD Rule 102 nor is it exempted in Rule 1106. The U.S. EPA does exempt t-BAc, and the VOC content limits in Rule 1106 are largely aligned with those in the U.S. EPA Marine Coatings CTG. Therefore, the use of t-BAc in marine and pleasure craft coatings is also relatively common.

During staff meetings with marine and pleasure craft coating industry stakeholders, manufacturers indicated they rely on pCBtF to a certain extent to meet certain U.S. EPA Marine Coatings CTG and Rule 1106 VOC limits and there is currently no suitable drop-in replacement solvent. Therefore, staff is proposing a phase-out approach for the usage of pCBtF and t-BAc in marine and pleasure craft coatings that includes sell-through and use-through periods for marine and pleasure craft coatings to provide sufficient time for coating manufacturers to develop suitable replacement products that will meet the lower future limits without the use of pCBtF and t-BAc. The prohibition timeline will also prevent stranded assets associated with existing product inventory already in the supply chain.

Based on coating manufacturer survey data received and evaluation of commercially available coatings, as well as similar coating categories in other South Coast AQMD rules, staff has proposed varying prohibition timelines for different coating categories. The varying timelines are intended to accommodate category-specific needs and reformulation challenges and take into account varying extents of reliance on pCBtF and t-BAc.

Staff is proposing a separate, extended pCBtF and t-BAc prohibition timeline for antifoulant coatings to address the reformulation time needed to phase out the use of pCBtF and t-BAc, and to accommodate for any additional time needed to obtain external regulatory approval for reformulated products. Antifoulant coatings contain biocides, which require EPA certification, a process that can add an additional 12 – 24 months. Due to that extra certification process, staff is proposing a longer phase out schedule than for other marine or pleasure craft coatings.

Staff is also proposing a separate, extended pCBtF and t-BAc prohibition timeline for wood coatings and colorants. Though the reported wood coatings do not contain pCBtF or t-BAc, the reported coatings were formulated to comply with higher VOC content limits compared to similar coating categories in other South Coast AQMD rules. Based on past rule developments taken to prohibit and phase out the use of pCBtF and t-BAc, staff acknowledges that current commercially available wood coatings formulated to comply with VOC limits of 275 g/L or lower rely on pCBtF to do so. After discussions with coating manufacturers, staff determined the proposed prohibition timeline to be sufficient in allowing enough time for these coatings to be reformulated to meet the VOC content limit of 275 g/L without the use of pCBtF. The proposed timeline is also consistent with the pCBtF and t-BAc prohibition timelines for similar coatings in other South Coast AQMD rules.

Staff is also proposing a separate, expedited pCBtF and t-BAc prohibition timeline for all primers, for both marine and pleasure craft application. Because reported primer surfacers either do not contain pCBtF or t-BAc or do not appear to be heavily reliant on pCBtF to comply with the current applicable VOC content limit, staff believes these coatings can more quickly transition away from pCBtF and t-BAc. After discussions with coating manufacturers, staff determined the proposed prohibition timeline to be sufficient in allowing enough time for these coatings to be reformulated.

Reformulating coatings to phase out toxic exempt solvents and comply with the proposed VOC limits is expected to require manufacturer resources primarily associated with research and development, formulation adjustments, product testing, validation, and qualification activities. These costs may include both initial reformulation efforts and follow-up adjustments as products are optimized to meet performance specifications and compliance requirements. Similar to other South Coast AQMD VOC rules that phased out pCBtF and t-BAc, reformulation costs are expected to vary depending on coating category, existing formulations, and the extent to which pCBtF and t-BAc are currently used. Survey responses indicated that t-BAc is used in antifoulant coatings and finish primer surfacers applied to pleasure craft, while pCBtF was reported in high-gloss coatings and finish primer surfacers for marine vessel application, as well as finish primer surfacers applied to pleasure craft and antifoulant coatings formulated for non-aluminum substrates applied to pleasure craft.

For the cost-effectiveness analysis, staff estimated that reformulation activities would increase final product costs by ten percent. For emissions calculations, reformulated coatings were assumed to comply with the new proposed VOC limits; however, staff identified comparable products with VOC contents below the proposed limits.

The cost of reformulation is dependent on the coating category and will differ based on availability of comparable products with low VOC content. In general, coatings that are heavily reliant on pCBtF or t-BAc for compliance will require greater reformulation efforts and typically need a longer timeline to transition. Coatings that are formulated with low concentrations of pCBtF and t-BAc generally require less time to reformulate which helps minimize overall cost.

Proposed category consolidation provisions are also expected to reduce overall compliance burden. PAR 1106 consolidates several existing coating categories into broader categories while providing sell-through and use-through allowances for products manufactured to comply with the original category limits. These consolidations are intended to simplify rule implementation, reduce the number of unique formulations manufacturers must maintain, and provide manufacturers with additional formulation flexibility while continuing to achieve VOC emission reductions. The sell-through and use-through provisions are also expected to minimize stranded inventory concerns and allow manufacturers, distributors, and end users sufficient time to transition.

The sell-through and use-through end dates apply to any marine and pleasure craft coating that is manufactured prior to the proposed prohibition effective date(s) in the following table.

Table 2-30: Summary of pCBtF and t-BAc Prohibition Timeline

Category	Prohibition Effective Date	Sell-Through End Date	Use-Through End Date
Antifoulant Coatings	January 1, 2031	January 1, 2032	January 1, 2033
Colorants and Wood Coatings	January 1, 2030	January 1, 2031	January 1, 2032
Primers	June 1, 2027	June 1, 2028	June 1, 2029
All Other Coating Categories	January 1, 2028	January 1, 2029	January 1, 2030

CHAPTER 3: SUMMARY OF PROPOSALS

INTRODUCTION
PROPOSED AMENDED RULE STRUCTURE
PROPOSED AMENDED RULE 1106

Introduction

The main objective of the proposed amendments to Rule 1106 is to phase out the use of pCBtF and t-BAc in marine and pleasure craft coatings, as directed by the South Coast AQMD's Stationary Source Committee, due to toxicity concerns.

In addition to the prohibition of pCBtF and t-BAc, staff is also proposing to revise the pleasure craft coating title to include marine structures. This revision is intended to clarify rule applicability and maintain alignment with the U.S. EPA CTG with regard to marine coatings, which is not applicable to docks and offshore oil and gas drilling platforms.

Staff is proposing the following amendments to Rule 1106. The proposed amendments primarily pertain to the prohibition of pCBtF and t-BAc use in the regulated products, revised coating categories and associated VOC content limits, introduction of alternative reactivity-based limits, and lowering of volumetric usage limits for touch up repair. Other amendments are for rule clarification or streamlining. The proposed revised rule structure and key provisions are discussed in the following sections.

Proposed Amended Rule Structure

(a) Purpose
(b) Applicability
(c) Definitions
(d) Requirements
(e) Alternative Compliance Options
(f) Prohibition of Possession, Specification and Sale
(g) Administrative and Recordkeeping Requirements
(h) Test Methods
(i) Rule 442 Applicability
(j) Exemptions

Proposed Amended Rule 1106

Purpose [Subdivision (a)]

The purpose of this rule is to reduce emissions of VOCs and toxic emissions from marine coatings, pleasure craft coatings, and marine structure coatings.

Staff added the reduction of toxic emissions to the purpose subdivision of Rule 1106 to be consistent with the primary purpose of the rule amendment. This addition to the purpose aligns with other recently adopted South Coast AQMD VOC rules that regulate emissions from coatings and are focused on prohibiting the use of pCBtF and t-BAc. No significant revisions were made to this subdivision.

Applicability [Subdivision (b)]

PAR 1106 applies to any person that supplies, sells, offers for sale, markets, manufactures, blends, packages, repackages, possesses, or distributes any marine, pleasure craft, and marine structure coating, or colorant, and any associated solvent for use within the South Coast AQMD, as well as any person who uses, applies, or solicits the use or application of any marine coating, pleasure

craft coating, or marine structure coating, and any associated solvent within the South Coast AQMD.

Staff capitalized defined terms as proper nouns to indicate that definitions for the associated terms can be found in subdivision (c). Revisions were made to the definitions in subdivision (c) and reflected in subdivision (b) to help clarify the interpretation of Marine Coating and what the term "exposure" signifies when applying to a vessel or structure due to potential overlap with other coatings rule such as coatings used in architectural applications or on metal surfaces. Three new definitions were added and modifications of two existing definitions in subdivision (c) are needed to help clarify and align with the original intent of the rule applicability. In subdivision (c), the definitions~~,~~ of Vessel, Marine Vessel, Marine Structure, Marine Structure Coatings, and Appurtenance were added, and the definitions of Pleasure Craft, and Marine Coatings were modified to align with the five newly added definitions. The change helps clarify when a coating becomes subject to Rule 1106, Rule 1113, or Rule 1107, and helps prevent any rule circumvention. The proposed changes clarify that when a coating is applied to vessels and their appurtenances, docks, navigational aids, buoys, or offshore platforms, it becomes subject to the limits and prohibitions of Rule 1106. Though bridges, elevated piers, coastal homes, and permanently docked ships are near or adjacent to the marine or freshwater environments, coatings used on these structures would not be subject to Rule 1106 and would be considered architectural coatings subject to Rule 1113 since they are stationary structures; this also better aligns with other air districts that do not include structures such as piers in their marine coating rules.

Definitions [Subdivision (c)]

To provide clarity, definitions are used in the proposed amended rule as a proper noun to better distinguish defined terms from common terms. Refer to PAR 1106 for a complete list of definitions. New definitions were added to align with the consolidation of several coating categories and clarify applicability. Consolidated categories are discussed later in subdivision (d).

The following are new and modified definitions for PAR 1106. For all definitions, refer to the preliminary draft of PAR 1106 released with the Staff Report. Accordingly, the following definitions will be added:

APPURTENANCE in paragraph (c)(5), which means:

> *"a fixed, structural, or semi-permanent attachment or accessory that extends beyond the hull or superstructure of a Vessel. Temporary equipment, including but not limited to, fishing nets, trailers, or portable generators, are not Appurtenances."*

CHEMICAL ABSTRACTS SERVICE REGISTRATION NUMBER or CAS RN in paragraph (c)(7), which means:

> *"a unique numerical identifier assigned by the Chemical Abstract Service to a single chemical substance to ensure unambiguous identification."*

CLEAR WOOD SEALER~~S~~ in paragraph (c)(8), which means:

> *"Coatings containing Resins, but not opaque pigments, which seals wood prior to application of the subsequent Coatings."*

CLEAR WOOD TOPCOATS in paragraph (c)(9), which means:

> *"a final Coating which contains Resins, but not opaque pigments, and is specifically formulated to form a transparent or semi-transparent solid protective film."*

COATING in paragraph (c)(10), which means:

> *"a material that is applied to a surface and forms a film in order to beautify, preserve, repair, or protect such a surface."*

COLORANT in paragraph (c)(11), which means:

> *"a solution of dyes or suspension of pigments sold or supplied as a separate component that an owner or operator of a Facility mixes with Marine Coatings or Pleasure Craft or Marine Structure Coatings on site."*

EXECUTIVE OFFICER in paragraph (c)(13), which means:

> *"is as defined in Rule 102 – Definition of Terms."*

EXTREME HIGH GLOSS COATING in paragraph (c)(15), which means:

> *"any Coating that registers a gloss of 95 units or greater on a 60 degree (°) meter according to ASTM Test Method D-523 – Standard Test Method for Specular Gloss (ASTM Test Method D-523)."*

LOW SOLIDS COATING in paragraph (c)(25), which means:

> *"a Coating containing one pound or less of solids per gallon of material, where the solids content is determined pursuant to ASTM D 2369 – Standard Test Method for Volatile Content of Coatings."*

MARINE COATING in paragraph (c)(26), which means:

> *"any Coating applied or intended for application to Marine Vessels, and their Appurtenances, Navigational Aids, or dredges."*

MARINE DECK SEALANT PRIMER in paragraph (c)(27), which means:

> *"any Primer intended to be applied to a substrate, prior to the application of a sealant, to enhance the bonding surface, which is formulated and labeled to be applied to wooden marine decks."*

MARINE STRUCTURE in paragraph (c)(28), which means:

> *"a dock or offshore platform."*

MARINE STRUCTURE COATING in paragraph (c)(29), which means:

"any coating, applied or intended for application to a Marine Structure."

MARINE VESSEL in paragraph (c)(30), which means:

"any Vessel that is not a Pleasure Craft."

MAXIMUM INCREMENTAL REACTIVITY (MIR) in paragraph (c)(31), which means:

"the measure of the photochemical reactivity of a VOC, which estimates the weight of ozone produced from a weight of VOC expressed as gram of ozone per gram of VOC (g O_3/g VOC). MIR for individual VOCs are specified in Title 17, California Code of Regulations, Sections 94700 and 94701."

NAVIGATIONAL AID in paragraph (c)(33), which means:

"any external device, marker, or guidance equipment, such as a buoy or other U.S. Coast Guard waterway marker, that is used to aid in nautical navigation."

NAVIGATIONAL AIDS COATING in paragraph (c)(34), which means:

"any Coating applied to a Navigational Aid that is recoated and returned to the water for navigational use."

PERSON in paragraph (c)(37), which means:

"is as defined in Rule 102."

PIGMENTED WOOD SEALER in paragraph (c)(38), which means:

"an opaque Coating which contains Resins and colored pigments formulated to provide a firm bond, level the wood surface, or seal the wood surface, which is applied prior to a Topcoat."

PIGMENTED WOOD TOPCOAT in paragraph (c)(39), which means:

"a final opaque or semi-transparent Coating which contains Resins and colored pigments and is formulated to hide or beautify the wood surface and form a solid protective film."

PLEASURE CRAFT in paragraph (c)(40), which means:

"are Vessels manufactured or operated primarily for recreational purposes, or are leased, rented, or chartered to a Person or business for recreational purposes. Pleasure Craft are also Vessels operated in amusement theme parks solely for the purpose of an amusement park attraction."

PLEASURE CRAFT COATING in paragraph (c)(41), which means:

> *"any coating, applied or intended for application to Pleasure Crafts and their Appurtenances."*

PRIMER in paragraph (c)(43), which means:

> *"any coating specifically formulated, labeled, and applied for the purpose of providing corrosion resistance, adhesion for subsequent Coatings, a moisture barrier, or promotes a uniform surface necessary for filling in surface imperfections."*

PRODUCT-WEIGHTED MIR (PW-MIR) in paragraph (c)(44), which means:

> *"the sum of all weighted-MIR for all ingredients in a Coating or material. The PW-MIR is the total product reactivity expressed to hundredths of a gram of ozone formed per gram of product (excluding container and packaging)."*

RESIN in paragraph (c)(46), which means:

> *"a non-volatile polymeric organic material which forms the surface film of a Coating."*

SEALANT FOR WIRE-SPRAYED ALUMINUM in paragraph (c)(47), which means:

> *"a Coating formulated, labeled, and applied to seal pores, voids, and cracks in Wire-Sprayed Aluminum Coatings."*

SOUTH COAST AQMD TEST METHOD in paragraph (c)(50), which means:

> *"a test method included in the manual "Laboratory Methods of Analysis for Enforcement Samples", which can be found on the South Coast AQMD website and are referenced in subdivision (h)."*

TEAK PRIMER in paragraph (c)(53) was moved to subparagraph (d)(6)(E), which means:

> *"a Coating applied to teak wood or previously oiled teak wood decks in order to improve the adhesion of a seam sealer."*

THERMOPLASTIC FOUL DETERRENT COATING in paragraph (c)(54), which means:

> *"a Coating formulated with a Thermoplastic Resin, applied to the underwater portion of Vessels to prevent or reduce the attachment of biological organisms without the use of chemical substances such as pesticides or biocides."*

THERMOPLASTIC RESIN in paragraph (c)(~~54~~55), which means:

> *"a polymer that cures through solvent evaporation and not chemical reaction."*

~~THERMOPLASTIC FOUL DETERRENT COATING in paragraph (c)(55), which means:~~

~~*"a Coating formulated with a Thermoplastic Resin, applied to the underwater portion of Vessels to prevent or reduce the attachment of biological organisms without the use of chemical substances such as pesticides or biocides."*~~

TRANSFER EFFICIENCY in paragraph (c)(57), which means:

"the ratio of the weight or volume of Coating solids that adheres to the object to the total weight or volume, respectively, of Coating solids used in the application process, expressed as a percentage."

VESSEL in paragraph (c)(~~59~~60), which means:

"any watercraft exposed to a marine or freshwater environment, including but not limited to, ships, boats, submersibles, or submarines.

WIRE SPRAYED ALUMINUM COATING in paragraph (c)(~~61~~62), which means:

"a protective molten aluminum coating made by melting and atomizing aluminum wire that is applied to steel substrates to protect from corrosion."

WOOD COATING in paragraph (c)(~~62~~63), which means:

"any Coating applied to wood substrates. For the purpose of this rule Wood Coatings includes Clear Wood Sealers, Clear Wood Topcoats, Pigmented Wood Sealers, and Pigmented Wood Topcoats".

Requirements [Subdivision (d)]

This subdivision contains the provisions for any person that applies any marine coating, pleasure craft coating, or marine structure coating as part of an operation associated with the manufacture, finishing, refinishing, or maintenance of marine vessels or pleasure craft, their appurtenances, and/or marine structures, and for any person who sells, offers for sale, markets, blends, distributes, packages, repackages, or supplies marine, pleasure craft, or marine structure coatings.

Paragraph (d)(1) - PAR 1106 Marine Coatings VOC Content Limits

PAR 1106 establishes VOC content limits for marine coatings by category, as summarized in PAR 1106 Table 1 – Table of Standards for Marine Coatings. The following table provides a summary of the proposed VOC content limits.

Staff is proposing to collapse the antifoulant coating subcategories into a single antifoulant coating category, with a VOC content limit of 400 g/L, the lower limit of the two current subcategories. Doing so would bring the antifoulant coating category and associated VOC content limit in line with the U.S. EPA Control Technique Guidelines (CTG), which does not contain the current substrate-based subcategories, and prevent the rule from being less stringent than the U.S. EPA CTG. The consolidated antifoulant category is also now reclassified as a subcategory of Fouling Deterrent Coatings. Thermoplastic Foul Deterrent Coating is a new subcategory to the Fouling Deterrent Coatings category.

Staff is also proposing to add a primer marine coating category and subcategories into PAR 1106 Table 1. Currently, primers intended for marine application fall under the "Any Other Coating Type" category, while primers intended for pleasure craft application have an established pleasure craft coating category in Table 2 of the rule with differing VOC content limits than the "Any Other Coating Type" category in Table 1. Therefore, the addition of a primer marine coating category and subcategories would reduce confusion regarding applicable VOC content limits for primers.

Pretreatment Wash Primers would become a primer subcategory in Table 1 and the VOC content limit will be increased to 780 g/L similar to the VOC limit for pleasure craft in Table 2 of the rule. Pretreatment Wash Primers are low-solids coatings that are heavily reliant on exempt compounds to comply with the existing VOC limit of 420 g/L. Additionally, an alternative PW-MIR limit of 1.80 is provided in Table 4 to provide formulation flexibility. The volume used annually for the category is low and cannot be disclosed due to confidentiality related to the limited number of manufacturers reporting in the survey.

The Topcoat subcategories will be consolidated into a single category in Table 1 for Marine Coating applications while maintaining the lower VOC limit of 340 g/L. The consolidated category will be named "High-Gloss Coating". This change is to align with U.S. EPA's CTG which does not include a category for "Extreme High-Gloss Coating." Similarly, for pleasure craft coatings in Table 2, the Topcoat subcategories will also be consolidated into a single category while retaining the lower limit of 420 g/L. The future effective date of the limit will be January 1, 2029, providing time for coating manufacturers to reformulate. The proposed date is based on industry feedback that a three-year period is needed for product reformulation. The 340 g/L effective date can be found in Table 5 – Former Coating Categories and Schedule in the proposed rule.

Based on the future effective phase out dates, marine coatings will be prohibited from containing pCBtF or t-BAc.

Table 3-1: Summary of Marine Coating VOC Content Limits

Marine Coating Category	Regulatory VOC Content Limits (g/L Coating)	
	Baked Coatings	Air Dried Coatings
Antenna Coating		340
Fouling Deterrent Coatings:		
Antifoulant Coating		400
Thermoplastic Foul Deterrent Coating		400
Inorganic Zinc Coating		340
Low Activation Interior Coating		420
Mist Coating		610
Navigational Aids Coating		340
Nonskid Coating		340
Organic Zinc Coating		340
Undercoaters:		
Primer	275	340
Pretreatment Wash Primer	420	780
Repair and Maintenance Thermoplastic Coating		340
Sealant for Wire-Sprayed Aluminum Coatings		610
Special Marking Coating		420
Specialty Coatings:		
Heat Resistant Coating	360	420
High Temperature Coating		500
Tack Coating		610
Topcoats:		
High Gloss Coating	275	340
Undersea Weapons Systems Coating	275	340
Any Other Coating Type	275	340

Staff moved the restrictions on the possession, sale, and use of marine coatings that contain VOC in excess of applicable limits, from subdivision (e) to paragraph (d)(1), preceding Table 1, to be consistent with recently amended VOC rule formatting and to streamline the rule language.

Paragraph (d)(2) – PAR 1106 Pleasure Craft and Marine Structure Coating VOC Content Limits

PAR 1106 establishes VOC content limits for pleasure craft and marine structure coatings by category, as summarized in PAR 1106 Table 2 – Table of Standards for Pleasure Craft and Marine Structure Coatings.

Similar to Table 1 for Marine Coatings, staff is proposing to collapse the antifoulant coating subcategories into a single antifoulant coating category, with a VOC content limit of 330 g/L, the lower limit of the two current subcategories. The consolidated antifoulant category is also now reclassified as a subcategory of Fouling Deterrent Coatings. Thermoplastic Foul Deterrent Coating is a new subcategory to the Fouling Deterrent Coatings category to reflect the newest type of antifoulant coating coming into the market.

Similar to Table 1, staff is also proposing to convert the pleasure craft and marine structure coating Primer category into a subcategory of a new Undercoaters category. Pretreatment wash primers would also become a Primer subcategory and provide an alternative PW-MIR limit of 1.80 which can be found in Table 4 of the rule; the alternative limit will provide formulation flexibility to manufacturers. The volume used annually for the category is low and not disclosed due to confidentiality related to the limited number of manufacturers reporting in the survey. Additionally, Marine Deck Primers and Teak Primers are now classified as part of the updated Wood Coatings category in Table 2 of the rule. Wood Coatings are now classified as either clear or pigmented and as an undercoat (sealer) or topcoat. Marine Deck Primers and Teak Primers are two types of coatings traditionally used as an undercoat or sealer on wood substrates, so if it pigmented, it would fall under the subcategory of Pigmented Wood Sealers. Similarly, existing Sealers and Varnishes would be consolidated with the new clear or pigmented Sealers and Topcoats subcategories. The categorization depends on if the coatings are pigmented or non-pigmented, and Coatings will be categorized as Sealers if they are specified to be applied to bare wood, requiring a subsequent coat, or as a Topcoat if they are specified to be the final coating on a wood substrate. This proposed change aligns with the wood coating categories found in Rule 1136 – Wood Coating Operations.

Table 3-2~~3 2~~: Summary of Pleasure Craft and Marine Structure Coating VOC Content Limits

Pleasure Craft and Marine Structure Coating Category	Regulatory VOC Content Limits (g/L Coating)	
	Current Limit	Limit Effective 1/1/2029
Fouling Deterrent Coatings:		
Antifoulant Coating	330	
Thermoplastic Foul Deterrent Coating	400	
Wood Coatings:		
Clear Wood Sealer	550	275
Pigmented Wood Sealer	550	275
Clear Wood Topcoat	490	275
Pigmented Wood Topcoat	490	275
Undercoaters:		
Primer	340	
Pretreatment Wash Primer	780	
Topcoats:		
High Gloss Coating	420	
Any Other Coating Type	420	340

Staff moved the restrictions on the possession, sale, and use of pleasure craft and marine structure coatings that contain VOC in excess of applicable limits, from subdivision (e) to paragraph (d)(2), preceding Table 2, to be consistent with recently amended VOC rule formatting and to streamline the rule language.

Paragraph (d)(3) – PAR 1106 Low-Solids Coatings VOC Content Limit

Staff moved the restrictions on the possession, sale, and use of low-solids marine and pleasure craft coatings that contain VOC in excess of applicable limits, from subdivision (e) to paragraph (d)(3), preceding Table 3, to be consistent with recently amended VOC rule formatting and to streamline the rule language.

Paragraph (d)(4) – Alternative PW-MIR VOC Content Limits

To help facilitate the transition away from toxic solvents and provide formulation flexibility for challenging categories, an alternative reactivity-based PW-MIR limit is being provided to manufacturers of marine, ~~and~~ pleasure craft, and marine structure coatings. The alternative PW-MIR limits in Table 4 of the rule become effective upon rule adoption and manufacturers may elect to comply with the PW-MIR limits rather than the VOC content limits in Table 1 or Table 2 of the rule. The alternative PW-MIR limits provided in Table 4 of the rule are consistent with the alternative PW-MIR limits for similar categories in other South Coast AQMD rules.

Table 3-3: Alternative PW-MIR VOC Content Limits

Coating Category	Current Limit
Pretreatment Wash Primers	1.80
Wood Coatings:	
Clear Wood Sealer	0.53
Pigmented Wood Sealer	0.60
Clear Wood Topcoat	0.53
Pigmented Wood Topcoat	0.46

Paragraph (d)(5) – Sell-Through and Use-Through Provisions for Future Effective VOC Limit Reductions

This provision allows coatings that are subject to a future effective VOC content limit lower than the current applicable limit to continue to be sold and used for respective periods of 12 and 24 months after the applicable future effective date, as long as they were manufactured prior to the applicable future effective date.

Paragraph (d)(6) – Subsumed Coating Categories

This provision specifies marine, ~~and~~ pleasure craft, and marine structure coating categories that were consolidated into new categories, and that they may continue to be possessed, stored at a worksite, applied or solicited for use in the South Coast AQMD if it has a VOC content of less than or equal to the applicable Current Regulatory VOC Content Limit (g/L-Coating) in Table 3-4 below.

Paragraph (d)(7) – Sell through and Use Through Provisions for Subsumed Coating Categories

This provision allows coatings that were consolidated into new categories, and which are now subject to a lower VOC content limit in Table 1 or Table 2, to be sold for up to 12 months and used up to 24 months after the applicable effective date. The coatings can be sold at the higher original VOC limit prior to consolidation and cannot be higher than the original VOC limit. This provision contains an added table for additional clarity, which lists each coating being proposed to be consolidated, its former applicable VOC content limit and the period during which that VOC content limit will remain effective, the proposed new consolidated coating category, sell-through and use-through periods, and the date on which the proposed VOC content limits for the consolidated coating category would become effective.

Table 3-4: Former Coating Categories and Schedule

Former Coating Category	Consolidated Coating Category	Former VOC Limit Effective Until January 1, 2029 (g/L-Coating)[1]	Sell-Through End Date[2]	Use-Through End Date[2]	Consolidated Category VOC Limit Effective on and after January 1, 2029 (g/L-Coating)[2]
Marine Coatings					
Antifoulant Coatings for Aluminum Substrates	Antifoulant Coatings	560	January 1, 2030	January 1, 2031	400
Extreme High Gloss Coating	High Gloss Coating	420			340
Pleasure Craft and Marine Structure Coatings					
Antifoulant Coatings for Aluminum Substrates	Antifoulant Coatings	560	January 1, 2030	January 1, 2031	330
Extreme High Gloss Coating	High Gloss Coating	490			420
Finish Primer/ Surfacer	Primers	420			340
Marine Deck Sealant Primer	Clear or Pigmented Wood Sealers	760			275
Teak Primer		775			
Sealers		550			
Varnishes	Clear or Pigmented Wood Topcoats	490			275

Paragraph (d)(8) – Most Restrictive VOC Limit

This subdivision specifies that if a marine coating meets the definition of, is recommended for use, or is suitable for use for more than one marine coating category, then the more restrictive VOC content limit in Table 1 shall apply. The subdivision also specifies that if a pleasure craft or marine structure coating meets the definition of, is recommended for use, or is suitable for use for more than one pleasure craft and marine structure coating category, then the more restrictive VOC content limit in Table 2 shall apply.

Paragraph (d)(9) – Application Equipment Transfer Efficiency

Staff reformatted the coating application transfer equipment requirements to be consistent with recently amended VOC rule formatting and streamline the rule language.

Alternative Compliance Options [Subdivision (e)]

This subdivision contains the provisions for any person that chooses to comply with the provisions of paragraphs (d)(1), (d)(2), (d)(3), and/or (d)(6) by using an approved alternative emission control plan.

This subdivision also outlines and specifies the requirements for any supplier, seller, or offeror of marine, pleasure craft, and/or marine structure coatings to any facility using an approved alternative emission control plan pursuant to requirements in Rule 108 – Alternative Emissions Control Plan.

Prohibition of Possession, Specification and Sale [Subdivision (f)]

This subdivision contains the prohibitions that no person shall apply, possess, solicit the use or application of, supply, sell, offer for sale, market, blend, package, repackage or distribute marine coatings, pleasure craft coatings, marine structure coatings, or colorants for use within the South Coast AQMD that contain toxic chemicals or compounds that can be detrimental to human health.

Paragraph (f)(1) – ~~Exempt~~Prohibited Compounds

Paragraph (f)(1) was restructured to streamline the rule and group all provisions that include prohibitions together in the same subdivision.

Original paragraph (d)(7) prohibits the manufacturing of regulated products for use in South Coast AQMD in which cadmium, nickel, lead, or hexavalent chromium is introduced as a pigment or as an agent to impart any property or characteristic of a marine or pleasure craft coating, while paragraph (d)(6) prohibits the use of any marine or pleasure craft coating that contain any Group II exempt compounds other than VMS.

The original paragraphs (d)(6) and (d)(7) of Rule 1106 have been restructured, combined, and respectively relocated to paragraph (f)(1) and (f)(3) of PAR 1106. The amended language includes a prohibition for VMS, but at a higher concentration limit of 0.1 percent to account for potential trace levels of VMS in certain coatings. VMS are found in small, but non-negligible, amounts in some silicone-based coatings. Staff is not aware of any coatings subject to Rule 1106 that are currently formulated with VMS; therefore, the prohibition will go into effect upon rule adoption.

-The prohibition of the manufacturing, supplying, selling, marketing, blending, distribution, packaging, and repackaging of coatings and colorants in which cadmium, nickel, lead, or

hexavalent chromium is introduced as a pigment or as an agent to impart any property or characteristic of a marine coating, pleasure craft and marine structure coating, or colorant intended for use within South Coast AQMD was moved to its own paragraph.

In addition, PAR 1106 prohibits the use of marine and pleasure craft coatings that contain pCBtF or t-BAc, with an upper concentration limit of 0.01 weight percent effective on the prohibition dates listed in Table 3-5 below for the respective categories.

Paragraph (f)(2) – Sell-Through and Use-Through Provision

Paragraph (f)(2) clarifies the periods in which marine coatings, pleasure craft coatings, marine structure coatings, and colorants that contain pCBtF or t-BAc, and that were manufactured prior to the applicable prohibition effective date listed in Table 3-5, can continue to be sold and used. The sell-through and use-through periods are intended to prevent stranded assets of coatings that are already in the supply chain on the prohibition effective date, and allow time to transition and reformulate away from pCBtF and t-BAc.

Manufacturers can continue to sell and use marine coatings, pleasure craft coatings, marine structure coatings, and colorants containing pCBtF and t-BAc manufactured prior to the applicable prohibition effective date within the South Coast AQMD until the applicable sell-through and use through end date listed.

The following table provides a summary of the proposed prohibition effective date and sell-though and use-through dates.

Table 3-5: pCBtF and t-BAc Prohibition Timelines

Category	Prohibition Effective Date	Sell-Through End Date	Use-Through End Date
Antifoulant Coatings	January 1, 2031	January 1, 2032	January 1, 2033
Colorants and Wood Coatings	January 1, 2030	January 1, 2031	January 1, 2032
Primers	June 1, 2027	June 1, 2028	June 1, 2029
All Other Coating Categories	January 1, 2028	January 1, 2029	January 1, 2030

PAR 1106 includes a longer phase-out period for antifoulant coatings for both marine and pleasure craft application to allow for any additional time that may be needed to obtain any potential new pesticide registration required by the U.S. EPA and California Department of Pesticide Regulation.

Paragraph (f)(3) – Carcinogenic Materials

Paragraph (f)(3) prohibits the manufacturing, supplying, selling, marketing, blending, distribution, packaging, and repackaging of coatings and colorants in which cadmium, nickel, lead, or hexavalent chromium is introduced as a pigment or as an agent to impart any property or characteristic of a marine coating, pleasure craft coating, marine structure coating, or colorant intended for use within South Coast AQMD. These prohibitions were moved to their own standalone paragraph.

Administrative and Recordkeeping Requirements [Subdivision (g)]

Subdivision (g) outlines recordkeeping requirements pursuant to Rule 109 – Recordkeeping for Volatile Organic Compound Emissions for any person who supplies for use or uses marine coatings, pleasure craft coatings, or marine structure coatings within South Coast AQMD.

Staff added basic recordkeeping criteria for rule enforceability purposes. The added criteria ~~is~~are not required in Rule 109 daily recordkeeping requirements and would therefore close a regulatory gap.

Subdivision (g) also outlines proposed labeling requirements pursuant to Rule 443.1 – Labeling of Materials Containing Organic Solvents added for manufacturers of marine coatings, pleasure craft coatings, and marine structure coatings for use within South Coast AQMD. Staff added additional basic labeling requirements for rule enforceability purposes.

Paragraph (g)(1) – Recordkeeping Requirements

Paragraph (g)(1) specifies the information and documentation to be maintained for each marine coating, pleasure craft coatings, marine structure coating, and colorant used.

Staff added basic recordkeeping criteria for rule enforceability purposes. The added criteria ~~is~~are not required in Rule 109 daily recordkeeping requirements and would therefore close a regulatory gap.

The documents must be made available upon request and maintained for two years with the following information: p~~P~~roduct name and manufacturer, applicable coating category, whether the product is intended for Marine or Pleasure Craft use, or both, or Marine Structure use, and purchase records.

Subparagraphs (g)(2)(A) and (g)(2)(B) – Labeling Requirements

Subparagraphs (g)(2)(A) and (g)(2)(B) specify the information required to be included on product labels for marine coatings, pleasure craft coatings, ~~-~~marine structure coatings, and colorants sold for use within South Coast AQMD. Information required to be included on product labels includes product manufacture date and product VOC content. This ensures that product information necessary for compliance determination is readily available.

Clause (g)(2)(A)(iii) – PW-MIR Labeling Requirements

Clause (g)(2)(A)(iii) requires any manufacturer of a pretreatment wash primer or wood coating who elects to comply with the PW-MIR limit in paragraph (d)(4) in lieu of the applicable mass limit in grams of VOC per liter in Tables 1 and 2, shall display the PW-MIR VOC content on the product label.

Test Methods [Subdivision (h)]

This provision specifies the approved test methods for determining the VOC content of marine coatings,– pleasure craft coatings, and marine structure coatings, their amounts of exempt perfluorocarbon compounds, gloss determination, viscosity determination, and transfer efficiency of alternative application methods, as well as the acid content of pretreatment wash primers.

Minor changes to the subdivision include restructuring and re-numbering for streamlining purposes, and the correction of a referenced test method name.

Staff removed former paragraph (h)(4), which specified how the metal and silicone content of metallic/iridescent coatings should be determined. Because the metallic heat-resistant coating category was removed during the 2023 amendment to Rule 1106, there is no current provision in the rule that relies on metal and/or silicone content.

Staff added a paragraph outlining the required approval for equivalent test methods to those listed in subdivision (h), and a paragraph outlining the required test method for determining the measured gloss of a coating.

Paragraph (h)(6) – Gloss Determination

Paragraph (h)(6) specifies the approved test methods for determining the measured gloss of marine coatings,- pleasure craft coatings, and/or -marine structure coatings. The test method is to clarify how a manufacturer would demonstrate their coating meets the definition of extreme high gloss coating or high gloss coating.

Paragraph (h)(7) – Viscosity Determination

Paragraph (h)(7) specifies the approved test methods for determining the viscosity of marine coatings, -pleasure craft coatings, and/or- marine structure coatings. The test method is to clarify how a manufacturer would demonstrate their coating qualified for the transfer efficiency requirement in paragraph (j)(3).

Paragraph (h)(8) – Solids Determination

Paragraph (h)(8) specifies the approved test method for determining the weight percent solids content of a marine coating, pleasure craft coating, and/or– marine structure coating. The test method is to clarify how a manufacturer would demonstrate their coating meets the definition of a low-solids coating.

Paragraph (h)(10) – Equivalent Test Methods

Paragraph (h)(10) specifies the regulatory bodies whose approval is required in addition to the South Coast AQMD Executive Officer before the use of any equivalent test method to those listed in subdivision (h).

Rule 442 Applicability [Subdivision (i)]

Subdivision (i) specifies that any marine coating, pleasure craft coatings, or marine structure coating that is exempt pursuant to subdivision (j) from all or a portion of the VOC limits of subdivision (d) shall comply with Rule 442 – Usage of Solvents. This subdivision was not changed other than to capitalize defined terms and amend a reference that changed.

Exemptions [Subdivision (j)]

This subdivision provides conditional exemptions to various provisions of PAR 1106. Staff reformatted and streamlined existing exemptions to be consistent with formatting of other recently adopted rules and proposed additional conditional exemptions to various provisions of PAR 1106.

Subparagraph (j)(2)(B) – Spot Repairs

Subparagraph (j)(2)(B) specifies any marine coating, pleasure craft coating, or marine structure coating that is supplied, sold, offered for sale, marketed, manufactured, blended, packaged, or repackaged for use within the South Coast AQMD in half-pint or smaller containers used to cover minor imperfections or mechanical damage incurred prior to initial use is not subject to the provisions of paragraphs (d)(1), (d)(2), (d)(3), and (d)(6). The purpose of this exemption is to replace the current exemption which exempts any volume of touch-up coatings used, as previously defined, and provide a narrower exemption that only applies to small amounts of marine coatings, pleasure craft coatings, and marine structure coatings used for small surface areas of coating application.

Subparagraph (j)(2)(C) – Research and Development Exemption

Subparagraph (j)(2)(C) specifies that the provisions of paragraphs (d)(1), (d)(2), (d)(3), and (d)(6) do not apply to laboratories that apply materials to test specimens for purposes of research, development, quality control, or testing related to production operations. This exemption was added to address industry concerns related to ongoing research activities.

Subparagraph (j)(4)(B) – Unsaturated Polyester Resin or Fiberglass Coatings

Subparagraph (j)(4)(B) specifies that the provisions of PAR 1106 do not apply to unsaturated polyester resin or fiberglass coatings. These coatings are subject to Rule 1162 – Polyester Resin Operations. These coatings are currently exempted by the defined terms of marine coating and pleasure craft coating.

Subparagraph (j)(4)(C) – Coatings Applied to Piers, Bridges, and Permanently Docked Vessels

Subparagraph (j)(4)(C) specifies that the provisions of PAR 1106 do not apply to coatings applied to piers and bridges. These coatings are subject to Rule 1113 – Architectural Coatings. Staff

removed language including coatings applied to piers and bridges from the definition of marine coating for clarity and consistency with the U.S. EPA CTG and past South Coast AQMD compliance advisories issued by staff.

Subparagraph (j)(4)(C) also specifies that the provisions of PAR 1106 do not apply to coatings applied to the above-waterline portions of permanently docked vessels that are serving as a stationary business. These coatings are subject to Rule 1113 – Architectural Coatings. To clarify, this exemption shall not apply to any fouling deterrent coatings, as defined, or any additional associated coatings necessary to apply a fouling deterrent coating. Staff added this exemption for clarity and consistency with other California air district rules.

Paragraph (j)(5) – Prohibition of Possession and Repackaging Exemption

Paragraph (j)(5) clarifies that the prohibitions of possessing and repackaging marine coatings, pleasure craft coatings, and marine structure coatings in paragraphs (d)(1), (d)(2), (d)(3), and (d)(6) do not apply to coatings that are shipped into the South Coast AQMD solely for temporary storage, reformulation or repackaging for sale and use outside the District, and are clearly labeled for use outside South Coast AQMD jurisdiction. This clarification addresses concerns regarding the treatment of in-transit materials.

CHAPTER 4: IMPACT ASSESSMENT

EMISSIONS IMPACT
COST-EFFECTIVENESS AND INCREMENTAL COST-EFFECTIVENESS
SOCIOECONOMIC IMPACT ASSESSMENT
CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)
COMPARATIVE ANALYSIS

Emission Impacts

To estimate the VOC emissions inventory for PAR 1106, staff relied on the manufacturer submitted survey and reviewed the Standard Industrial Classification (SIC) codes and Emissions Inventory Categories (EIC) codes related to marine and pleasure craft coating operations within South Coast AQMD and included in the emission inventory for facilities within South Coast AQMD. Three SIC facility types were evaluated: boat building and repairing facilities, marina boatyard facilities, and boat dealership facilities, while the EIC codes used are associated with emissions from marine coatings and related process solvents. The facilities evaluated are primarily engaged in building and repairing boats, operating marinas, performing incidental repairs, and transportation. Staff then ran a query of Annual Emissions Reporting (AER) SIP inventory for compliance year 2025 using the SIC and EIC codes. A comparison of the emissions reported from the survey and SIP inventory indicates that the volumes of coatings reported in the survey only accounted for approximately 33 percent of the total SIP baseline of 0.142 tons per day. ~~Based on the evaluation, PAR 1106 area sources account for approximately 0.142 tons per day~~. To adjust for the potentially underreported coating volumes, staff adjusted the manufacturer survey emissions by a factor of three to help obtain a more accurate emissions reductions estimate. The following table shows the estimated emissions for each marine coating category and percentage of Total VOC emissions.

Table 4-1: Coating Category Percentage of Total Emissions and Adjusted Estimated VOC Annual Emissions

Category	Coating Category Percentage of Total VOC Emissions	Adjusted Estimated VOC Annual Emissions (lbs)
Aluminum	5	~1,800
Non-Aluminum	55	~18,000
Finish Primer/Surfacer	20	~8,000
High-Build Primer/Surfacer	6	~1,900
High-Gloss Topcoat	3	~1,000
Clear Wood Varnish	4	~1,200
Other Coating Categories	5	~1,600

Control Technology

Compliance with PAR 1106 is expected to be met through manufacturers reformulating regulated products by substituting certain chemicals with other chemicals that contain less VOCs and less or no toxic compounds. Coating manufacturers will have flexibility to use any compliant

alternative reformulation to meet the VOC content limits in PAR 1106. Some end-users may comply with the rule using alternative options such as control devices (e.g., emission collection systems or thermal oxidizer). The latter options may be cost prohibitive for most facilities, so it is anticipated that most will comply with existing and proposed new VOC limits with existing products or commercially available replacement products.

Emission Reductions

Staff is proposing updated VOC content limits for two existing marine coating categories, one proposed new marine coating category, eight existing pleasure craft coatings categories, and one proposed new pleasure craft coating category. This is based on the technology assessment, which includes staff discussions with stakeholders and analyzing the South Coast AQMD marine and pleasure craft coating manufacturer survey data as well as product data sheets. Staff is proposing an effective date of January 1, 2029, for all updated VOC content limits to provide the necessary time to reformulate these coatings to meet the proposed updated VOC content limits. The estimated emission reductions for PAR 1106 are approximately 23.9 pounds per day. Staff does not anticipate a VOC emissions increase or impact from raising the VOC limit for the pretreatment wash primer category. No pretreatment wash primers were reported in the manufacturer submitted survey. The VOC limit was raised to align with other recently adopted South Coast AQMD rules and U.S. EPA CTG for the coating category. The raising of the VOC limit also ensures pCBtF and t-BAc formulations are not introduced into the region. The following table highlights the proposed emission reductions or impacts from the proposed restructuring and changes to the VOC content limits and coating category consolidation.

Table 4-2: Emissions Impact and Reduction

Category	Current VOC Limit (g/L-Regulatory)	Proposed VOC Limit (g/L-Regulatory)	Emission Impact (pounds per day)
Antifoulant Coatings (Marine)	560	400	0
Aluminum Substrate Antifoulant Coatings (Pleasure Craft)	560	330	(1.47)
Primers (Pleasure Craft and Marine Structure)	420/760	340	(17.11)
Extreme High-Gloss Coating (Pleasure Craft and Marine Structure)	490	420	(0.80)
Extreme High-Gloss Coating (Marine)	490	340	0
Clear/Pigmented Wood Sealers	550	275	(0.8)
Clear/Pigmented Wood Topcoats	490	275	(3.78)
Pretreatment Wash Primers (Marine)	420	780	0
Any Other Coating Type (Pleasure Craft and Marine Structure)	420	340	0
Overall Emission Reduction	**23.9 pounds per day**		

Cost-Effectiveness and Incremental Cost-Effectiveness

Cost-Effectiveness

Staff gathered costs from various sources which included meetings with manufacturers, online research, and product surveys. Certain coating categories such as the wood coatings will have their

limits changed to align with the VOC limits and alternative MIR limits for similar wood coating categories in Rule 1136. For categories where costs are not available, staff assumed a ten percent increase in cost to account for reformulation costs. This difference in cost is used in the cost-effectiveness analysis.

Table 4-3: Reformulation Unit Cost of Updated Categories for Marine and Pleasure Craft and Marine Structure Coatings

Category	Current VOC Limit (g/L-Regulatory)	Proposed VOC Limit (g/L-Regulatory)	Cost-Effectiveness ($ per ton)	Reformulation Cost Increase Per Gallon ($/gal)
Antifoulant Coatings (Marine)	560	400	RACT	Currently Available
Antifoulant Coatings (Pleasure Craft)	560	330	$0	$20
Primers (Pleasure Craft)	420/760	340	$0	$7-10
Extreme High-Gloss Coating (Marine)	490	340	$0	$0
Extreme High-Gloss Coating (Pleasure Craft)	490	420	$0	$9-10
Clear/Pigmented Wood Sealers	550	275	$0	$8-11
Clear/Pigmented Wood Topcoats	490	275	$0	$11-14
Any Other Coating Type (Pleasure Craft)	420	340	$0	N/A[1]

1. Staff is not aware of any pleasure craft coating within the "Any Other Coating Type" category

Despite these reformulation costs, staff identified lower -VOC products that comply with the proposed lower VOC limits and are comparable in performance to products currently complying with existing VOC limits. In addition, the costs of the lower VOC comparable products are typically lower than the higher VOC products, therefore, staff expects the overall reformulation cost associated with PAR 1106 to have minimal impacts.

Incremental Cost-Effectiveness

An incremental cost effectiveness is not conducted for PAR 1106 because no other feasible VOC control technology was identified. For Rule 1106 coatings operations, the only feasible pathway to lower VOC emissions is through manufacturer reformulation and staff did not identify multiple VOC limits that are feasible. Many of the marine, pleasure craft, and marine structure coatings, due to the size the vessel or surface being coated, are applied by a hand roller and in the open air. Similarly, upstream controls such as thermal oxidizers or carbon adsorbers are not feasible for many marine, pleasure craft, or marine structure coating operations since most –vessels or structures do not fit in a spray booth. Any control technology relying on VOC destruction requires high flow rates and a large fuel supply, which are not technically feasible due to operation or location of application.

Socioeconomic Impact Assessment

Introduction

On March 17, 1989, the South Coast Air Quality Management District (South Coast AQMD) Governing Board adopted a resolution which requires an analysis of the socioeconomic impacts associated with adopting and amending rules and regulations. In addition, Health and Safety Code Sections 40440.8 and 40728.5 require a socioeconomic impact assessment for proposed and amended rules resulting in significant impacts to air quality or emission limitations. Thus, this Socioeconomic Impact Assessment has been prepared in accordance with Health and Safety Code and South Coast AQMD Governing Board requirements. Lastly, Health and Safety Code Section 40920.6 requires an incremental cost-effectiveness analysis for a proposed rule or amendment which imposes Best Available Retrofit Control Technology (BARCT) or "all feasible measures" requirements relating to emissions of ozone, carbon monoxide (CO), sulfur oxides (SOx), nitrogen oxides (NOx), VOC, and their precursors.

PAR 1106 is designed to partially implement the 2022 AQMP control measure CTS-01 – Further Emission Reductions from Coatings, Solvents, Adhesives, and Lubricants by:

- Providing a timeline for the prohibition and phase-out of pCBtF and t-BAc from marine, pleasure craft, and marine structure coatings; and
- Reducing VOC emissions, where feasible.

Legislative Mandates

The legal mandates directly related to the Socioeconomic Impact Assessment of PAR 1106 include South Coast AQMD Governing Board resolutions and various sections of the Health and Safety Code.

South Coast AQMD Governing Board Resolution

On March 17, 1989, the South Coast AQMD Governing Board adopted a resolution that requires an analysis of the economic impacts associated with adopting and amending rules and regulations which consider all of the following elements:

- Affected industries;
- Range of probable costs;

- Cost-effectiveness of control alternatives; and
- Public health benefits.

Health and Safety Code Requirements

The state legislature adopted legislation which reinforces and expands the South Coast AQMD Governing Board resolution requiring socioeconomic impact assessments for rule development projects. Health and Safety Code Section 40440.8 requires a socioeconomic impact assessment for any proposed rule, rule amendment, or rule repeal which "will significantly affect air quality or emissions limitations."

To satisfy the requirements in Health and Safety Code Section 40440.8, the scope of the analysis typically includes the following information:

- Type of affected industries;
- Range of probable costs, including those to industry;
- Availability and cost-effectiveness of alternatives to the rule;
- Emission reduction potential;
- Necessity of adopting, amending, or repealing the rule in order to attain state and federal ambient air quality standards; and
- Impact on employment and the regional economy.

However, as explained in more detail later in this assessment and as summarized in Table 4-6, the estimated annual cost of implementing PAR 1106 is anticipated to be less than one million dollars on an annual basis. When the average annual compliance cost of a project is less than one million dollars, job impacts of a proposed project to be implemented within the South Coast AQMD jurisdiction cannot be forecasted because there is not enough data to produce reliable estimates on a macroeconomic scale. For this reason, a job impact analysis was not conducted for PAR 1106.

Health and Safety Code Section 40728.5 requires the South Coast AQMD Governing Board to: 1) actively consider the socioeconomic impacts of regulations; 2) make a good faith effort to minimize adverse socioeconomic impacts; and 3) include small business impacts. To satisfy the requirements in Health and Safety Code Section 40728.5, the socioeconomic impact assessment should include the following information:

- Type of industries or business affected, including small businesses; and
- Range of probable costs, including costs to industry or business, including small business.

In addition, to satisfy the requirements in Health and Safety Code Section 40920.6, the scope of the analysis should include an incremental cost-effectiveness analysis for a proposed rule or amendment which imposes BARCT or “all feasible measures” requirements relating to emissions of ozone, CO, SOx, NOx, VOC, and their precursors. Because pCBtF and t-BAc are toxics and not criteria pollutants or their precursors, an incremental cost-effectiveness analysis pursuant to Health and Safety Code Section 40920.6 is not required for the proposed phase out pCBtF and t-

BAc, and thus, has not been prepared. Additionally, since more stringent VOC technologies have not been identified, an incremental cost-effectiveness analysis relative to the proposed lowering of the VOC limits in PAR 1106 has not been conducted.

Affected Facilities and Industries

PAR 1106 is applicable to any person who supplies, sells, offers for sale, markets, manufactures, blends, packages, repackages, possesses or distributes any marine, pleasure craft, and/or marine structure coating, and any associated solvent used with a marine, pleasure craft, and/or marine structure coating for use within the South Coast AQMD jurisdiction. PAR 1106 is also applicable to any person who uses, stores at a worksite, or solicits the application of related coatings and solvents within the jurisdiction. Most manufacturers are located outside of California and South Coast AQMD jurisdiction. The supply chains of marine, pleasure craft, and/or marine structure coatings are least affected because they generally have small proportions of related products and are able to transfer compliance costs to end users via price pass through. As such, this section focuses on the types of facilities that would utilize marine, pleasure craft, and/or marine structure coatings, including but not limited to, shipyards, docks, boatyards, marinas, and repair and refinishing facilities. Implementation of PAR 1106 would potentially affect approximately 37 facilities within the South Coast AQMD jurisdiction with 22 facilities in Los Angeles County, 11 facilities in Orange County, two facilities in Riverside County, and two in San Bernardino County. Table 4-4 presents the distribution of the affected facilities across various industrial sectors under the North American Industrial Classification System (NAICS). As summarized in the table, the largest share (27.03%) of those facilities belongs to the Other Transportation Equipment Manufacturing industry (NAICS 3364-3369), followed by 10.81% for the sectors of Repair and Maintenance, Amusement, gambling, and recreation, and State and Local Government (NAICS 811, 713, and 92).

Table 4-4: Distribution of Affected Facilities Across Industries

NAICS	Industry Name	Number of Facilities	Percentage of Facilities
3364-3369	Other transportation equipment manufacturing	10	27.03%
811	Repair and maintenance	4	10.81%
713	Amusement, gambling, and recreation	4	10.81%
92	State and Local Government	4	10.81%
332	Fabricated metal product manufacturing	3	8.11%
42	Wholesale trade	3	8.11%
23	Construction	2	5.41%
487-488	Scenic and sightseeing transportation; Support activities for transportation	1	2.70%
3361-3363	Motor vehicles, bodies and trailers, and parts manufacturing	1	2.70%
512	Motion picture and sound recording industries	1	2.70%
339	Miscellaneous manufacturing	1	2.70%
337	Furniture and related product manufacturing	1	2.70%

NAICS	Industry Name	Number of Facilities	Percentage of Facilities
54	Professional, scientific, and technical services	1	2.70%
NA*	NA*	1	2.70%
Total		**37**	**100%**

*Facilities that could not be identified under a specific NAICS have been labeled NA.

Small Business Analysis

The South Coast AQMD defines a "small business" in Rule 102 for the purpose of fees as one which employs 10 or fewer persons and which earns less than $500,000 in gross annual receipts. The South Coast AQMD also defines "small business" for the purpose of qualifying for access to services from the South Coast AQMD's Small Business Assistance Office as a business with an annual receipt of $5 million or less, or with 100 or fewer employees. In addition to the South Coast AQMD's definition of a small business, the United States (U.S.) Small Business Administration and the federal 1990 Clean Air Act Amendments (1990 CAAA) each have their own definition of a small business.

The 1990 CAAA classifies a business as a "small business stationary source" if it: 1) employs 100 or fewer employees; 2) does not emit more than 10 tons per year of either VOC or NOx; and 3) is a small business as defined by the U.S. Small Business Administration. Based on firm revenue and employee count, the U.S. Small Business Administration definition of a small business varies by six-digit NAICS codes.[2] Many of the facilities affected by PAR 1106 are classified within the sectors of Boat Building (NAICS 336612). According to the small business definition of the U.S. Small Business Administration, the facilities in this sector which have fewer than 1,000 employees will be classified as small businesses.

South Coast AQMD mostly relies on Dun and Bradstreet data to conduct small business analyses for private companies. In cases where the Dun and Bradstreet data are unavailable or unreliable, other external data sources such as Manta, Hoover, LinkedIn, and company website data will be used. The determination of data reliability is based on data quality confidence codes in the Dun and Bradstreet data as well as staff's discretion. Revenue and employee data for publicly owned companies are gathered from Securities and Exchange Commission (SEC) filings. Since subsidiaries under the same parent company are interest-dependent, the revenue and employee data of a facility's parent company will be used for the determination of its small business status.

Employment and revenue data from 2025 Dun and Bradstreet data as well as other external sources are available for 34 of the 37 affected facilities. It is important to note that although the employment and revenue data for some facilities are unknown or missing, the current data relied upon to conduct this small business analysis represents the most thorough and accurate information obtainable as of the date of publication. Table 4-5 presents the number of affected facilities that may qualify as small businesses, based on each of the four small business definitions. Among the 34 facilities with available employment and revenue data, up to 29 facilities may qualify as small

[2] U.S. Small Business Administration, 2023 Small Business Size Standards, https://www.sba.gov/document/support-table-sizestandards, accessed March 7, 2025.

businesses under the definition of South Coast AQMD Small Business Assistance Office. Also, five facilities have reported their annual VOC and/or NOx emissions to the South Coast AQMD in 2025 and only one facility may qualify as a small business based on the 1990 CAAA definition.

Table 4-5: : Number of Small Businesses Under Various Definitions

Small Business Definition	Number of Small Businesses
South Coast AQMD Rule 102	9
South Coast AQMD Small Business Assistance Office	29
U.S. Small Business Administration	26
1990 CAAA	1

Compliance Costs

PAR 1106 would phase out coatings formulated with pCBtF and/or t-BAc in marine, pleasure craft, and marine structure coating operations and lower current VOC limits when applicable. Because most coating manufacturers are located outside of California and the South Coast AQMD jurisdiction, the cost impact of PAR 1106 is mainly through the price change of marine, pleasure craft, and marine structure coatings sold in South Coast AQMD's jurisdiction before and after PAR 1106 is adopted.

The price change of marine, pleasure craft, and marine structure coatings is determined by the difference in costs of the reformulated coatings with lower VOC emissions and no pCBtF and t-BAc after PAR 1106 is adopted and existing comparable coatings currently in use. When reformulation is needed to either phase out pCBtF and/or t-BAc, or lower VOC emissions to meet the proposed lower VOC limits in PAR 1106, manufacturers will be able to pass the reformulation costs to end users in the South Coast AQMD jurisdiction via higher sales prices of the reformulated coatings. Note that the proposed alternative PW-MIR VOC limit in PAR 1106 provides manufacturers with more flexibility that potentially lowers their reformulation costs and could even preclude the need for reformulation. For example, if the manufacturer of an existing marine, pleasure craft, or marine structure coating can demonstrate compliance with the applicable lowered VOC limits in PAR 1106 via the alternative PW-MIR VOC limit, then reformulation will not be necessary and no change in the sales price of the existing marine, pleasure craft, or marine structure coating will be necessary.

On the other hand, because traditional solvents are generally cheaper than pCBtF and t-BAc, reformulating marine, pleasure craft, and marine structure coatings without pCBtF or t-BAc is expected to result in a recurring cost savings for the manufacturers, which ~~may~~ will offset, in whole or in part, the upfront reformulation costs. In addition, many existing coatings for these categories, except for clear/pigmented wood sealers and topcoats, have been identified with relatively low VOC contents that are capable of meeting the proposed VOC emission limits in PAR 1106, but with equivalent or lower sales prices within the South Coast AQMD jurisdiction. Thus, electing to use the existing comparable coatings with equivalent or lower prices may potentially lead to a cost savings.

The cost-effectiveness and cost impacts of implementing PAR 1106 have been evaluated by each coating category and the estimates are based on expected price change of related coatings sold in the South Coast AQMD jurisdiction before and after implementing PAR 1106. In addition, the evaluation of cost impacts is based on the estimated cost-effectiveness and anticipated VOC emissions per year.

For the antifoulant coatings, primers, high gloss coatings, and some other pleasure craft and marine structure coatings that are currently available and rely on the PW-MIR VOC limit to demonstrate compliance with PAR 1106, a cost savings is expected. The cost savings is estimated to ~~which will~~ be equivalent to or ~~even~~ greater than the potential any pass-through costs associated with reformulation, leading to $0 per ton cost-effectiveness and minimal to no compliance costs. The facilities, however, are expected to purchase the least expensive coating for their operations.

For the categories of clear/pigmented wood sealers and topcoats, there are no readily available comparable products in the market that meet the lower VOC limits ~~but also~~ with lower prices. Thus, reformulation of clear/pigmented wood sealers and topcoats to phase out pCBtF and/or t-BAc is expected to be needed for these categories to comply with the lower VOC limits in PAR 1106. The cost-effectiveness associated with reformulation is estimated at $32,001 per ton for clear/pigmented wood sealers and $40,936 per ton for topcoats, respectively.

Table 4-6 presents the annual cost estimates to facilities for products reformulated by manufacturers ~~projects that the amendment would~~to ~~lower~~ reduce the VOC emissions ~~from~~ in clear/pigmented wood sealers and topcoats by 0.146 and 0.690 tons per year in the jurisdiction, respectively. With that, compliance costs related to those two categories are estimated to be $32,001 x 0.146 = $4,672.15 and $40,936 x 0.690 = $28,245.84, respectively.

Table 4-6: Annual Cost ~~of~~to Facilities When Manufacturers Transition~~ing~~ to Lower VOC Limits

Coating Category	Cost-Effectiveness ($/ton)	VOC Emission Reductions (tons per year)	Annual Cost
Clear/Pigmented Wood Sealers	$32,001	0.146	$4,672.15
Clear/Pigmented Wood Topcoats	$40,936	0.690	$28,245.84
All other Categories	$0	3.537	$0
	Total	**4.373**	**$32,917.99**

**Notes*:

1. The ~~annual cost~~ Cost Effectiveness is calculated by dividing the annual cost ~~multiplying the Cost-Effectiveness~~ by the VOC Emission Reductions.
2. The VOC emission reductions of tons per year are calculated by multiplying the emission reductions of 0.8, 3.78, and 19.38 pounds per day, respectively, by 365 then dividing by 2,000.

Macroeconomic Impacts on the Regional Economy

Regional Economic Models, Inc. (REMI) developed the Policy Insight Plus Model (PI+ v3) is a tool that South Coast AQMD typically uses to assess the impacts of rule development projects on the job market, prices, and other macroeconomic variables in the region when the average annual compliance cost is greater than one million current U.S. dollars ($1 MM).[3] However, when the average annual compliance cost of a proposed project is less than $1 MM, the model cannot reliably forecast job impacts and other economic variables of the proposed project implemented within the South Coast AQMD jurisdiction because there is not enough data to produce reliable estimates on a macroeconomic scale.

Since implementation of PAR 1106 is anticipated to have an annual compliance cost that is less than $1 MM, a socioeconomic impact analysis of job impacts using the REMI model has not been conducted.

California Environmental Quality Act (CEQA)

Pursuant to CEQA Guidelines Sections 15002(k) and 15061, the proposed project (PAR 1106) is exempt from CEQA pursuant to CEQA Guidelines Section 15061(b)(3). A Notice of Exemption ~~will be~~has been prepared pursuant to CEQA Guidelines Section 15062, and if the proposed project is approved, the Notice of Exemption will be filed with the county clerks of Los Angeles, Orange,

[3] Regional Economic Modeling Inc. (REMI). Policy Insight® for the South Coast Area (70-sector model). Version 3. 2023.

Riverside, and San Bernardino counties, and with the State Clearinghouse of the Governor's Office of Land Use and Climate Innovation.

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, nonduplication, 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 1106 is needed to phase out two exempt compounds, pCBtF and t-BAc, to address their toxic risk and to achieve VOC emissions reductions as proposed in 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, 40000, 40001, 40440, 40441, 40702, 40725 through 40728.5, 40920.6, and 41508.

Clarity - PAR 1106 is written and displayed so that the meaning can be easily understood by persons directly affected by it.

Consistency - PAR 1106 is in harmony with, and not in conflict with or contradictory to, existing statutes, court decisions, or federal and state regulations.

Nonduplication - PAR 1106 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 Rule 1106, 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 39002, 40000, 40001, 40406, 40702, 40440(a), 40725 through 40728.5, 40920.6, 41508 and federal Clean Air Act Sections 110, 172, and 182(e).

Comparative Analysis

Under Health and Safety Code Section 40727.2, the South Coast AQMD is required to perform a comparative analysis when adopting, amending, or repealing a rule or regulation. The comparative analysis is relative to existing federal requirements and existing or proposed South Coast AQMD rules and air pollution control requirements and guidelines which are applicable to VOC regulations for marine and pleasure craft coating operations. According to subsection (a), the analysis may be in matrix form. See below.

Rule Element	PAR 1106	U.S. EPA Control Techniques Guidelines: Shipbuilding and Ship Repair Operations (Surface Coating)	California Air Districts
Applicability	• Any person who supplies, sells, offers for sale, markets, manufactures, blends, packages, repackages, possesses, or distributes any Marine, Pleasure Craft Coating, Marine Structure coating,~~,~~ or associated solvent for use within the South Coast AQMD, as well as any person who uses, applies, or solicits the use or application of any Marine or Pleasure Craft Coating, Marine Structure, Marine or Pleasure Craft Coating Component, or associated solvent within the South Coast AQMD	• Shipbuilding and ship repair operations • Any building, repair, repainting, converting, or alteration of ships; ship meaning any marine or freshwater vessel used for military or commercial operations, including self-propelled vessels, those propelled by other craft (barges), and navigational aids (buoys) • Includes all military and Coast Guard vessels, commercial cargo and passenger (cruise) ships, ferries, barges, tankers, container ships, patrol and pilot boats, and dredges • Not applicable to pleasure craft and offshore oil and gas drilling platforms; pleasure craft meaning any marine or freshwater vessel used by individuals for non-commercial, non-military, and recreational purposes that is less than 20 meters in length	• Surface preparation and coating of marine vessels, components and structures intended for exposure to a marine environment, including oil drilling platforms and navigational aids (BAAQMD) • Marine coating operations including the coating of marine and freshwater vessels, oil drilling platforms, navigational aids and component parts; and structures intended for exposure to a marine environment (SDCAPCD)
Requirements	• VOC limits for marine and pleasure craft coatings categories: antifoulant coatings, primers, topcoats and other specialty marine~~-~~, pleasure craft, and ~~-~~marine structure coating categories • Sell through and use through for products on shelf prior to effective date of rule • Minimum transfer efficiency requirements	• VOC limits for marine coatings, including general use coating categories, and specialty coating categories such as antifoulant coatings	• Similar marine coating categories and associated VOC content limits as U.S. EPA CTG • BAAQMD and SDCAPCD do not subcategorize antifoulant coatings based on substrate type
Prohibition	• Prohibition of the manufacturing of marine coatings, pleasure craft coatings, marine structure coatings, , and associated solvents containing pCBtF and t-BAc for use within South Coast AQMD, with compliance dates based on coating category • Prohibition of the manufacturing of marine and pleasure craft coatings that contain VOC in excess of applicable VOC content limits, for use within South Coast AQMD • Prohibition of sale and use of marine coatings, pleasure craft coatings, marine structure coatings, marine and pleasure craft coating components, and associated solvents containing	• None	• Prohibition of use of any marine and pleasure craft coatings that such use results in a violation of any provisions of the rule (BAAQMD, SDCAPCD, SJVAPCD)

Rule Element	PAR 1106	U.S. EPA Control Techniques Guidelines: Shipbuilding and Ship Repair Operations (Surface Coating)	California Air Districts
	pCBtF and t-BAc for use within South Coast AQMD, with compliance dates based on coating category • Prohibition of the manufacturing of marine, pleasure craft, and marine structure coatings that contain VOC in excess of applicable VOC content limits, for use within South Coast AQMD		
Recordkeeping	• Daily or monthly usage, pursuant to Rule 109 – Recordkeeping for Volatile Organic Compound Emissions (Rule 109) • Material data	• Monthly volumetric usage records • Material data	• Daily usage, coating component mix ratios, and material data (BAAQMD, SJVAPCD) • Monthly usage, coating component mix ratios, and material data (SDCAPCD)
Administrative	• Container labeling of VOC content~~, coating category, application type,~~ and date of manufacture	• None	• None (BAAQMD, SDCAPCD) • Container labeling or product data sheets to include VOC content, product name, manufacturer name, and density as supplied (SJVAPCD)
Exemptions	• Exemption for marine, ~~-~~pleasure craft, and marine structure coatings containing less than 50 grams per liter of VOC • Marine, pleasure craft, and marine structure coatings supplied or sold in 0.5 ounces or smaller containers used for spot repairs • Aerosol coating products • Marine and pleasure craft coatings with a viscosity of 650 centipoise or greater as applied • Marine coatings used for vessels intended to submerge to at least 500 feet below the surface of the water, limited to 12 gallons per calendar year and compliance with U.S. EPA CTG • Exemption for possession of in-transit marine, pleasure craft, and marine structure coatings not meant for use within South Coast AQMD jurisdiction • Unsaturated polyester resin or fiberglass coatings • Coatings applied to piers, bridges, and above the waterline portions of permanently	• Low-usage exemption • Aerosol coating products • Unsaturated polyester resin coatings	• Pleasure craft coatings purchased in containers of one gallon or less volume; coatings used in volumes less than 20 gallons in any one calendar year; touch-up operations; antifoulant coatings applied to aluminum substrate hulls; military components (BAAQMD) • Non-commercial marine coating operations performed by individuals at personal residence for purpose of coating own pleasure craft(s); coatings used in volumes less than 20 gallons in any one calendar year; antifoulant coatings applied to aluminum substrates (SDCAPCD)

Rule Element	PAR 1106	U.S. EPA Control Techniques Guidelines: Shipbuilding and Ship Repair Operations (Surface Coating)	California Air Districts
	docked Vessels serving as a stationary business or structure		

APPENDIX A: RESPONSES TO COMMENTS

Public Workshop Comments

Staff held a Public Workshop on August 28, 2026, to provide a summary of PAR 1106. The following is a summary of the verbal comments received on PAR 1106 and staff's responses.

Commentor #1 Rita Loof – RadTech International

Rita Loof sought clarification regarding estimated emission reductions and the availability of compliant coatings that can achieve the proposed VOC limits. Mrs. Loof also sought clarification regarding the coating technology type and chemistry, specifically if any coatings that staff observed were energy-curable coatings. Additionally, Rita Loof sought clarification regarding the removal of the energy-curable coatings definition, the proposed VOC content limit for pretreatment wash primers, and alternative emission control plans, including if we are going to be allowing an averaging mechanism. Furthermore, Rita Loof requested that staff clarify in the staff report what methodologies are acceptable to determine VOC content of thin film energy-curable materials and that staff provide any information and/or documentation indicating that the U.S. EPA would disapprove a rule from being included in the Sate Implementation Plan (SIP) if it included sole Executive Officer approval, specifically allowing the Executive Officer to approve a test method without also having approval from CARB and the U.S. EPA.

Staff Response to Commentor #1:

Staff clarified that compliant coatings have been identified and observed to achieve the proposed VOC limits, and that the coatings identified were of multiple chemistry types (e.g. solvent-based and water-based).~~;~~ H~~h~~owever, staff did not observe or identify any energy-curable coatings. Staff further clarified that unused definitions are proposed to be removed, and such is standard practice when amending a rule. Additionally, staff explained that pretreatment wash primers are used in very low volume, are heavily reliant on pCBtF to comply with current VOC content limits, and that very few low-VOC compliance pathways for pretreatment wash primers exist without the use of pCBtF due to the nature of the coating. Staff clarified that the alternative emission control plan option is an existing provision in Rule 1106, that an averaging option is not being considered, and that associated filing and processing fees can be found in Rule 306 – Plan Fees. Staff agreed to include information clarifying which methodologies are acceptable to determine the VOC content of thin film energy-curable materials in the proposed rule staff report, which can be found on page A-8 of Appendix A. Regarding the documentation on the U.S. EPA's concern over sole authority, or "unbounded director's discretion," can be found in the U.S. EPA's Final Limited SIP Disapproval of Rule 1118[1], emphasis added, effective on October 24, 2022, which states the following:

> "We proposed a limited approval because we determined that this rule improves the SIP and is largely consistent with the relevant CAA requirements. We simultaneously proposed a limited disapproval because Rule 1118 Section (j) does not satisfy the requirements of CAA section 110 and part D of the Act. As described in our proposal, documents submitted for inclusion into the SIP **should not include unbounded director's discretion that allows the State to approve alternatives** to the applicable SIP without following the SIP revision process described in CAA section 110. **Rule 1118 Section (j) provides the Executive Officer the authority to approve other American Society for Testing and Materials (ASTM) methods other than those currently included in the rule.** Without further specificity regarding how this authority will be exercised, it could functionally

> allow for a revision of the SIP without complying with the process for SIP revisions required by the CAA. As a result, this undermines the enforceability of the submission, constitutes a SIP deficiency, and conflicts with CAA Section 110. "

Therefore, the language in paragraph (h)(10) that states "Other test methods may be used provided they are determined to be equivalent and approved in writing **by the U.S. EPA, CARB, and the South Coast AQMD Executive Offic**er" must be maintained.

[1]U.S. EPA's Final Limited SIP Disapproval of South Coast AQMD Rule 1118

Comment Letter #1

California Council for Environmental and Economic Balance
369 Pine Street, Suite 720, San Francisco, CA 94104
1201 J Street, Suite 222-223, Sacramento, CA 95814
(415) 512-7890 | cceeb.org

April 14, 2026

Chris Bradley
Planning, Rule Development, and Implementation
South Coast Air Quality Management District 21865 Copley Drive, Diamond Bar, CA 91765

Subject: Comments on Proposed Amended Rule 1106 – Marine and Pleasure Craft Coatings

Dear Mr. Bradley,

The California Council for Environmental and Economic Balance (CCEEB) is a coalition of business, labor and public policy leaders that works together to develop balanced and effective policy solutions. Some CCEEB member organizations operate facilities in the South Coast Air Quality Management District (SCAQMD or "District") where marine and pleasure craft coatings are developed and used and; as such, we are closely following the development of PAR 1106.

CCEEB understands the need to move away from the use of pCBtF/t-Bac. In developing this phaseout, we ask that you consider the following points:

(1) **Reformulation is needed.** CCEEB agrees with District's assessment that reformulating a new system involves many factors and requires significant time and resources. To many CCEEB members, reformulating a new solvent-based marine and pleasure craft coating system without pCBtF or t-BAc is needed because waterborne or acetone-based coatings do not provide the desired protection, show quality and durability. A complete coating system includes multiple components such as primer, basecoat, topcoat, sealer, catalyst, initiator, hardener, accelerator, thinner, reducer, brush additive, colorant, etc. and each component requires individual reformulation work.

Comment 1-1

(2) **Colorant Challenge.** A homogeneous colorant is essential to any colored coating system. While progress has been made to primer, basecoat, topcoat, catalyst, thinner, brush additive, reformulating a new colorant without pCBtF or t-BAc presents a unique challenge, and will require additional R&D work and field verification testing.

(3) **Rule 1107 and PAR 1136 Approaches for pCBtF-containing Colorant**. CCEEB has worked with District closely during recent Rule 1107 and PAR 1136 amendment rulemaking. The Amended Rule 1107, in section (e)(3) and (e)(4), provides additional time (until December 5,

Comment 1-2

2030) to prohibit manufacturing of pCBtF-containing colorant, allowing needed time for reformulation. Similarly, PAR 1136 proposes a 5-year extension in Table 3 to prohibit manufacturing of pCBtF-containing colorants. CCEEB suggests District implement a similar policy in PAR 1106 for colorant used in marine and pleasure craft coating products by providing a 5-year extension in the proposed Table 4.

Table 4: pCBtF and t-BAc Prohibition Timeline

Category	Prohibition Effective Date	Sell-Through End Date	Use-Through End Date
Antifoulant Coatings	January 1, 20XX	January 1, 20XX	January 1, 20XX
All Other Coating Categories	January 1, 2028	January 1, 2029	January 1, 2030
Colorant	[Five *Years after Date of Rule Adoption]*	*[Six Years after Date of Rule Adoption]*	[Seven *Years after Date of Rule Adoption]*

Comment 1-2 (cont.)

(4) **Technology Assessment**. CCEEB appreciates District willingness to consider conducting a technology assessment prior to manufacturing prohibition dates. This will be an important check to ensure the reformulations are complete and successfully field-tested. CCEEB strongly recommends the District adopt technology assessments for all coating rules amendments.

Comment 1-3

CCEEB recognizes the importance of this proposed rule and, along with our members, is committed to work with you to in its development. Please let me know if you would like to meet to discuss our comments in greater detail.

Sincerely,



William J. Quinn
CCEEB Consultant

cc: Sarady Ka
Heather Farr
Michael Krause
Tim Carmichael
Peter Okurowski
Kirstin Kolpitcke
Members, CCEEB SCAP Project

Response to Comment 1-1

Staff acknowledges the challenges associated with reformulating marine, pleasure craft, and marine structure coating products and has provided a prohibition schedule that allows time for reformulation, as well as optional reactivity-based VOC limits to provide additional flexibility.

Response to Comment 1-2

Staff acknowledges the comment regarding reformulation challenges specifically for colorants, and included a separate, extended timeline specifically for colorants in Table 6 – pCBtF and t-BAc Prohibition Timelines to ensure adequate time is given to reformulate colorants and phase out the use of pCBtF and t-BAc in these materials.

Response to Comment 1-3

Staff acknowledges the importance of technology check-in to ensure future effective requirements are feasible and effective. Staff will include a provision in the resolution presented for Governing Board's approval that directs staff to conduct a technology check-in after rule adoption and provide an update to the Stationary Source Committee no later than January 1, 2029. This check-in will focus on the progress of reformulation efforts to transition away from pCBtF.

Comment Letter #2



September 9,2026

Re: Public Comments Marine Coatings (Rule 1106) --OPPOSE

Dear Ms. Farr:

RadTech International is the premier trade association in North America for Ultraviolet/Electron Beam/Light Emitting Diode (UV/EB/LED) technology. We speak on behalf of our over 800 members who are involved in a myriad of industry sectors ranging from printing and packaging to nail polish. UV/EB/LED processes are all electric, eliminating the need for add-on control devices thereby preventing emissions of criteria pollutants (Nitrogen Oxides) and Greenhouse Gases. The materials are not formulated with conventional solvents and therefore the emissions of Volatile Organic Contaminants (VOCs) are negligible. The very low VOC content of these materials has rendered the traditional VOC test method (EPA Method 24) unsuitable as the VOC content is within the error margin of the test (plus or minus 20 grams/liter). We do not take any position regarding the District's proposal to phase out tertiary Butyl Acetate and para-chloro benzo trifluoride (tBAc and pCBtF) as our technology does not rely on those chemicals.

Unfortunately, we cannot support the staff proposal for Rules 1106 as we believe it is detrimental to our industry. Our Association participated in the PAR 1106 public workshop and raised concerns which are reiterated herein.

Deletion of Definition of Energy Curable Materials—Definitions (c)

The District should retain the definition of Energy Curable materials. During the workshop, staff attributed the removal of the definition language to the Environmental Protection Agency (EPA) and its proposed disapproval of ASTMD7767-11—the only viable method to determine Volatile Organic Content (VOC) from think film energy curable materials. I clarified that the EPA had never actually disapproved the method and that the decision to remove it rested squarely with the SCAQMD. The EPA never questioned the definition of energy curable materials itself and limited the issue to the test method. By eliminating the definition altogether, the district is going far beyond what EPA is requiring. Deleting a definition of energy curable materials will be detrimental to the industry. It will bring uncertainty because the rule is silent on including these products as potential compliance options. In contrast, competing technologies enjoy detailed definitions. This approach is inequitable and puts energy curable technology at a competitive disadvantage.

Comment 2-1

Test Method

According to district documents (Rule 1168 Test Method Guidance, Page 4)

"...at this time, there is no method that can be used for enforcement purposes."

The Guidance document also refers to ASTM D7767-11 "as a tool for manufacturers to determine the VOC content of thin film energy curable products" Our industry developed ASTM D7767-11 because both the EPA and the district told us they had no way of measuring the VOC content from our materials as it was too low to measure. Neither the EPA or the district have provided any other alternatives to the test method and thus, eliminating it as an option puts our members at risk of penalties and fines by regulators, including by the district. The EPA has long recognized our materials as pollution prevention (dating back to 1997) and they meet EPA's Lowest Achievable Emission Rate as well as the district's Best Available Control Technology. We would hope that the district joins arms with our industry to gain EPA approval of the method rather than putting up hurdles which will be detrimental to our Southern California businesses and impede voluntary emission reductions above and beyond those mandated by district rules.

Comment 2-2

Public Records Request related to UV/EB/LED

As mentioned during the public workshop, RadTech requested any and all records the district may have that would support staff's contention in prior rulemakings (such as in the Rule 1136 -Wood Coatings rulemaking) that there are UV materials that contain VOC's and toxics. To date, we have not received the Material Safety Data Sheet or any other document that would support staff's allegations. It is improper for staff to make allegations without basis and especially when those contentions will be used to impose regulations on our industry.

Comment 2-3

We look forward to a collaborative rulemaking process and please do not hesitate to reach out if you need any additional information.

Sincerely,

Rita M. Loof

Response to Comment 2-1

Staff acknowledges the concern expressed in the comment regarding the removed definition. However, it is standard practice in agency rule development to only define terms used throughout rule language for purposes of clarity. Furthermore, there are no provisions in PAR 1106 that reference the removed definition mentioned in the comment. Therefore, there is no basis for

including the definition. Having a term defined when there are no requirements or mention of it in the rule could cause more confusion.

Response to Comment 2-2

Staff acknowledges the comment regarding the mentioned test method. However, ASTM International D7767-11 "Standard Test Method to Measure Volatiles from Radiation Curable Acrylate Monomers, Oligomers and Blends and Thin Coatings Made from Them" is not a U.S. EPA approved test method and cannot be used to enforce a SIP approved rule, and therefore will not be added to PAR 1106. In order to avoid confusion and provide clarification regarding the procedure for reporting VOC content for energy curable thin films, the following description is now included on the South Coast AQMD website to provide further clarification:

> Coatings products sold or used within South Coast AQMD's jurisdiction may be required to include VOC content on product labels pursuant to Rule 443.1 ─ Labeling of Materials Containing Organic Solvents. VOC content for labeling purposes may be determined by calculation from formulation data and/or by test results. The approved VOC test methods appropriate for determining product VOC content, whether for labeling or compliance purposes, vary by coating application. Please refer to the specific VOC rule applicable to the coating product to identify the required test methods and VOC calculation procedures. Further information on VOC test methods is available at:
>
> https://www.aqmd.gov/home/rules-compliance/compliance/vocs/calculations
>
> For energy-curable coatings, VOC content may be determined using ASTM D5403 ─ Standard Test Methods for Volatile Content of Radiation Curable Materials, which is an approved method for establishing VOC content for both labeling and compliance purposes. However, thin-film energy-curable coatings (including UV/EB/LED-cured materials applied with very low film thickness) currently do not have an approved compliance test method for determining VOC content under South Coast AQMD rules. When VOC content must be included on product labels pursuant to Rule 443.1, manufacturers may use formulation data or estimate the VOC emissions of the reactive components of the thin film energy curable coatings using ASTM D7767 ─ Standard Test Method to Measure Volatiles from Radiation Curable Acrylate Monomers, Oligomers, and Blends and Thin Coatings Made from Them. ASTM D7767 is not a U.S. EPA approved test method and as such is not an appropriate compliance test method that a third-party laboratory, or the South Coast AQMD Laboratory, could rely on to verify the VOC content of a thin-film energy curable coating. For determining compliance with VOC limits for thin-film energy curable coatings, manufacturers may rely on formulation data and ASTM D7767 to determine product VOC content for labeling purposes.

Response to Comment 2-3

Staff provided Ms. Loof the specific SDS requested on August 28th at 8 am, and is currently working to completely fulfill the very broad public records request for every communication, email, and document on the proposed amendments to Rule 1136 over a five month period. The more broad a public records request is, the longer it takes to fulfill.

ATTACHMENT H

South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 • www.aqmd.gov

SUBJECT: **NOTICE OF EXEMPTION FROM THE CALIFORNIA ENVIRONMENTAL QUALITY ACT**

PROJECT TITLE: **PROPOSED AMENDED RULE 1106 – MARINE AND PLEASURE CRAFT COATINGS**

Pursuant to the California Environmental Quality Act (CEQA) Guidelines, the South Coast Air Quality Management District (South Coast AQMD), as Lead Agency, has prepared a Notice of Exemption pursuant to CEQA Guidelines Section 15062 – Notice of Exemption for the project identified above.

If the proposed project is approved, the Notice of Exemption will be filed for posting with the county clerks of Los Angeles, Orange, Riverside, and San Bernardino Counties. The Notice of Exemption will also be electronically filed with the State Clearinghouse of the Governor's Office of Land Use and Climate Innovation for posting on their CEQAnet Web Portal which may be accessed via the following weblink: https://ceqanet.lci.ca.gov/search/recent. In addition, the Notice of Exemption will be electronically posted on the South Coast AQMD's webpage which can be accessed via the following weblink: http://www.aqmd.gov/nav/about/public-notices/ceqa-notices/notices-of-exemption/noe---year-2026.

NOTICE OF EXEMPTION FROM THE CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

To:	County Clerks for the Counties of Los Angeles, Orange, Riverside, and San Bernardino; and Governor's Office of Land Use and Climate Innovation – State Clearinghouse	**From:**	South Coast Air Quality Management District 21865 Copley Drive Diamond Bar, CA 91765

Project Title: Proposed Amended Rule 1106 – Marine and Pleasure Craft Coatings

Project Location: The proposed project is located within the South Coast Air Quality Management District's (South Coast AQMD) jurisdiction, which includes the four-county South Coast Air Basin (all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino counties), and the Riverside County portion of the Salton Sea Air Basin and the non-Palo Verde, Riverside County portion of the Mojave Desert Air Basin.

Description of Nature, Purpose, and Beneficiaries of Project: Rule 1106 limits Volatile Organic Compound (VOC) emissions from marine and pleasure craft coatings formulated for use in the marine environment. The primary objective of Proposed Amended Rule (PAR) 1106 is to partially implement Control Measure CTS-01: Further Emission Reductions From Coatings, Solvents, Adhesives, and Lubricants, of the 2022 Air Quality Management Plan and to phase out the use of para-Chlorobenzotrifluoride (pCBtF) and tert-Butyl Acetate (t-BAc) in marine coatings, pleasure craft coatings, and marine structure coatings due to toxicity concerns. PAR 1106 proposes to: 1) prohibit the sale and use of coatings which contain pCBtF and/or t-BAc above trace levels within the South Coast AQMD with future effective prohibition dates that vary by coating category; 2) prohibit the sale and use of cyclic, branched, or linear, completely methylated siloxane above trace levels within the South Coast AQMD; 3) prohibit the possession of non-compliant marine coatings, pleasure craft coatings, and marine structure coatings upon rule adoption; 4) include alternative Product Weighted-Maximum Incremental Reactivity (PW-MIR) VOC content limits for pre-treatment wash primers and wood coatings; 5) include recordkeeping and labeling requirements; and 6) update rule structure, add new definitions, remove outdated rule provisions, and make other edits for consistency and clarity. Implementation of PAR 1106 is anticipated to benefit public health and ambient air quality by reducing VOC emissions by 23.9 pounds per day and reducing the risk of exposure to pCBtF and t-BAc among workers, nearby receptors, and the public through the phaseout of these toxic chemicals.

Public Agency Approving Project:	**Agency Carrying Out Project:**
South Coast Air Quality Management District	South Coast Air Quality Management District

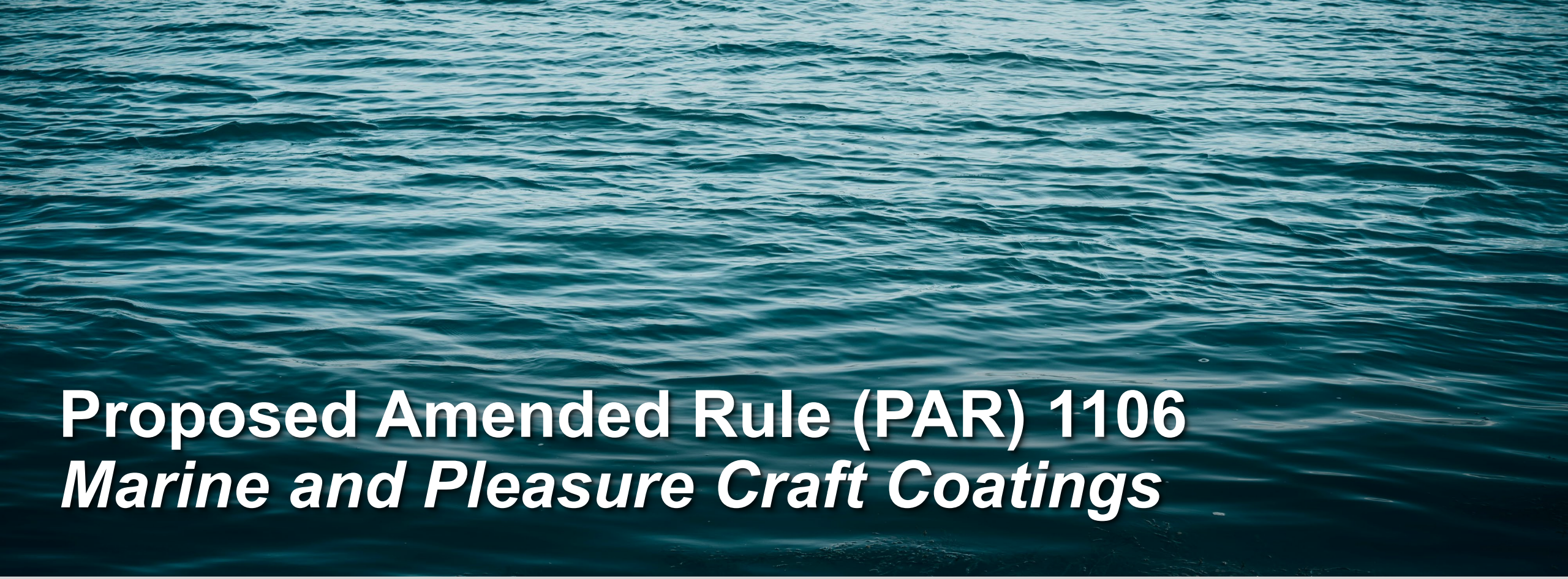
Exempt Status:
CEQA Guidelines Section 15061(b)(3) – Common Sense Exemption

Reasons Why Project Is Exempt: South Coast AQMD, as Lead Agency, has reviewed the proposed project (PAR 1106) pursuant to: 1) CEQA Guidelines Section 15002(k) – General Concepts, the three-step process for deciding which document to prepare for a project subject to CEQA; and 2) CEQA Guidelines Section 15061 – Review for Exemption, procedures for determining if a project is exempt from CEQA. It can be seen with certainty that there is no possibility that the proposed project (PAR 1106) may have a significant adverse effect on the environment because: 1) PAR 1106 will benefit public health and ambient air quality by reducing VOC emissions and the risk of exposure to toxic compounds pCBtF and t-BAc without increasing ozone formation and without the need for physical modifications to existing equipment; 2) compliant formulations of some coating categories that do not contain pCBtF and/or t-BAc are commercially available; 3) additional time is provided for manufacturers to reformulate coatings, if needed; and 4) the sell-through and use-through provisions will prevent stranded assets and the generation of waste by ensuring that manufacturers, distributors, and end users have sufficient time to find suitable replacements. Therefore, the proposed project is exempt from CEQA pursuant to CEQA Guidelines Section 15061(b)(3) Common Sense Exemption.

Date When Project Will Be Considered for Approval (subject to change): South Coast AQMD Governing Board Public Hearing: November 6, 2026		
CEQA Contact Person: Sina Taghvaee, Ph.D.	**Phone Number:** (909) 396-2192	**Email:** staghvaee@aqmd.gov
PAR 1106 Contact Person: Christopher Bradley	**Phone Number:** (909) 396-2185	**Email:** cbradley@aqmd.gov

Date Received for Filing: _____ **Signature:** *(Signed and Dated Upon Board Approval)*

Kevin Ni
Program Supervisor, CEQA
Planning, Rule Development, and Implementation



Proposed Amended Rule (PAR) 1106
Marine and Pleasure Craft Coatings

GOVERNING BOARD PRESENTATION
November 6, 2026

ATTACHMENT I

Rule 1106 Background

Adopted in November 1988, latest amendment in 2023

- Establishes Volatile Organic Compound (VOC) limits for coatings applied to marine vessels, pleasure craft, and marine structures
- Manufacturers rely on exempt compounds to meet VOC limits



Proposed Amendments Needed to

- Reduce cancer risk by phasing out two toxic exempt compounds
- Reduce VOC limits for several categories

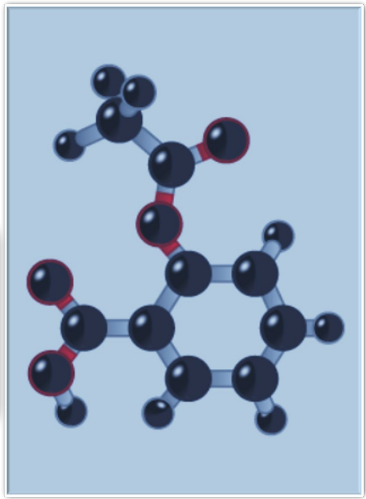
Public Process Began July 2025

- Three working group meetings
- One Public Workshop

Phasing Out pCBtF and t-BAc in Marine and Pleasure Craft Coatings

Rule currently allows para-Chlorobenzotrifluoride (pCBtF) and tert-Butyl Acetate (t-BAc) to used as in marine and pleasure craft coatings

- pCBtF used as exempt solvent to meet lower VOC limit
- t-BAc used but is not exempt in Rule 1106



California Office of Environmental Health Hazard Assessment (OEHHA) determined pCBtF and t-BAc are carcinogenic

- To date, eight South Coast VOC rules have prohibited and phased out pCBtF and t-BAc

Manufacturer survey and data showed pCBtF and t-BAc are used in four out of the seven reported products

Phase Out Approach and Prohibition Schedule for pCBtF and t-BAc

- Establish future-effective prohibition date
- Allow longer timeline for:
  - Coatings that rely heavily on pCBtF or t-BAc
  - Coatings that require additional certifications and testing, e.g., antifoulant coatings

Coating Category	Final Manufacture Date	Sell-Through End Date	Use-Through End Date
Antifoulant Coatings	January 1, 2031	January 1, 2032	January 1, 2033
Colorants and Wood Coatings	January 1, 2030	January 1, 2031	January 1, 2032
Primers	June 1, 2027	June 1, 2028	June 1, 2029
All Other Coating Categories	January 1, 2028	January 1, 2029	January 1, 2030

Other Proposed Revisions

Revised coating categories and VOC limits

- Reduce VOC limits to align with U.S. EPA Control Techniques Guidelines, other California Air District rules, and other South Coast AQMD rules
- Raise limit for one small niche category

Proposed Reactivity-based VOC limits for two challenging coating types

- Allow alternative reactivity-based VOC limits for wood coatings and low-volume pretreatment wash primers
  - Wood coatings and pretreatment wash primers rely heavily on pCBtF
  - Limited alternative formulations
  - Approach consistent with recent rule amendments for wood, autobody, and aerospace coatings

Key Issues

Key Issue #1:

- **Removal of "energy curable coatings" definition**

- Standard practice to only define terms used in rule
  - Defining terms not subject to any requirements may cause confusion
- "Energy curable coatings" not referenced in PAR 1106, so no basis to include definition

Key Issue #2:

- **Not including ASTM Test Method D7767-11 "Standard Test Method to Measure Volatiles from Radiation Curable Acrylate Monomers, Oligomers and Blends and Thin Coatings Made from Them"**

- ASTM Method D7767-11 not a U.S. EPA approved test method, cannot be used to enforce SIP approved rule
- No known thin film materials used on marine vessels or pleasure craft
- Information regarding test method included in staff report and on South Coast AQMD website

Socioeconomic Impact Assessment

- Cost impacts associated with lowering VOC limits and prohibiting pCBtF and t-BAc
  - Anticipated price change of marine, pleasure craft, and marine structure coatings sold within South Coast AQMD jurisdiction
- Average annual cost of $32,918 primarily attributed to reformulating:
    - Clear/Pigmented Wood Sealers; and
    - Clear/Pigmented Wood Topcoats



California Environmental Quality Act (CEQA)



- PAR 1106 is health protective due to reducing emissions of VOC and toxics by prohibiting use of pCBtF and t-BAc
  - Manufacturers will reformulate products
  - No physical modifications and no significant impacts expected
- PAR 1106 qualifies for an exemption from CEQA
- A Notice of Exemption has been prepared

Staff Recommendations

Determine that PAR 1106 is Exempt from CEQA; and

Amend Rule 1106 – Marine and Pleasure Craft Coatings

Direct Staff to submit PAR 1106 to CARB and U.S. EPA for inclusion into the State Implementation Plan

