Proposed Amended Rule 1113
Architectural Coatings

Working Group Meeting #2
January 20, 2026

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Agenda

- Rule 1113 Background
- Key Objectives of Rule Amendment
- pCBtF and t-BAc Background
- Maximum Incremental Reactivity Background
- Rule 314 Background and Data
- Manufacturer Surveys
- Next Steps

Rule 1113 Background

Rule 1113 Background

- Adopted in 1977
  - Amended 29 times
  - Most recent amendment in 2016
- Applicable to manufacturers, distributors, specifiers, and end-users of architectural coatings
- Current emission baseline ~8.25 tons per day

Architectural Coating Categories

- 58 categories in total
- High volume categories such as flat and non-flat coatings have a 50 g/L VOC limit
- Rule allows for higher VOC limits for specialty coatings that have higher performance standards
  - Color indicating IM coatings used at refineries
  - Japans/Faux finishing coatings used by movie studios
- Staff continues to research lower-VOC alternatives to higher-VOC categories

TABLE OF STANDARDS 1
VOC LIMITS

Grams of VOC Per Liter of Coating,
Less Water and Less Exempt Compounds

COATING CATEGORY	Category Codes	Current Limit[1]	Effective Date			Small Container Exemption
			1/1/14	2/5/16	1/1/19	
Bond Breakers	5	350				✓
Building Envelope Coating	62	100			50	✓
Concrete-Curing Compounds	7	100				✓
Concrete-Curing Compounds For Roadways and Bridges[2]	7	350				✓[3]
Concrete Surface Retarder	58	50	50			✓
Default	51	50	50			✓
Driveway Sealer	52	50				✓
Dry-Fog Coatings	8	50	50			✓
Faux Finishing Coatings						
Clear Topcoat	9a	100	100			✓
Decorative Coatings	9	350				✓
Glazes	9b	350				✓
Japan	9c	350				✓
Trowel Applied Coatings	9d	50	50			✓
Fire-Proofing Coatings	10	150	150			✓
Flats	13	50				✓[5]
Floor Coatings	14	50				✓
Form Release Compound	16	100	100			✓
Graphic Arts (Sign) Coatings	17	200	150	200		✓
Industrial Maintenance (IM) Coatings	19	100				✓[5]
Color Indicating Safety Coatings		480				✓[5]
High Temperature IM Coatings	18	420				✓[5]
Non-Sacrificial Anti-Graffiti Coatings	19a	100				✓[5]
Zinc-Rich IM Primers	56	100				✓[5]
Magnesite Cement Coatings	22	450				✓[3]
Mastic Coatings	23	100	100			✓
Metallic Pigmented Coatings	24	150	150			✓
Multi-Color Coatings	25	250				✓[3]
Nonflat Coatings	26, 27, 28	50				✓[5]
Pre-Treatment Wash Primers	29	420				✓[3]
Primers, Sealers, and Undercoaters	30	100				✓
Reactive Penetrating Sealers	59	350				✓[4]
Recycled Coatings	33	250			150	✓
Roof Coatings	34	50				✓
Roof Coatings, Aluminum	53	100				✓
Roof Primers, Bituminous	4	350				✓[3]
Rust Preventative Coatings	35	100				✓[6]
Sacrificial Anti-Graffiti Coatings	60	50				✓[3]
Shellac						
Clear	37	730				✓[4]
Pigmented	38	550				✓[4]
Specialty Primers	39	100				✓
Stains	41	100				✓

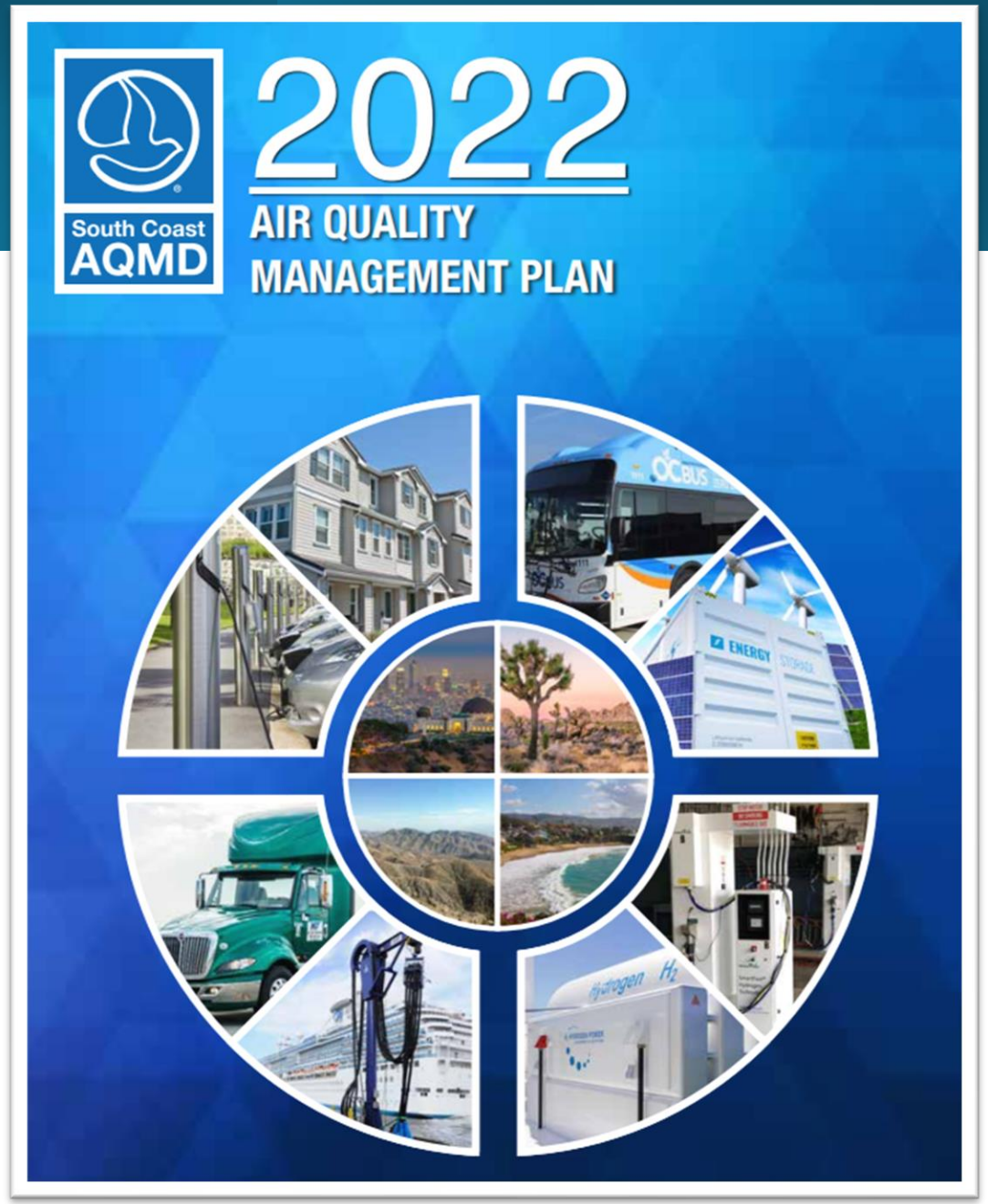
Basis for VOC Limits

- Quantity and emission data reported in Rule 314
- Feedback from manufacturers
- Data search for compliant materials
- Working Group Meeting discussions
- Past Technical Assessments which included:
  - Laboratory Evaluation
  - Field Evaluation
  - Accelerated Weathering

Key Objectives of Rule Amendment

Need for Rule Amendment

- Address control measure CTS-01 from the 2022 AQMP
  - *Further Emission Reductions from Coatings, Solvents, Adhesives, and Sealants*
- Address Para-Chlorobenzotrifluoride (pCBtF/CAS: 98-56-6) and *tert*-Butyl Acetate (t-BAc/CAS: 540-88-5) toxicity concerns
  - t-BAc has limited exemption for Industrial Maintenance coatings

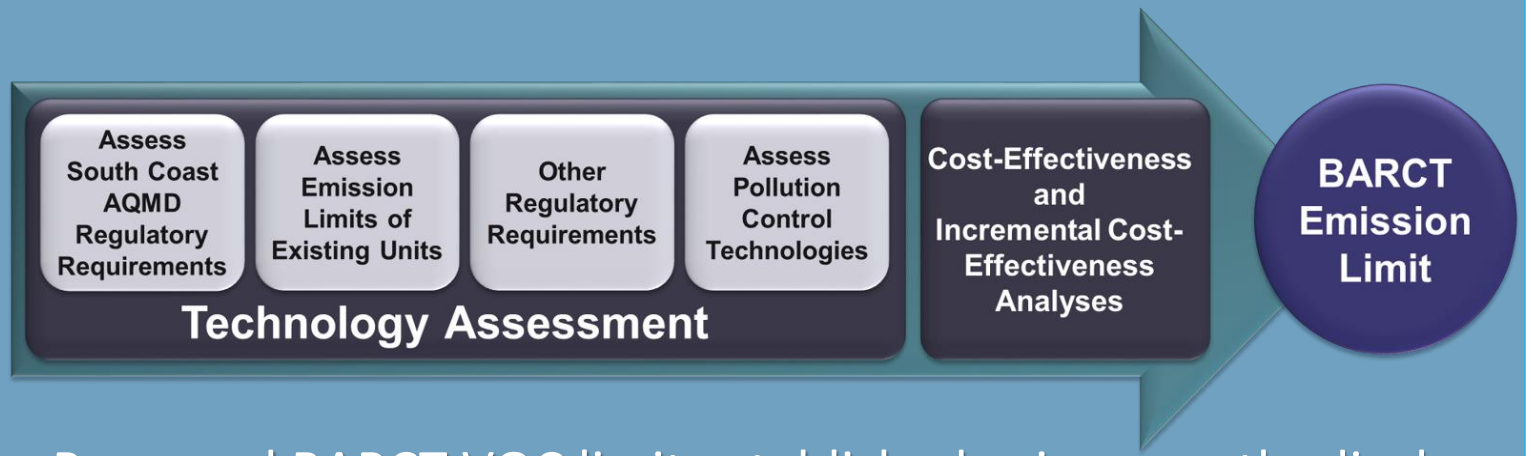


Key Objectives of PAR 1113

Phase Out of the use of pCBtF and t-BAc

Reevaluate VOC Limits

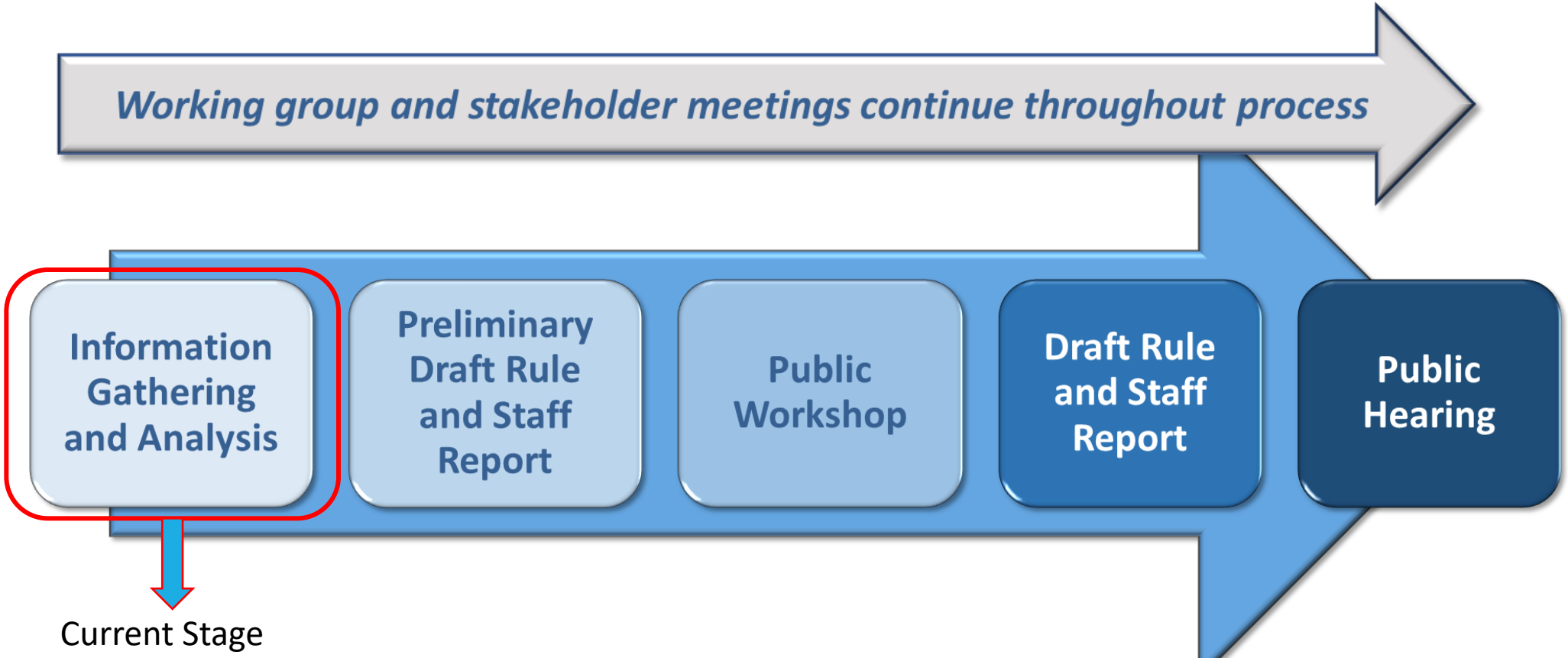
BARCT Assessment



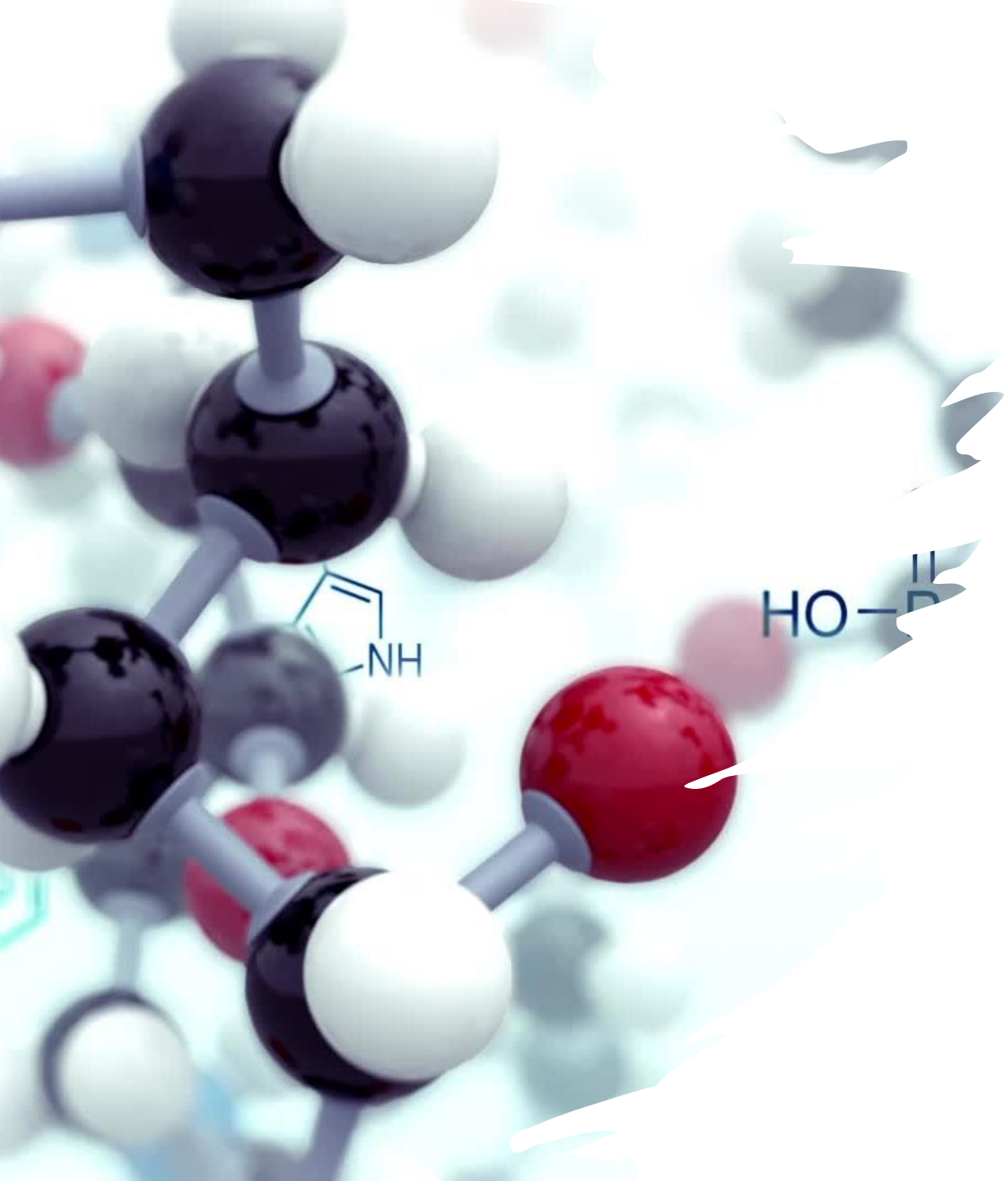
- Proposed BARCT VOC limit established using a methodical approach that meets state law
- BARCT is defined in the California Health and Safety Code §40406 as:
  "…an emission limitation that is based on the maximum degree of reduction achievable by each class or category of source, taking into account environmental, energy, and economic impacts."

- VOC limits are designed to achieve maximum reductions taking into account economic impacts
- 2022 Final AQMP requires staff to present options for control when cost threshold is exceeded
- Cost-effectiveness threshold is $36,000/ton of VOC reduced

Overview and Status of Rule Development Process



pCBtF and t-BAc Background



Exempt Compounds

- Certain solvents are defined as exempt from the definition of a VOC by the U.S. EPA if they are negligibly photochemically reactive
  - Defined as less reactive than ethane
- Exempt compounds are not considered toward the VOC content of regulated materials
- U.S. EPA does not consider toxicity when making their designation

South Coast AQMD's Defined Exempt Compounds

- South Coast AQMD considers compounds designated as exempt by the U.S. EPA but also considers the toxicity, ozone depletion potential, or other environmental impacts
- Rule 102 – Definition of Terms breaks exempt compounds into two groups
  - Group I: exempt compounds that are not expected to be restricted in the future
  - Group II: exempt compounds that are prohibited from use in many VOC rules
- South Coast AQMD sometimes includes limited exemption in source specific rules to address potential toxicity concerns
  - Rule 1113 – Architectural Coatings includes limited exemptions for t-BAc for the Industrial Maintenance Coating category added in 2006

(B) Group II

methylene chloride (dichloromethane)
1,1,1-trichloroethane (methyl chloroform)
trichlorofluoromethane (CFC-11)
dichlorodifluoromethane (CFC-12)
1,1,2-trichloro-1,2,2-trifluoroethane (CFC-113)
1,2-dichloro-1,1,2,2-tetrafluoroethane (CFC-114)
chloropentafluoroethane (CFC-115)
cyclic, branched, or linear, completely methylated siloxanes (VMS)
tetrachloroethylene (perchloroethylene)
ethylfluoride (HFC-161)
1,1,1,3,3,3-hexafluoropropane (HFC-236fa)
1,1,2,2,3-pentafluoropropane (HFC-245ca)
1,1,2,3,3-pentafluoropropane (HFC-245ea)
1,1,1,2,3-pentafluoropropane (HFC-245eb)
1,1,1,3,3-pentafluoropropane (HFC-245fa)
1,1,1,2,3,3-hexafluoropropane (HFC-236ea)
1,1,1,3,3-pentafluorobutane (HFC-365mfc)
chlorofluoromethane (HCFC-31)
1,2-dichloro-1,1,2-trifluoroethane (HCFC-123a)
1 chloro-1-fluoroethane (HCFC-151a)

The use of Group II compounds and/or carbon tetrachloride may be restricted in the future because they are either toxic, potentially toxic, upper-atmosphere ozone depleters, or cause other environmental impacts. By January 1, 1996, chlorofluorocarbons (CFC), 1,1,1-trichloroethane (methyl chloroform), and carbon

pCBtF and t-BAc Regulatory Background

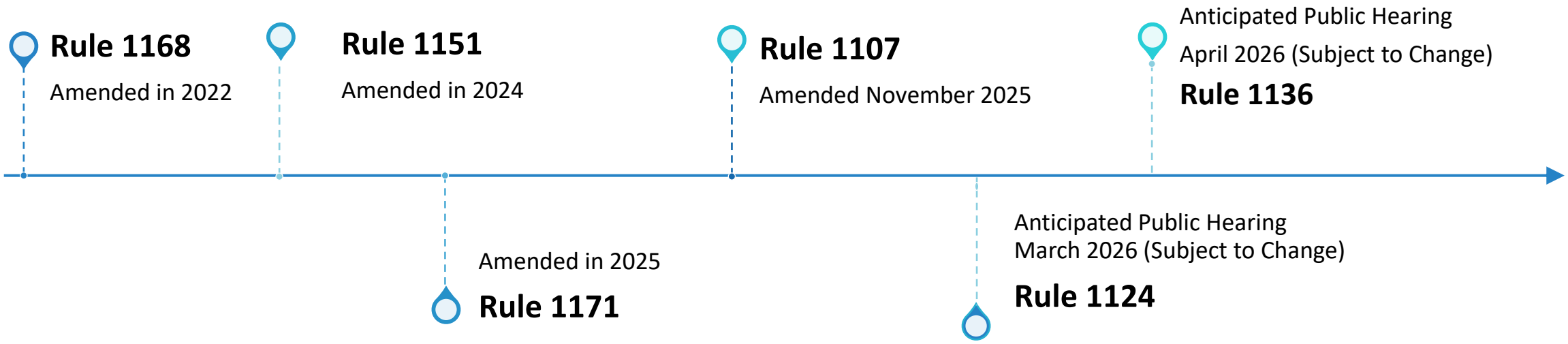
1994 -1995	U.S. EPA and South Coast AQMD exempted pCBtF as a due to low photochemical reactivity
2004 - 2006	U.S. EPA exempted t-BAc as a VOC, South Coast AQMD included limited exemptions
2015	Office of Environmental Health Hazard Assessment (OEHHA) draft assessment showed t-BAc as potential carcinogen
2017	South Coast AQMD Stationary Source Committee directed staff to prioritize lowering toxicity over emission reductions
2018	OEHHA finalized t-BAc Cancer Potency Factor, concluding poses potential cancer risk to humans, South Coast AQMD requested OEHHA evaluate toxicity of pCBtF
2020	OEHHA finalized pCBtF Inhalation Cancer Potency Factor, concluding pCBtF poses greater cancer risk to humans than t-BAc

South Coast AQMD's Approach

Working to phase out and prohibit the use of pCBtF and t-BAc for coatings, solvents, and other -containing materials

Conducting case-by-case assessment for each rule and product category to determine the best approach

Rule Amendments to Address pCBtF and t-BAc



- **Rule 1168 – Adhesive and Sealant Applications**
- **Rule 1151 – Motor Vehicle and Mobile Equipment Non-Assembly Line Coating Operations**
- **Rule 1171 – Solvent Cleaning Operations**
- **Rule 1107 – Coating of Metal Parts and Products**
- **Rule 1124 – Aerospace Assembly and Component Manufacturing Operations**
- **Rule 1136 – Wood Products Coatings**

Other Ongoing Efforts

- Staff recently distributed a manufacturer survey for a suite of rules to assess the extent of pCBtF and t-BAc use
- Rule schedule and approach will depend on survey results

- **Rule 1106** – Marine and Pleasure Craft Coatings
- **Rule 1113** – Architectural Coatings
- **Rule 1122** – Solvent Degreasers
- **Rule 1125** – Metal Container, Closure, and Coil Coating Operations
- **Rule 1126** – Magnet Wire Coating Operations
- **Rule 1128** – Paper, Fabric, and Film Coating Operations
- **Rule 1130** – Graphic Arts
- **Rule 1130.1** – Screen Printing Operations
- **Rule 1143** – Consumer Paint Thinners & Multi-Purpose Solvents
- **Rule 1144** – Metalworking Fluids and Direct-Contact Lubricants
- **Rule 1145** – Plastic, Rubber, Leather, and Glass Coatings
- **Rule 1162** – Polyester Resin Operations

Additional information and documents from the rule development processes can be found on the South Coast AQMD website:
https://www.aqmd.gov/home/rules-compliance/rules/scaqmd-rule-book/proposed-rules

pCBtF and t-BAc Phase Out Approach Concepts For Recently Adopted Rules

Swift Prohibition

- Temporarily raise limits and quickly prohibit pCBtF and t-BAc
- Rule 1151 approach due to number of autobody shops within community

Future Prohibition

- Allow time for reformulation with future phase out date
- Rule 1168, 1171, and 1107 approach

Require Control Equipment

- Air pollution control technology to reduce public exposure levels
- Rule 1124 approach due to challenges with aerospace reformulation

Initial Considerations to Address pCBtF and t-BAc

- Swift prohibition pathway could significantly increase VOC emissions
  - High volume of coatings sold under Rule 1113
    - Over 43 million gallons architectural coatings sold annually
    - Rule 1151, ~ 2 million gallons of autobody paint sold annually
  - VOC limit increase could result in significant backsliding
    - Potential option for small niche categories
- Air pollution controls requirements not likely feasible
  - Architectural coatings are field applied
- Future prohibition likely the most feasible option
  - Allow time for product reformulation, maintain limits where feasible
- Any potential VOC limit increases will need to be offset by lowering VOC limit in another category
- Consider reactivity-based limits for some challenging categories

Maximum Incremental Reactivity (MIR)

Mass-Based versus MIR VOC Limits

- MIR is a measure of the photochemical reactivity of a VOC, which estimates the weight of ozone produced from a weight of VOC
- Mass-based limits treat all solvents equally, other than water and exempt solvents which are not considered VOCs
- MIR-based limits restrict the ozone-forming potential of materials by limiting the weighted averages of the MIR value of each solvent (Product-Weighted MIR; PW-MIR)
- CARB uses reactivity-based limits for aerosol coatings and other consumer products
- Reactivity-based limits are another way to reduce ozone impacts from solvents and coatings

Table of Reactivity Limits
Product-Weighted MIR in Grams Ozone per Gram Product
(g O_3 / g product)

Aerosol Coating Category

General Coatings	**06/01/2002**	**01/01/2017**
Clear Coating	1.50	0.85
Flat Coating	1.20	0.80
Fluorescent Coating	1.75	1.30
Metallic Coating	1.90	1.25
Nonflat Coating	1.40	0.95
Primer	1.20	0.70
Specialty Coatings (A)	**01/01/2003**	**01/01/2017**
Auto Body Primer	1.55	0.95
Electrical/Electronic/Conformal Coating		2.00
Exact Match Finish:		
Automotive	1.50	0.95
Engine	1.70	0.95
Industrial	2.05	1.20
Flexible Coating		1.60
Ground Traffic/Marking Coating	1.20	0.85
Mold Release Coating		1.10
Two Component Coating		1.20
Uniform Finish Coating		1.30

MIR Values of Some Common Solvents

- MIR-based limits would require manufacturers to choose solvents with lower reactivity
- Allows formulators more flexibility in formulating compliant products while also reducing air quality impacts
- MIR-based limits can be particularly useful for specialty categories that do not have a strong pathway to lower limits, such as products that are low-solids and not readily converted to water-based
  - Adhesion Promoters
  - Pretreatment Wash Primers
  - Thinners and Reducers
  - Solvent Cleaning Materials
  - Wood Coatings

Compound	MIR
2-pentenes	10.47
o-xylene	7.64
butanal	5.97
toluene	4.00
ethanol	1.53
MEK	1.48
nonane	0.78
methanol	0.67
isopropyl alcohol	0.61
tert-Butyl alcohol	0.41
acetone	0.36
pCBtF	0.13
methyl acetate	0.07
D4	0.00
benzaldehyde	0.00

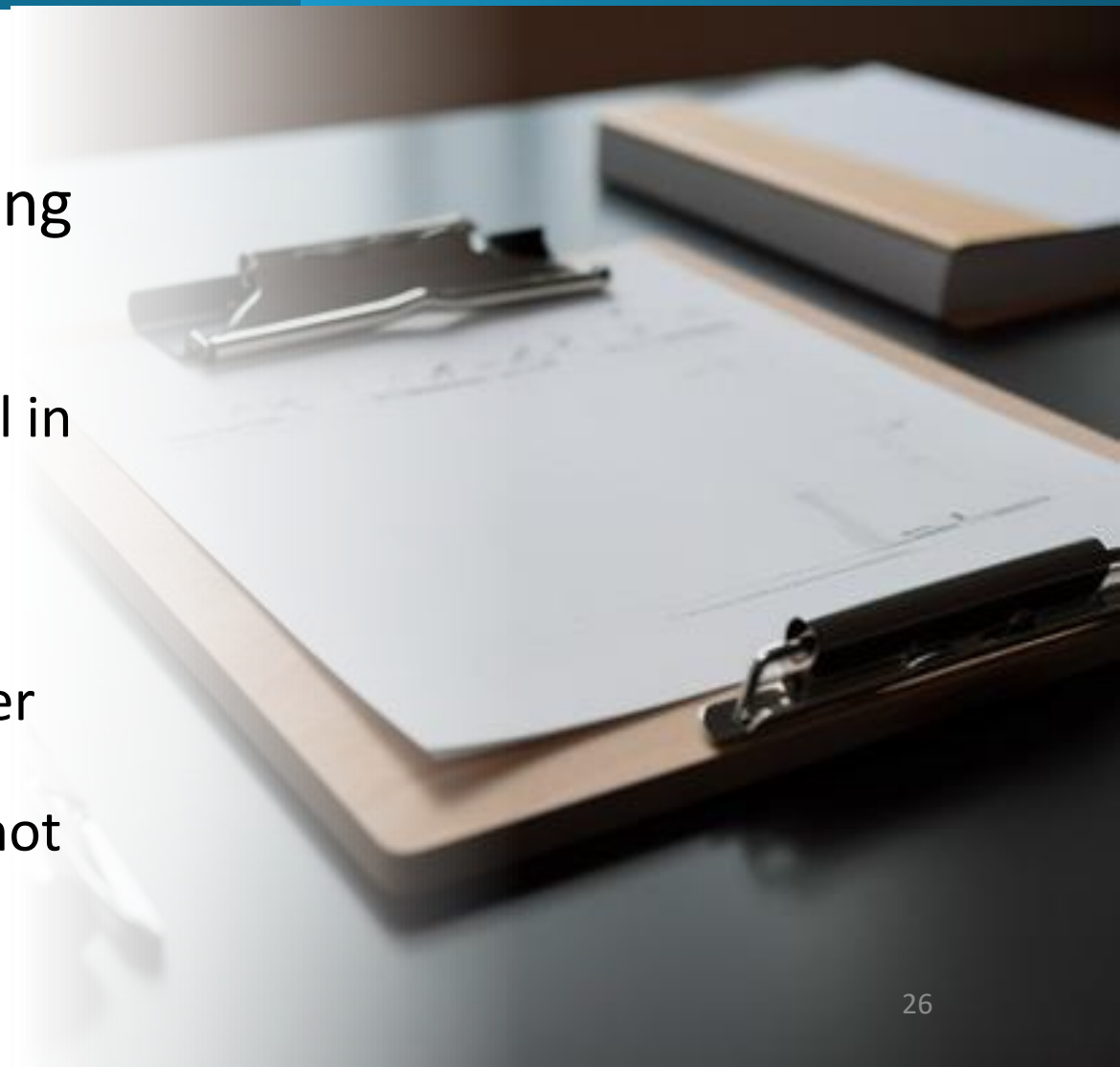
Adopted Product-Weighted MIR Limits

- Rule 1151 includes PW-MIR limits for:
  - Thinners and Reducers
    - No other mechanism to reduce content without exempt solvents
  - Adhesion Promoters and Pretreatment Wash Primers
    - Alternative limit, not required
    - Allows reformulation flexibility and provides air quality benefit
    - Both are low-solids, high- categories with no other mechanism to lower content without exempt solvents
- Rule 1171 includes alternative PW-MIR limits for some solvent cleaning categories
- PAR 1136 proposes alternative PW-MIR for six coating categories and paint strippers
- Staff may consider alternative PW-MIR limits for some Rule 1113 categories, depending on stakeholder feedback

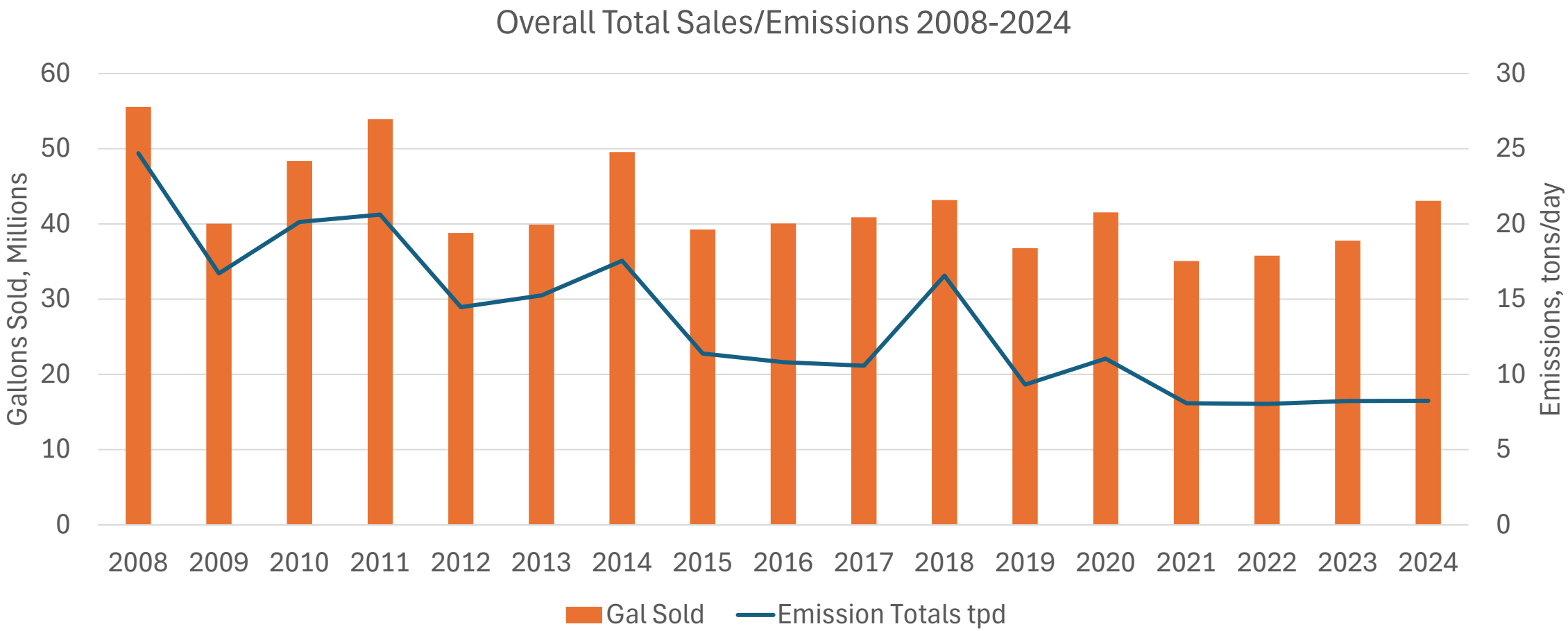
Rule 314 Background and Data

Rule 314 – Fees for Architectural Coatings Background

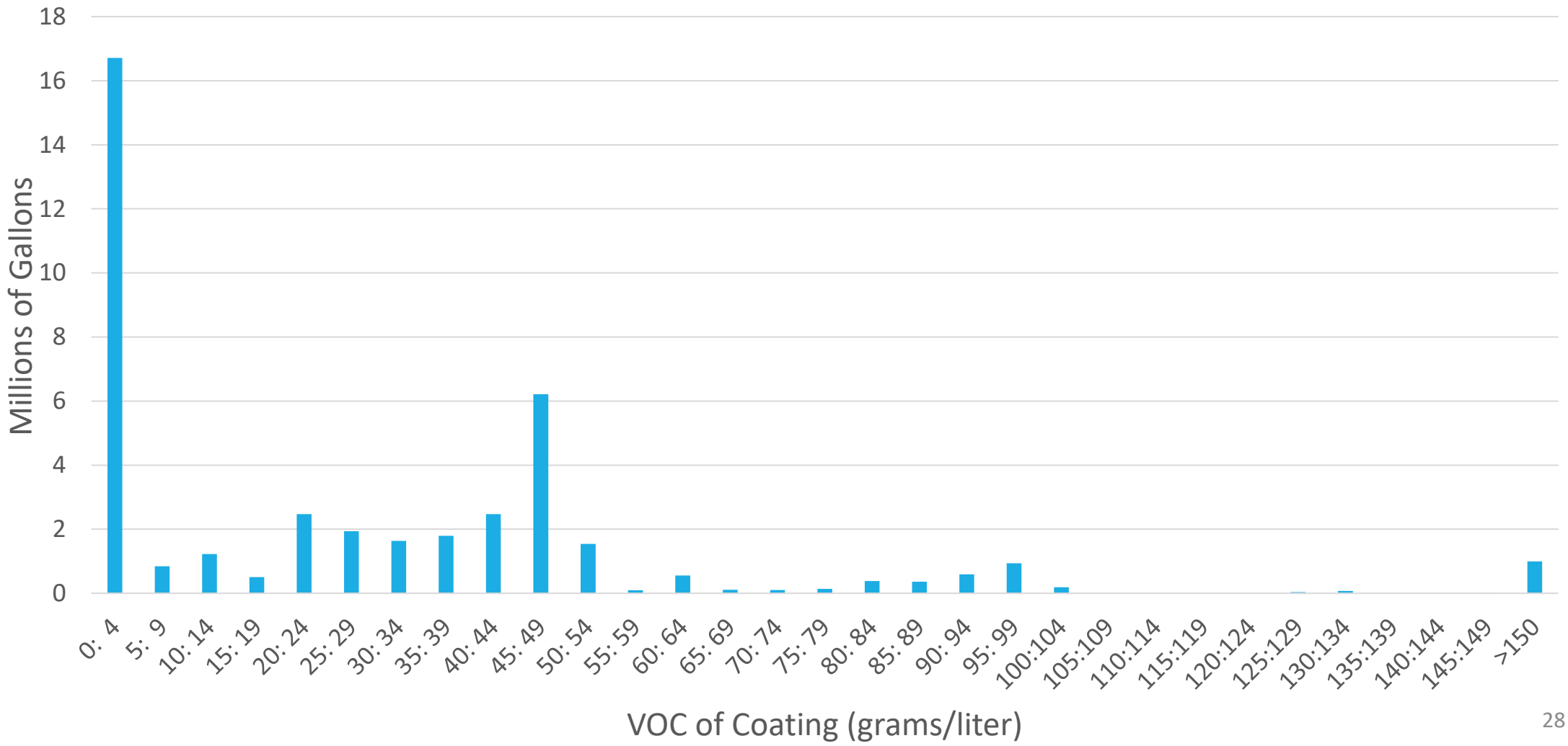
- Adopted June 6, 2008
- Intended to recover the cost of implementing architectural coatings regulations and to gather data
  - Data generated from Rule 314 has been critical in achieving future VOC reductions from architectural coatings
- Encourages the sale of low-VOC coatings
  - Fees are based on emissions, so there are lower fees for low-VOC coating
  - Coatings with VOC content less than 5 g/L do not pay fees



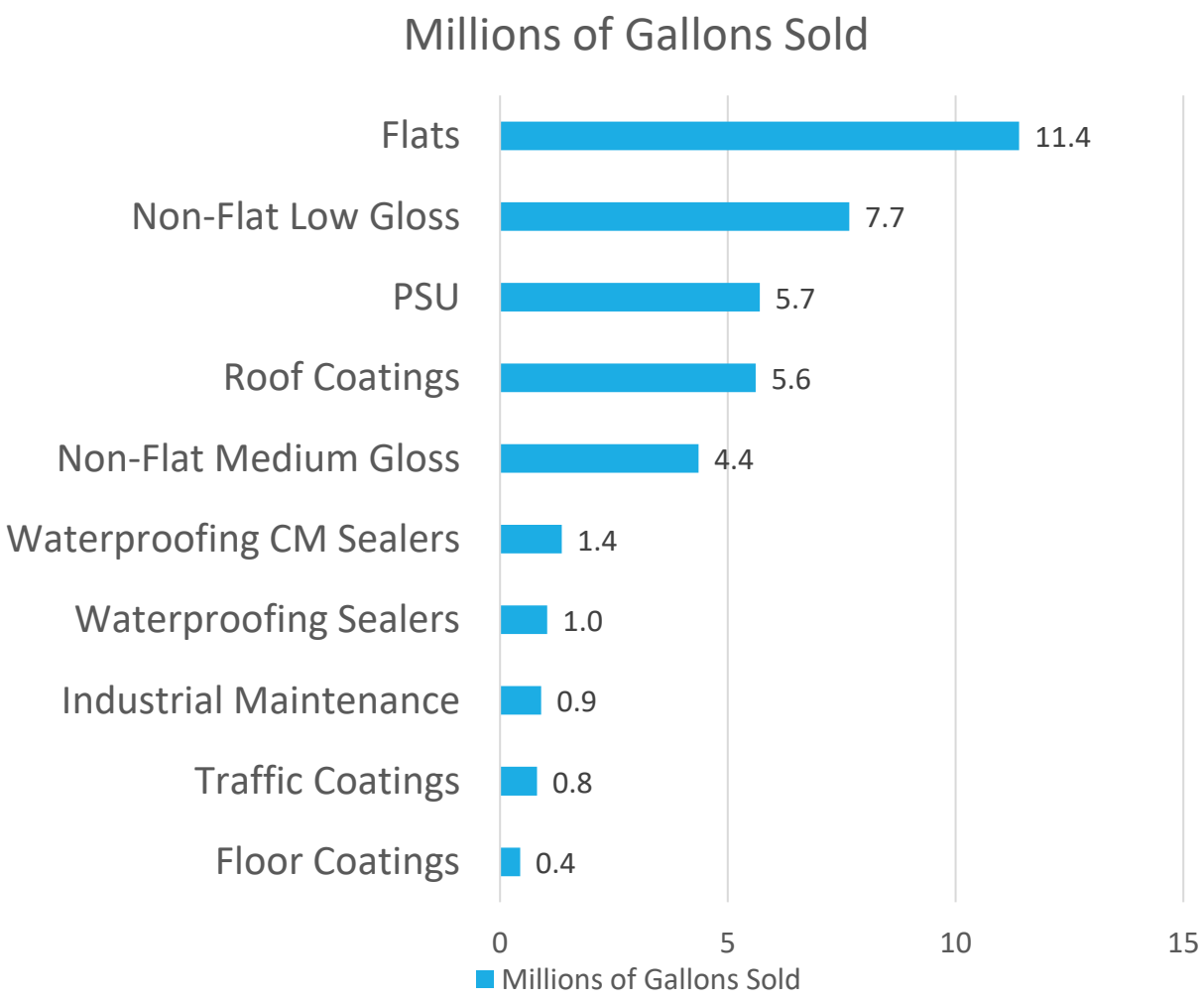
Overall Sales and Emissions

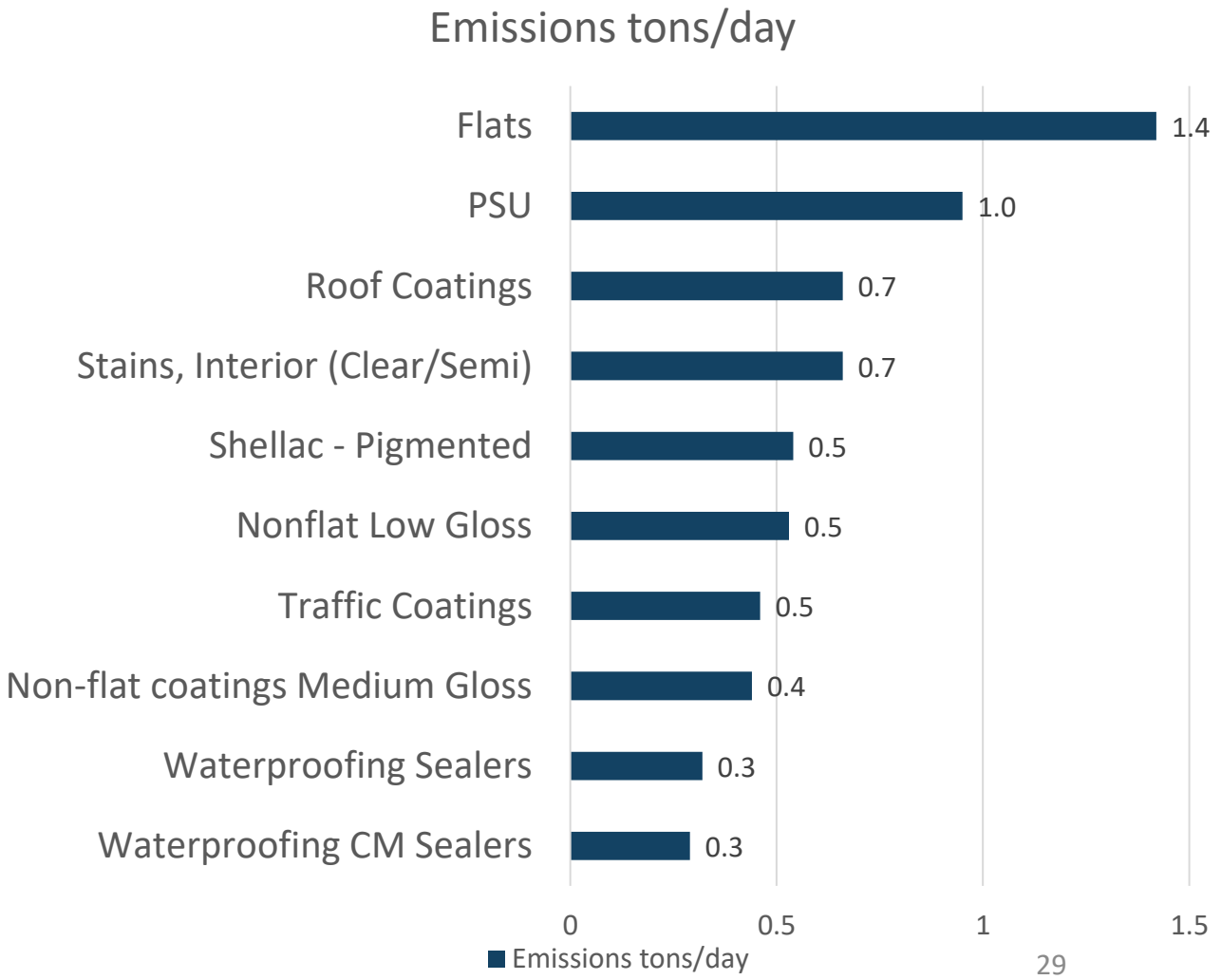


VOC Distributions of Architectural Coatings Sold in 2024



Top 10 Categories





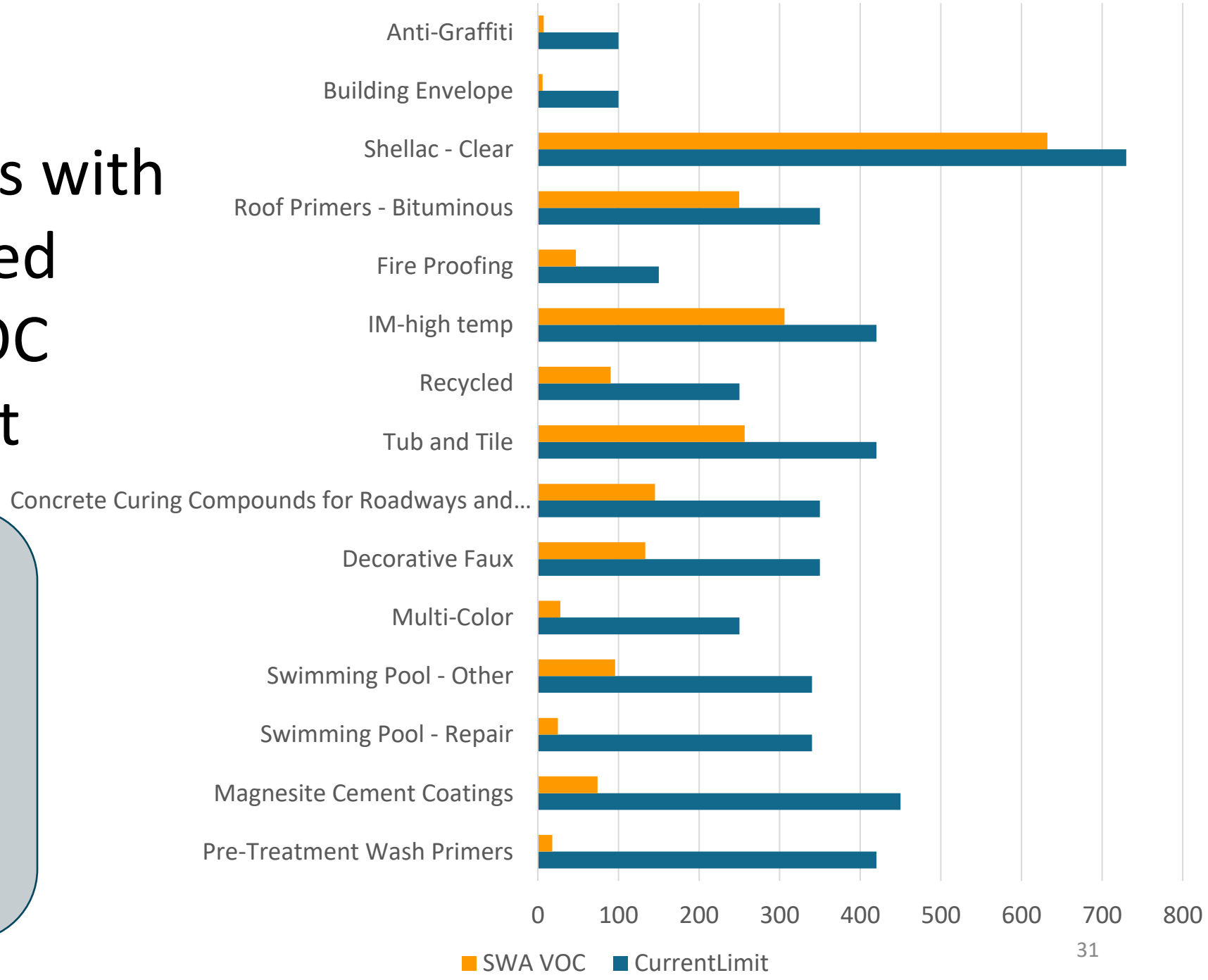
Highest and Lowest VOC Categories

Categories with Highest Avg. VOC (g/L)		
Coating Category	**Current Limit**	**Sales Weighted Average**
Shellac - Clear	730	632
Faux - Glazes	350	576
Shellac - Pigmented	550	535
Wood Preservatives - Below-Ground	350	508
Stone Consolidant	450	436
Bond Breakers	350	385
Faux-Japan	350	350
Reactive Penetrating Sealers	350	348
Stains, Interior (Clear/Semi)	250	328
IM - High Temp	420	306

Categories with Lowest Avg. VOC (g/L)		
Coating Category	**Current Limit**	**Sales Weighted Average**
Non-Sacrificial Anti-Graffiti	100	7
Faux-Trowel Applied	50	8
Default	50	8
Roof Coatings	50	14
Nonflat coatings- Low Gloss	50	16
Driveway Sealers	50	17
Pre-Treatment Wash Primers	420	18
Concrete Surface Retarder	50	22
Nonflat - Medium Gloss	50	23
Swimming Pool - Repair	340	25

Coating Categories with Low Sales Weighted Average (SWA) VOC Compared to Limit

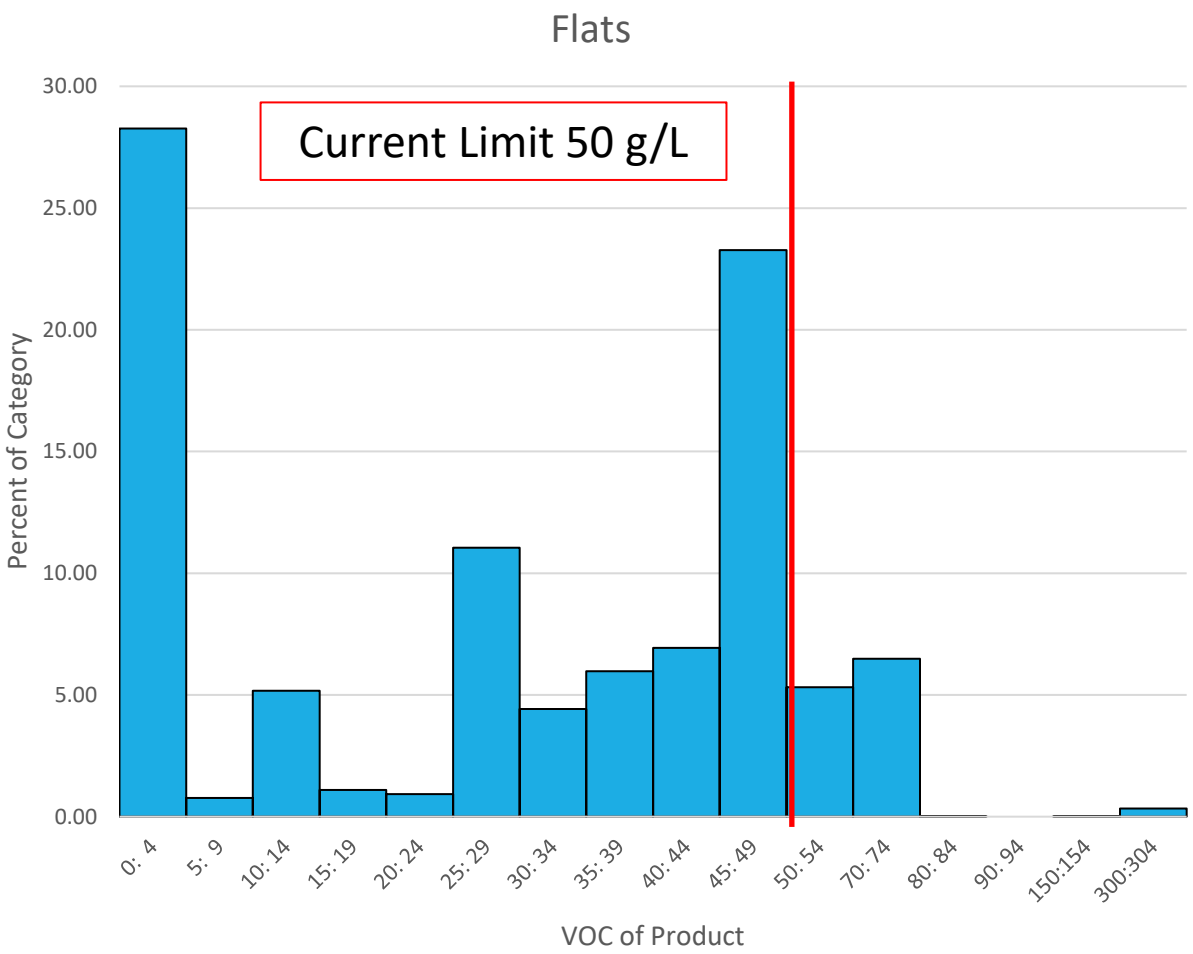
- Potential categories where VOC limits could be lowered
  - Must determine if coatings formulated with pCBtF or t-BAc

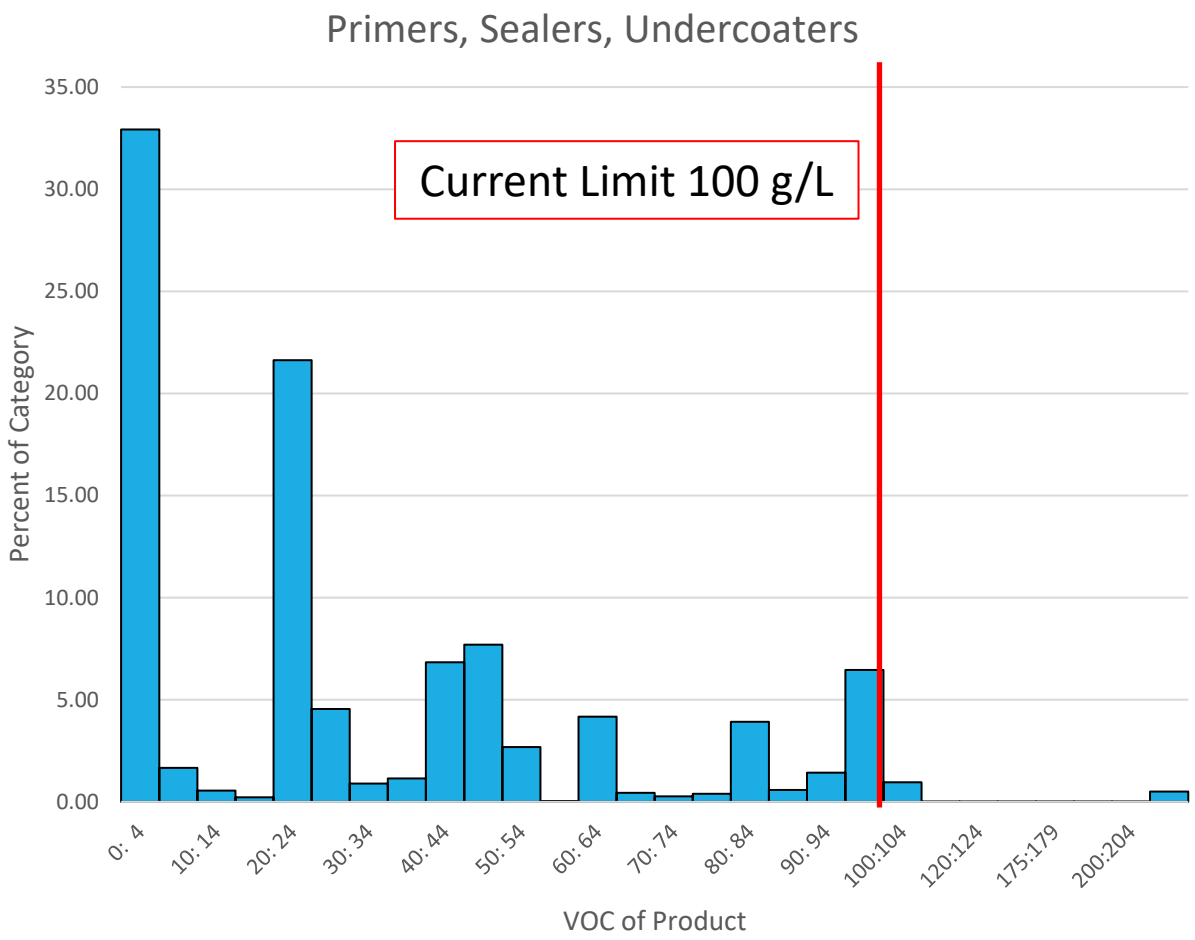


Histograms and VOC distribution

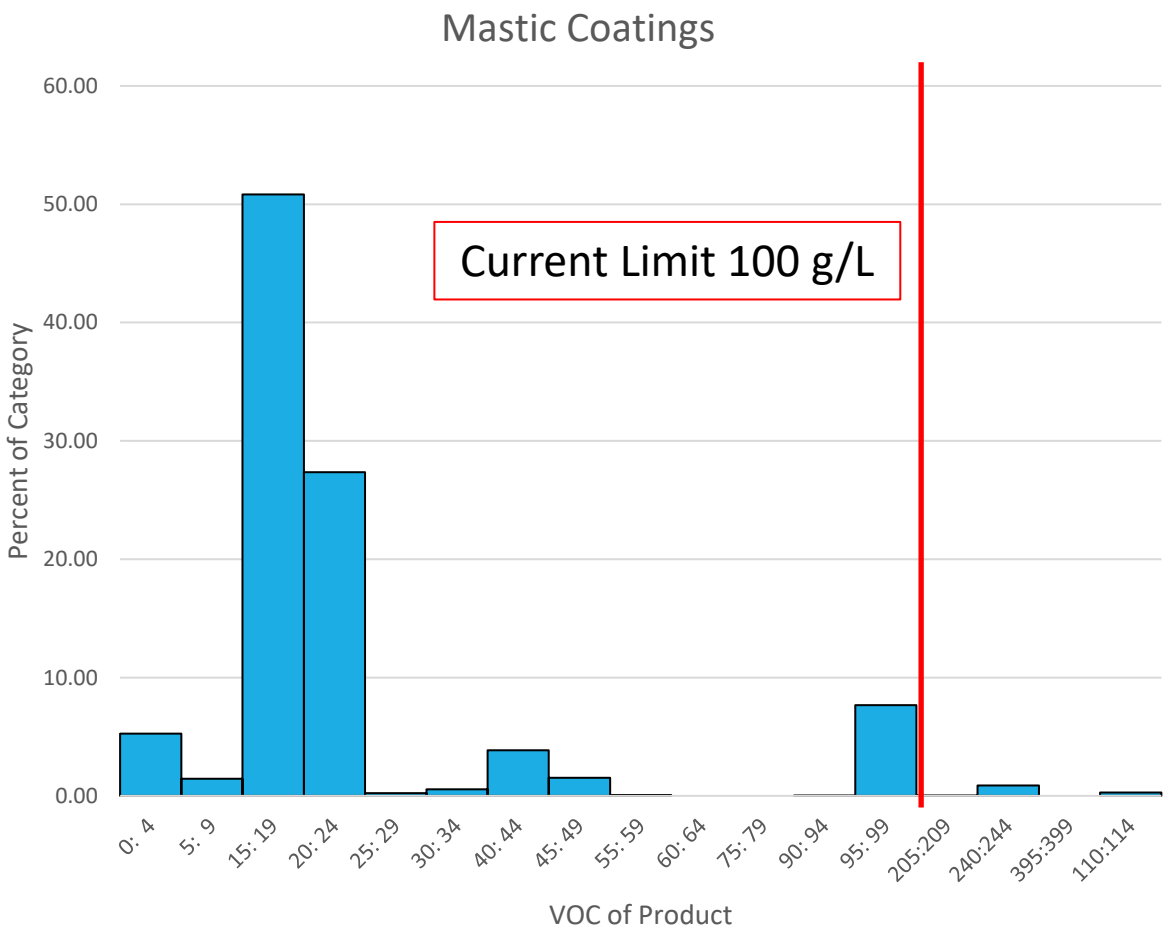
- VOC distribution, or histograms, per category can also show where there are potential VOC emission reductions
- Staff evaluated some of the large volume categories and some categories with low sales weighted average VOCs compared to the VOC limits

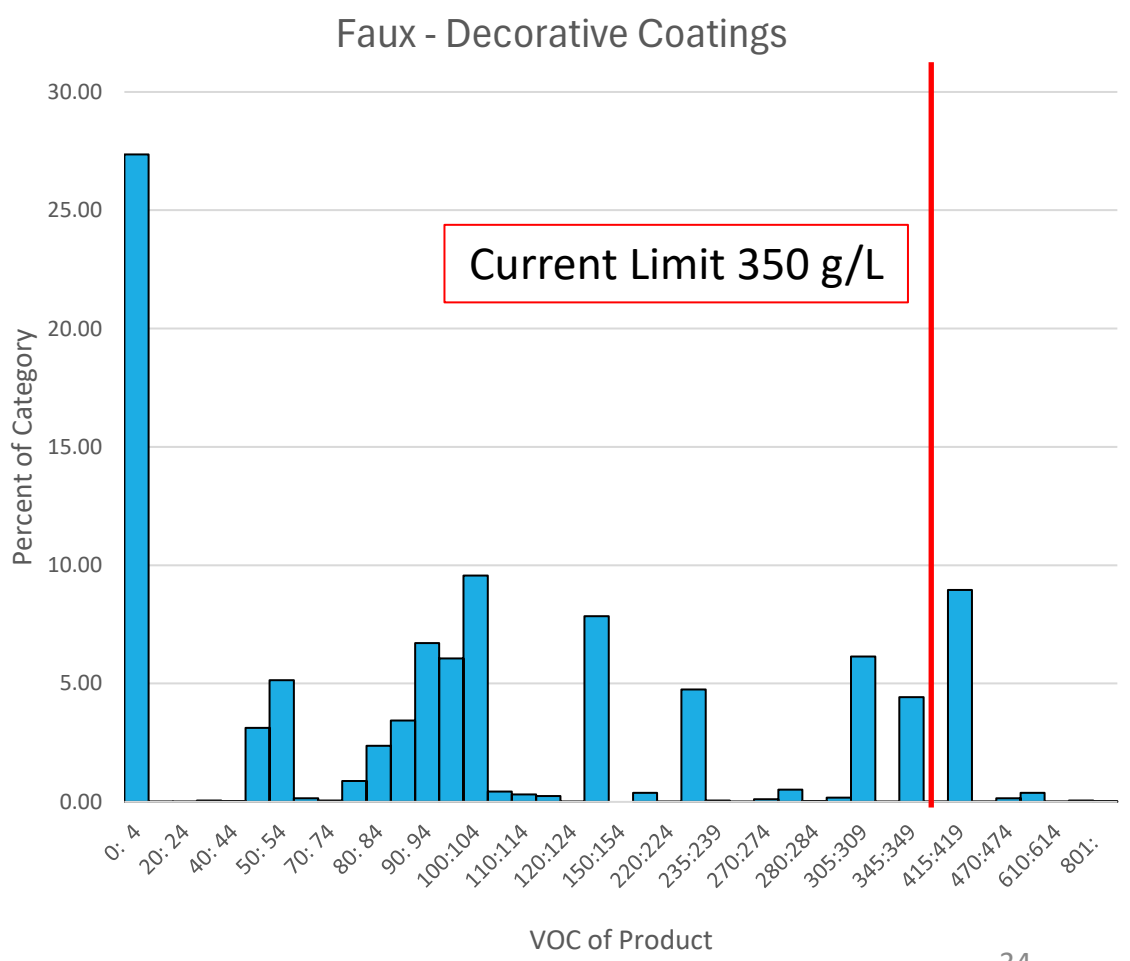
VOC Distribution in Largest Categories



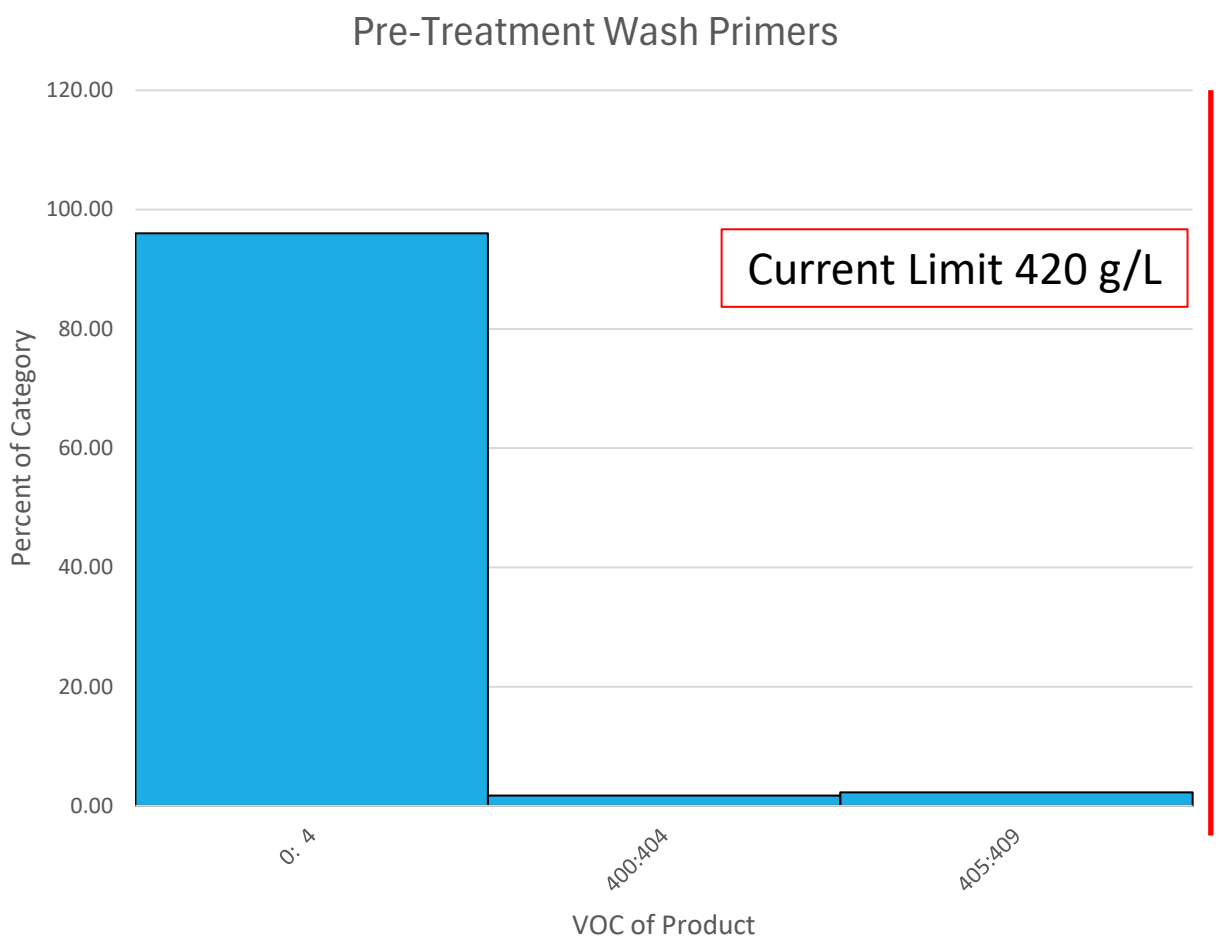


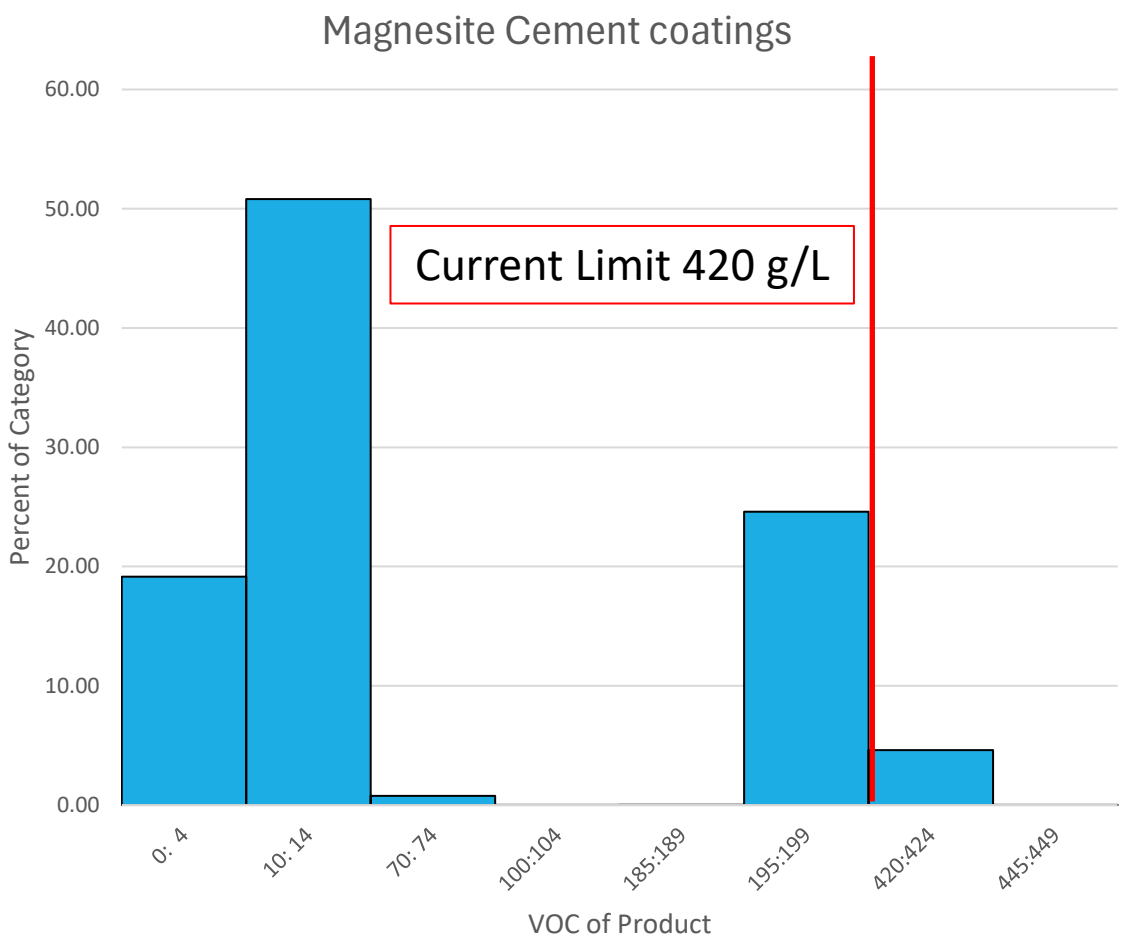
Potential VOC Reduction Examples





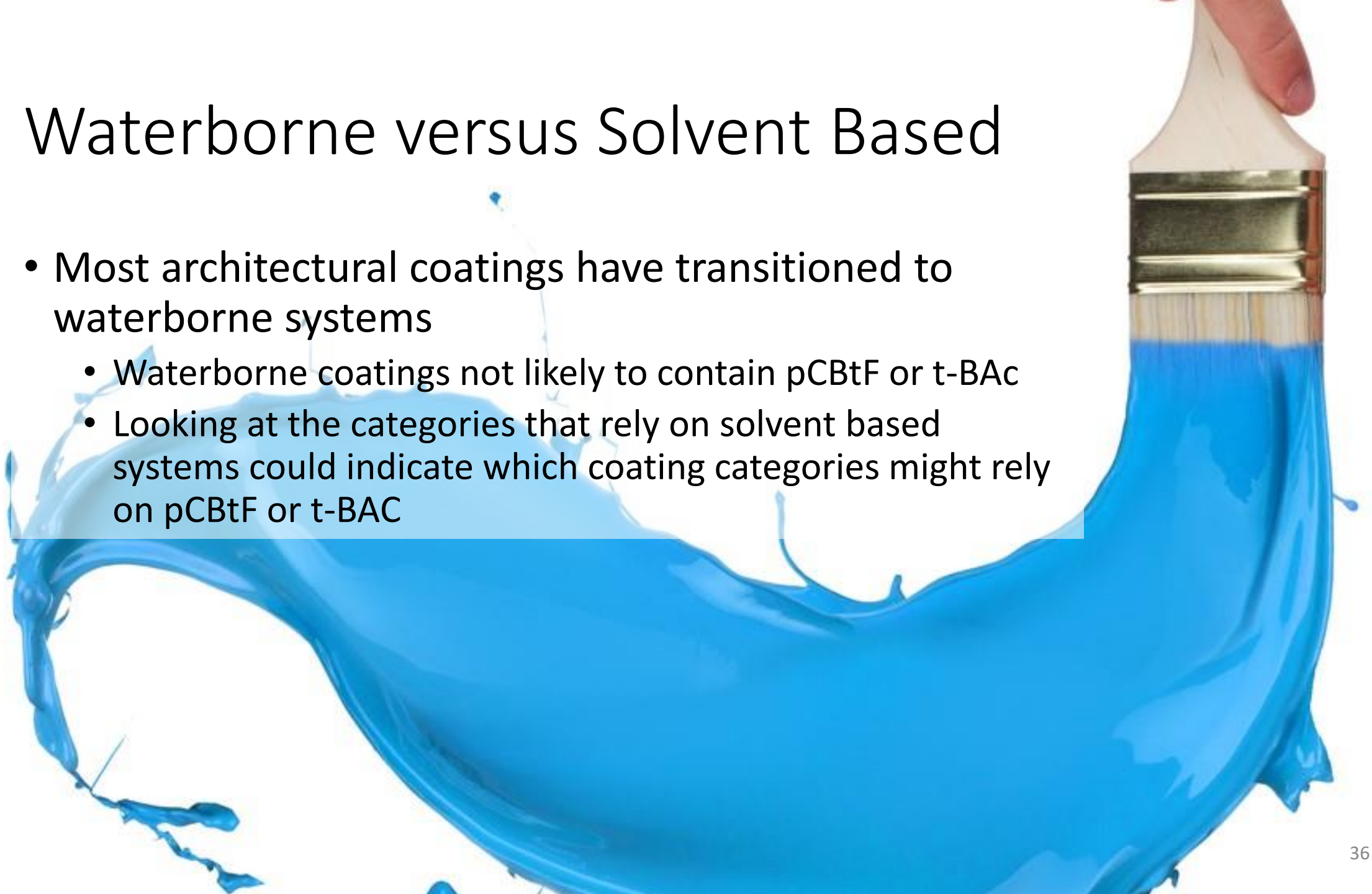
Categories With Lowest SWA Compared to Limit



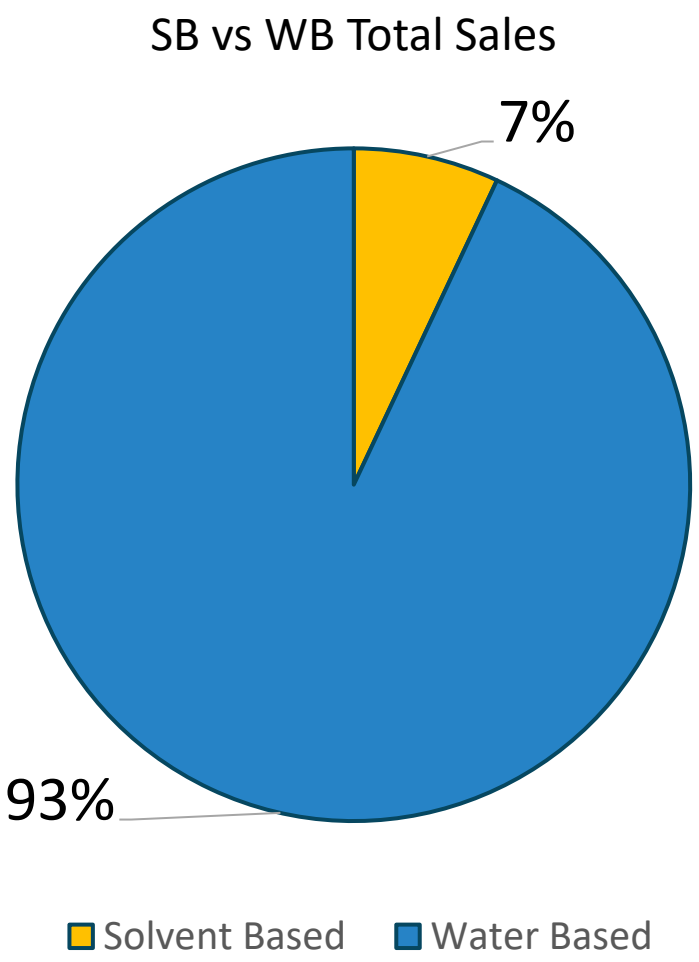


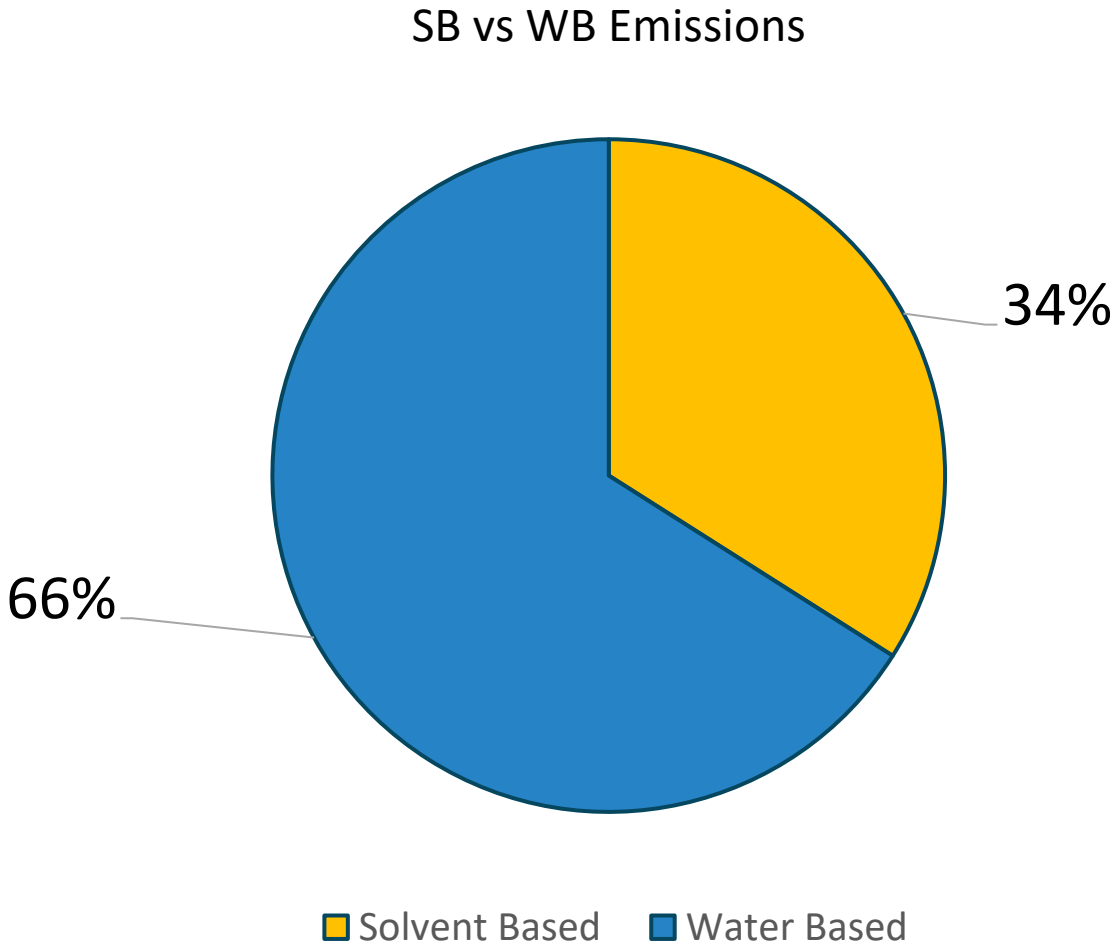
Waterborne versus Solvent Based

- Most architectural coatings have transitioned to waterborne systems
  - Waterborne coatings not likely to contain pCBtF or t-BAc
  - Looking at the categories that rely on solvent based systems could indicate which coating categories might rely on pCBtF or t-BAC

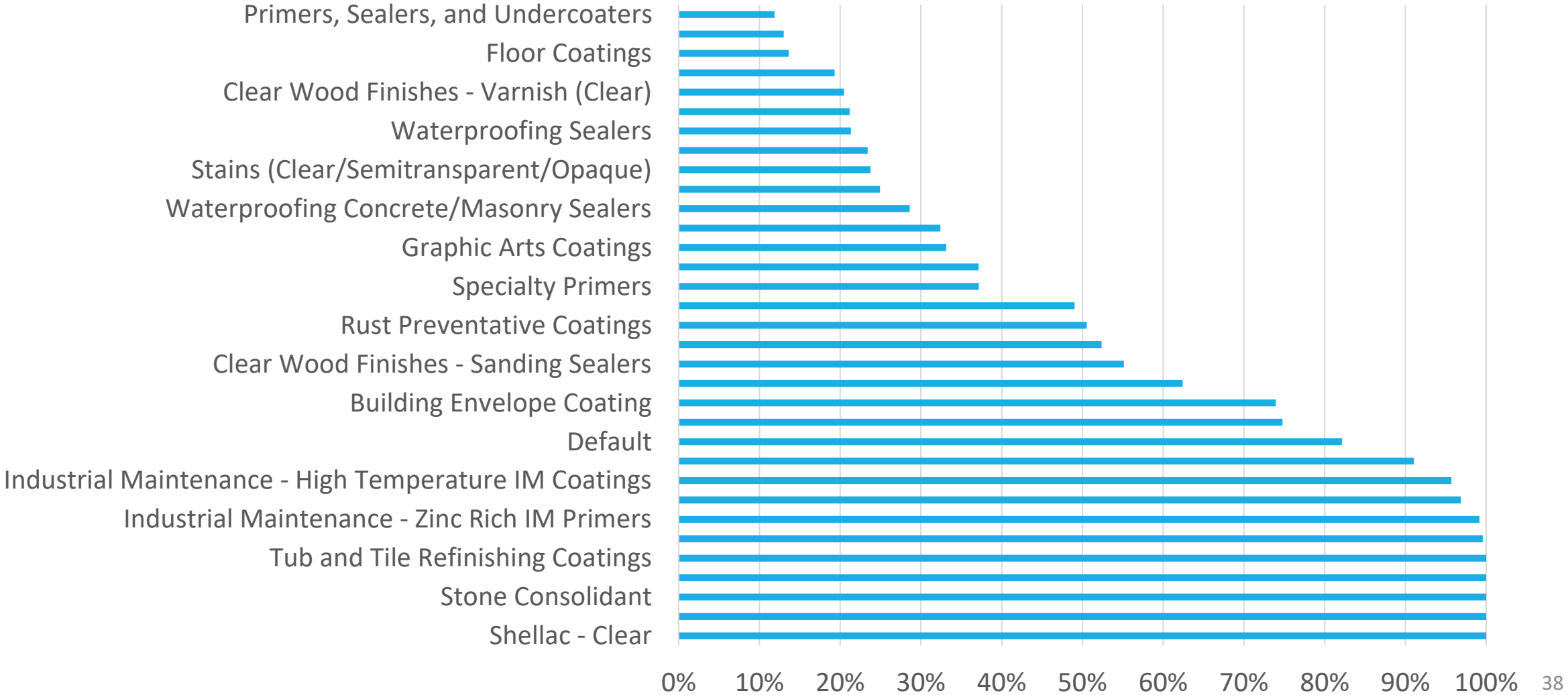


Waterborne Coatings versus Solvent Based





Categories with High Percent of Solvent Based Coatings



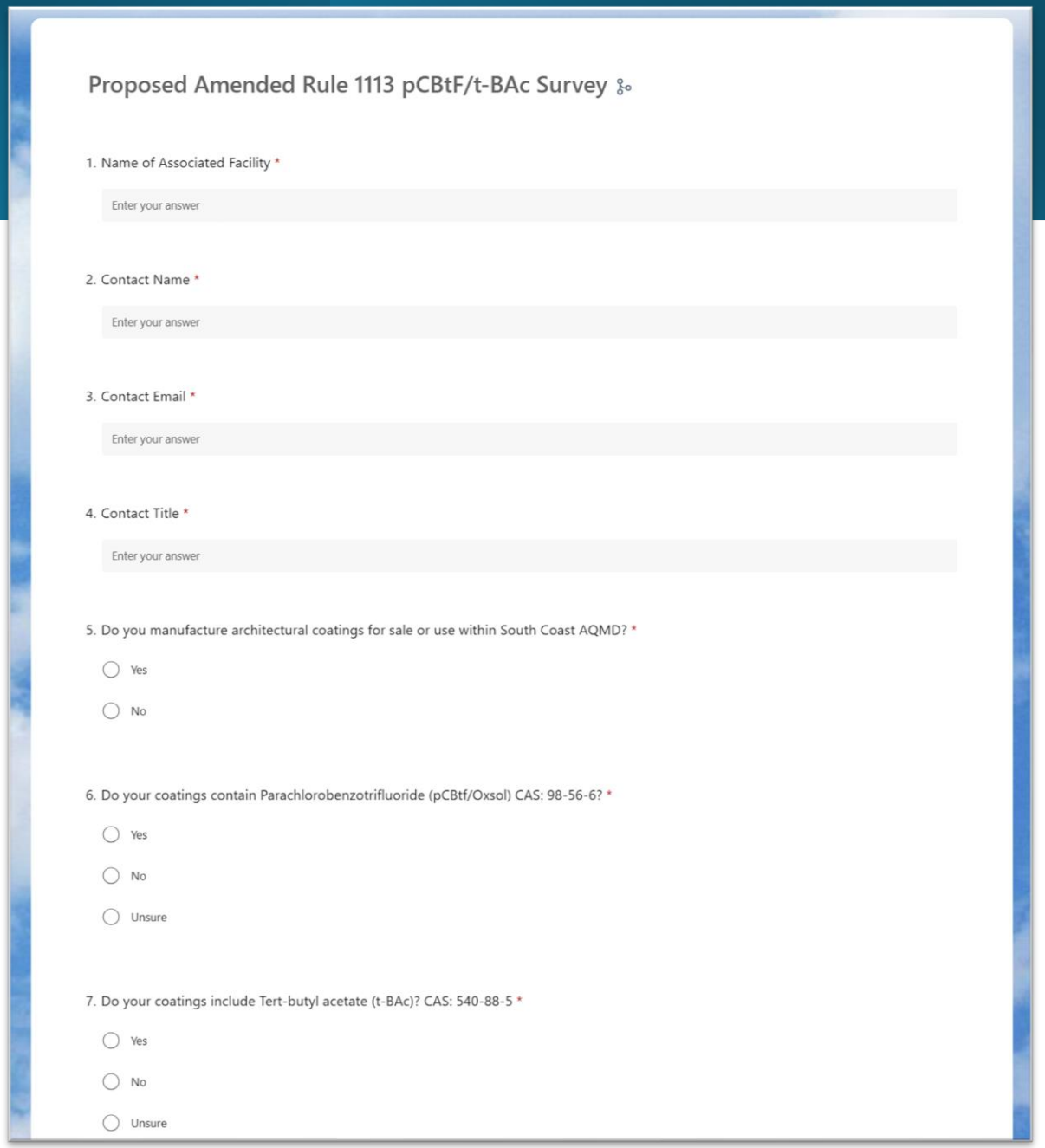
Take aways from the Rule 314 Data

- 93% of architectural coatings sold are water-based
- Majority of products sold have VOC content of 100 g/L or less
- Categories with percent of solvent-based formulations suggest potential pCBtf use
- Rule 314 data shows trends that would help achieve the key objectives of PAR 1113:
  - Highlights potential VOC limit reductions in categories with a low SWA VOC
  - Reductions may be needed to offset potential VOC limit increases to address pCBtF/t-BAc phase out
- Further analysis and stakeholder input needed

pCBtF/t-BAc Survey Results

Preliminary Survey

- Brief questionnaire that provided general information of:
  - How many manufacturers use t-BAc and/or pCBtF
  - Updated contact information for sending the more comprehensive Manufacturer Product Survey



Proposed Amended Rule 1113 pCBtF/t-BAc Survey

1. Name of Associated Facility *

Enter your answer

2. Contact Name *

Enter your answer

3. Contact Email *

Enter your answer

4. Contact Title *

Enter your answer

5. Do you manufacture architectural coatings for sale or use within South Coast AQMD? *

- Yes
- No

6. Do your coatings contain Parachlorobenzotrifluoride (pCBtf/Oxsol) CAS: 98-56-6? *

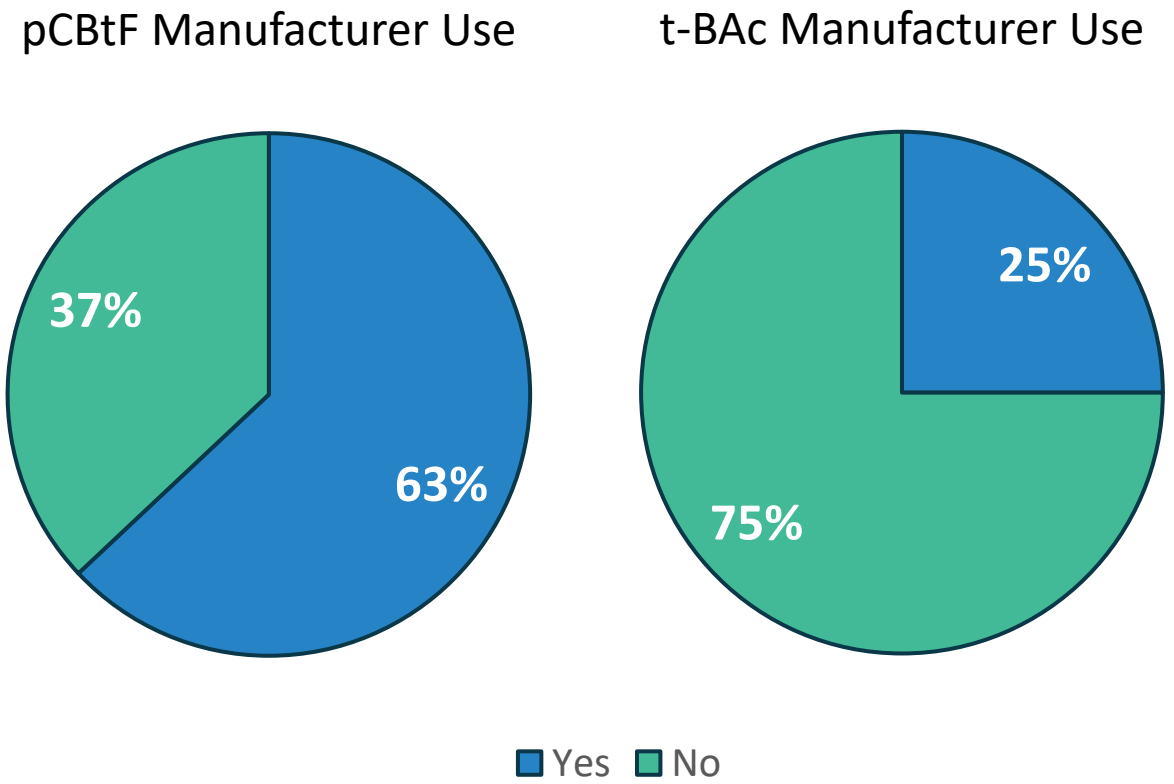
- Yes
- No
- Unsure

7. Do your coatings include Tert-butyl acetate (t-BAc)? CAS: 540-88-5 *

- Yes
- No
- Unsure

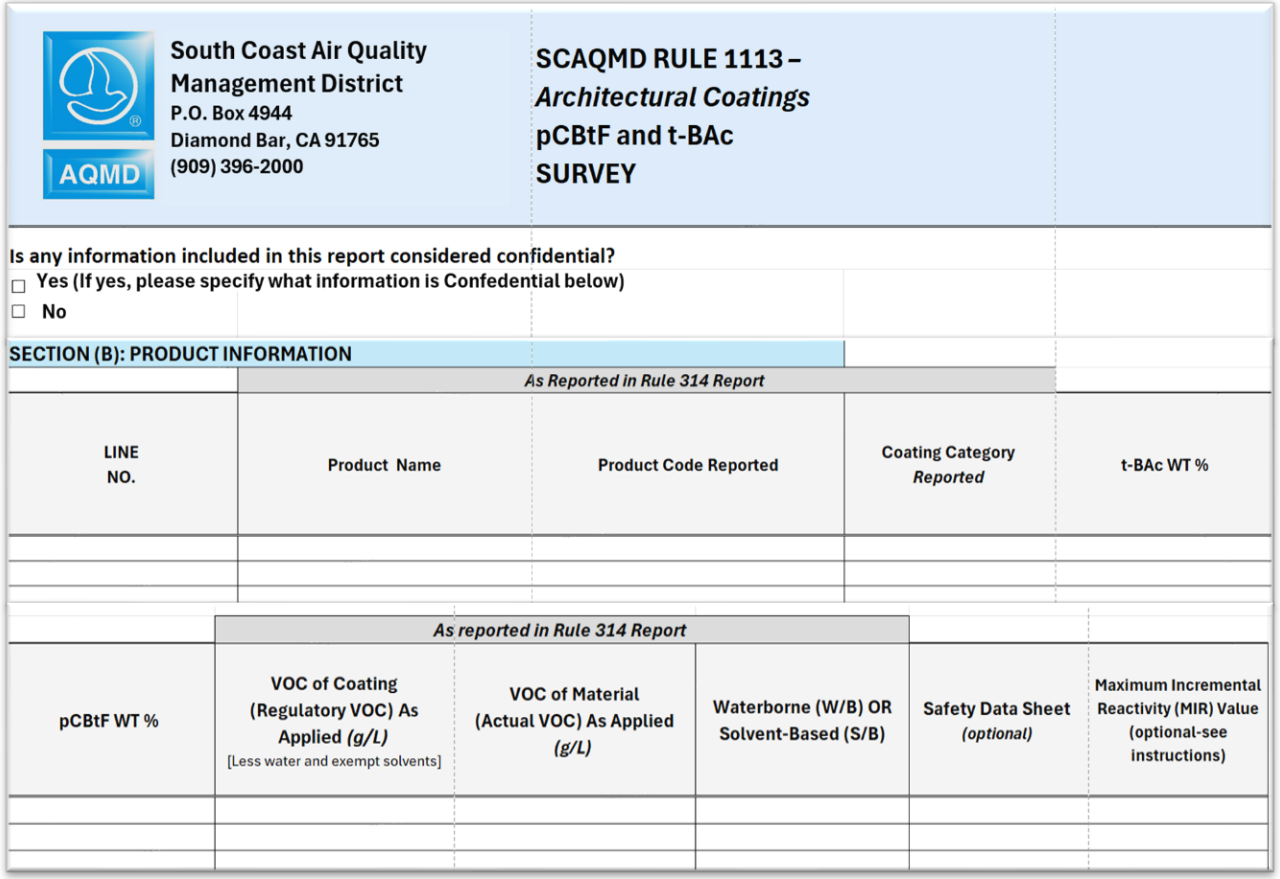
Preliminary Survey Data

- Sent to manufacturers in August 2025
  - 68 responses received
  - Brief questionnaire to gather information regarding pCBtF/ t-BAC use
- Manufacturers who reported using pCBtF or t-BAc were sent a more detailed survey
  - Detailed survey sent to 28 manufacturers



Stakeholder Survey

- Stakeholder survey provided staff with a clearer picture of:
  - pCBtF and t-BAC ranges
  - Share of the overall architectural coating market that contains t-BAC and/or pCBtF
  - MIR values of applicable products for a possible alternative MIR based VOC limit
- Deadline for submitting surveys has passed, however late submissions are still accepted



South Coast Air Quality Management District
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SCAQMD RULE 1113 – *Architectural Coatings*
pCBtF and t-BAc SURVEY

Is any information included in this report considered confidential?
☐ Yes (If yes, please specify what information is Confedential below)
☐ No

SECTION (B): PRODUCT INFORMATION

	As Reported in Rule 314 Report			
LINE NO.	Product Name	Product Code Reported	Coating Category *Reported*	t-BAc WT %

	As reported in Rule 314 Report				
pCBtF WT %	VOC of Coating (Regulatory VOC) As Applied *(g/L)* [Less water and exempt solvents]	VOC of Material (Actual VOC) As Applied *(g/L)*	Waterborne (W/B) OR Solvent-Based (S/B)	Safety Data Sheet *(optional)*	Maximum Incremental Reactivity (MIR) Value (optional-see instructions)

pCBtF Manufacturer Product Survey Data

- Manufacturer Product Survey has been sent out to obtain more specific data regarding pCBtF/t-BAc weight percentages
  - 12 responses received
  - Responses to the survey has shown trends of product categories that have the most prevalent use of pCBtF

Coating Category	Average pCBtf WT% in Products that Report pCBtf	Low	High
Roof Coatings	53%	44%	57%
Industrial Maintenance	45%	5%	100%
Mastic Coatings	40%	4%	46%
Primers, Sealers, and Undercoaters	39%	9%	84%
Rust Preventative Coatings	30%	19%	58%
Clear Wood Finishes - Varnish (Clear)	27%	9%	43%
Floor Coatings	16%	3%	54%

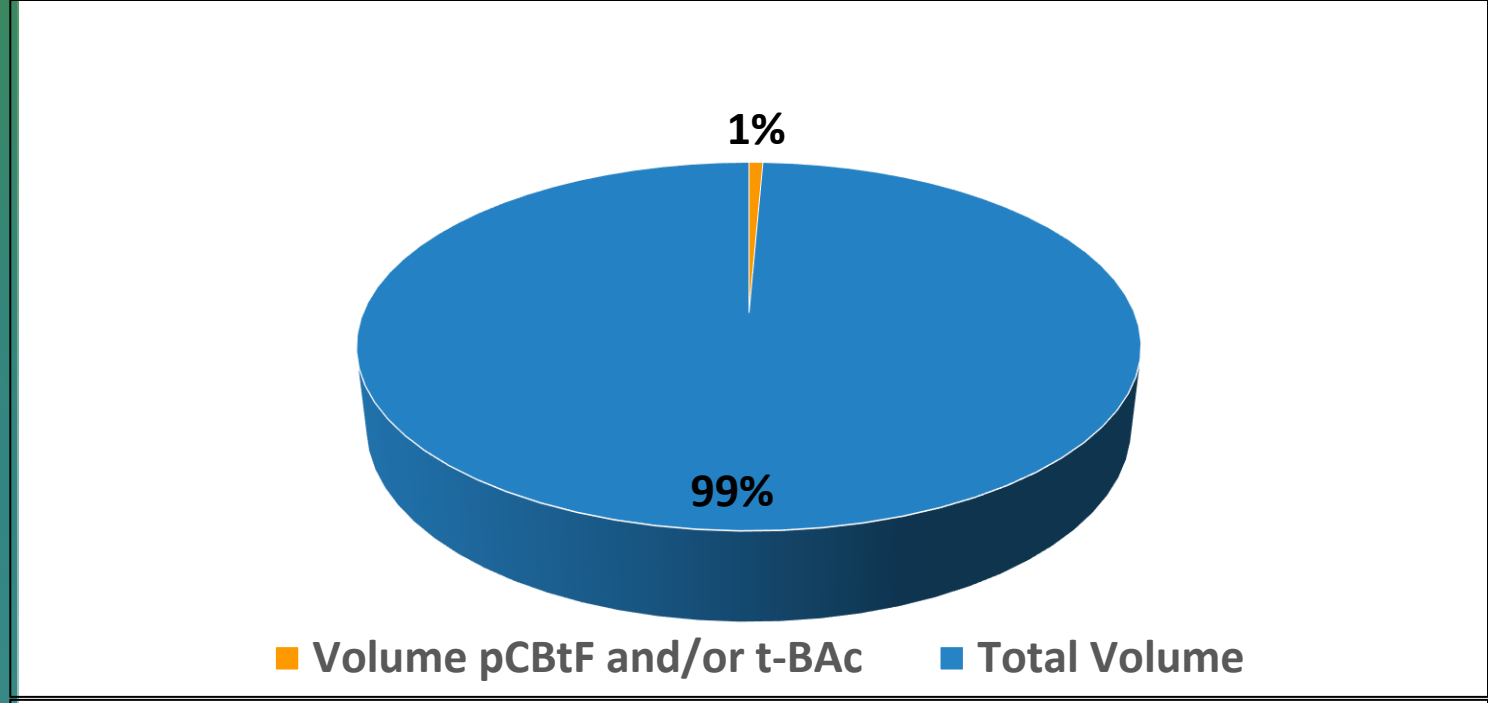
t-BAc Manufacturer Product Survey Data

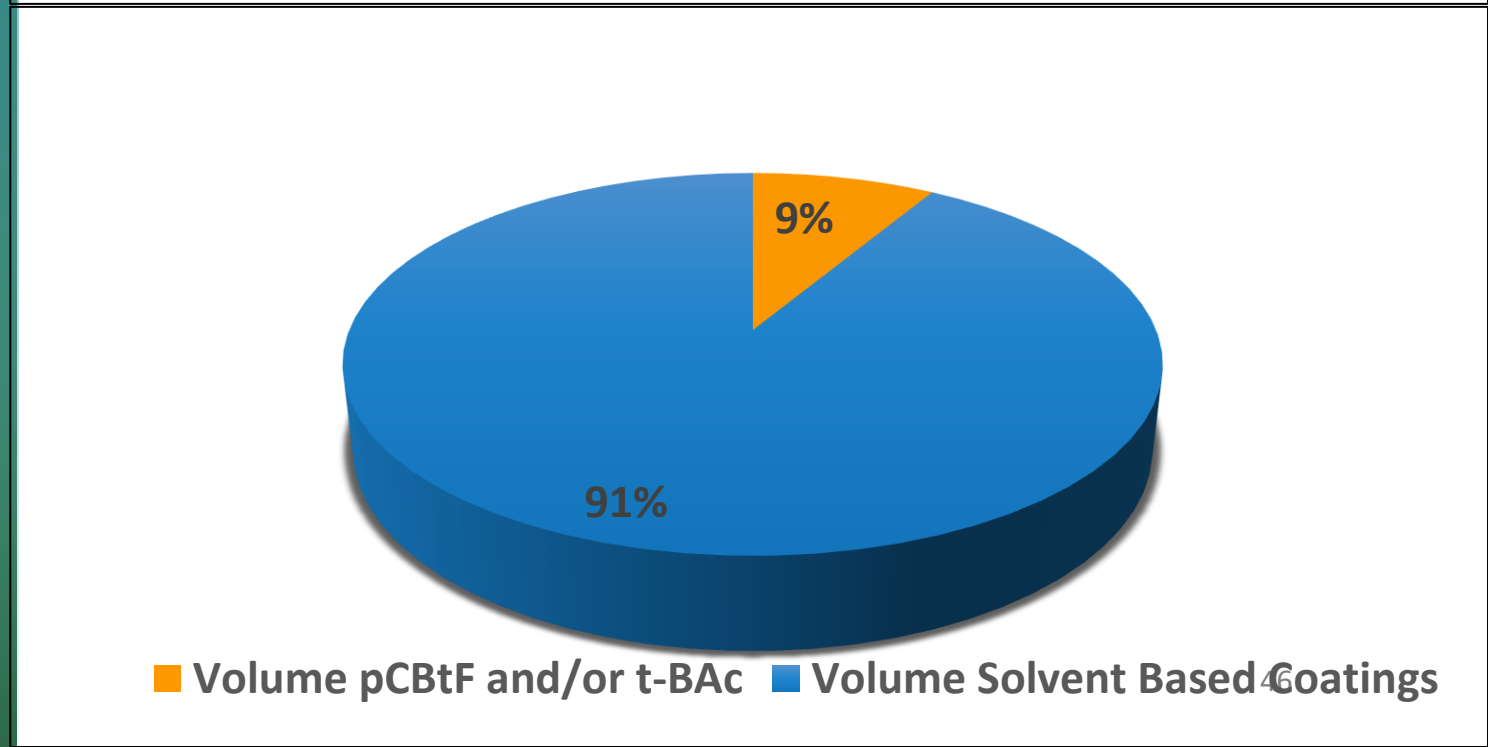
- t-BAc has a limited exemption, and as a result has fewer categories that would be affected by a prohibition
  - Limited survey responses received related to t-BAc use and composition

Coating Category	Average pCBtf WT% in Products that Report pCBtf	Low	High
Industrial Maintenance	8.5%	1.6%	46.2%

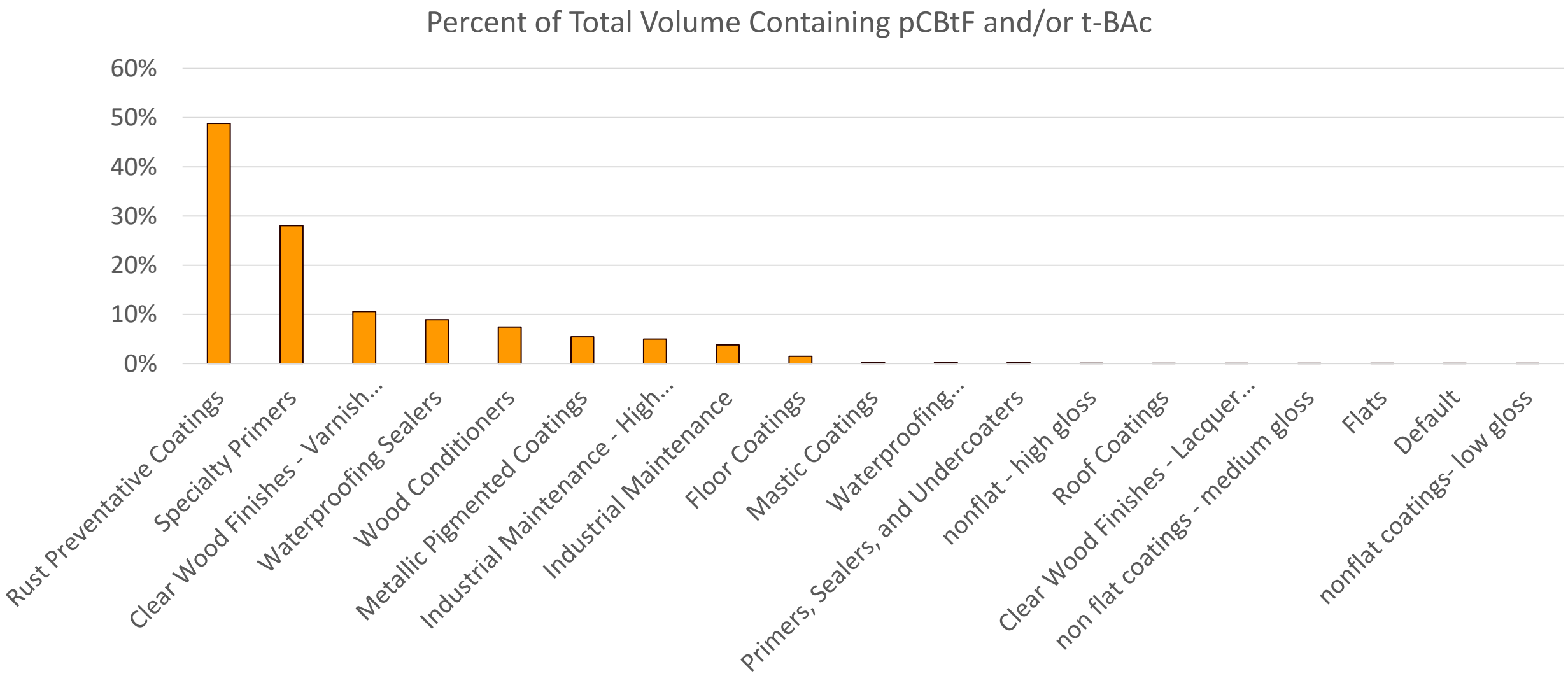
Percent of Coatings from Survey that rely on pCBtF and/or t-BAc

- Staff compared the volume of coatings reported as containing either pCBtF or t-BAc versus the volume of the coating sold
  - Very low volume of coatings reported to rely on pCBtF or t-BAc
- Compared category by category (next slide)





Coating Categories Reported with pCBtF and/or t-BAc



Manufacturer Product Survey Take-Aways

- Survey results suggest that the following categories may pose challenges proposing a pCBtF prohibition:

  Due to high use percentage within category:

  - **Rust Preventative Coatings**
  - **Specialty Primers**

  Due to high average pCBtf WT% in products that report pCBtf:

  - **Roof Coatings**
  - **Industrial Maintenance**
- More information needed regarding proposing a feasible prohibition timeline
- Limited information received regarding MIR based limits
- Staff will continue to work with manufacturers to consider alternative MIR based limits

Next Steps

Next Steps

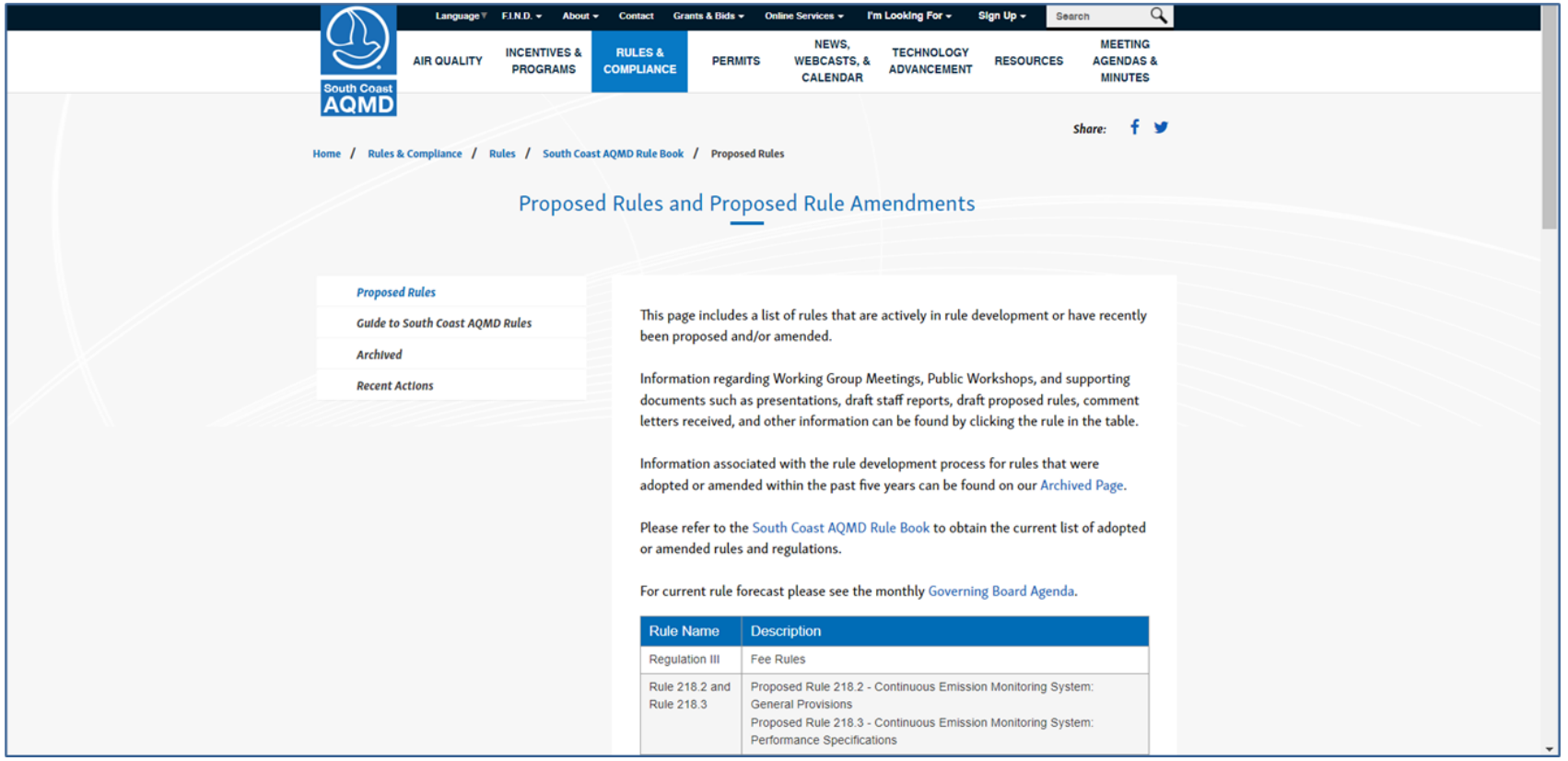
Continue to hold Working Group and individual stakeholder meetings

Continue to review existing products on the market

Anticipated Public Hearing in 2026 (4th Quarter)

Working Group Materials

- Working group materials for each working group meeting will be made available: **https://www.aqmd.gov/home/rules-compliance/rules/scaqmd-rule-book/proposed-rules**



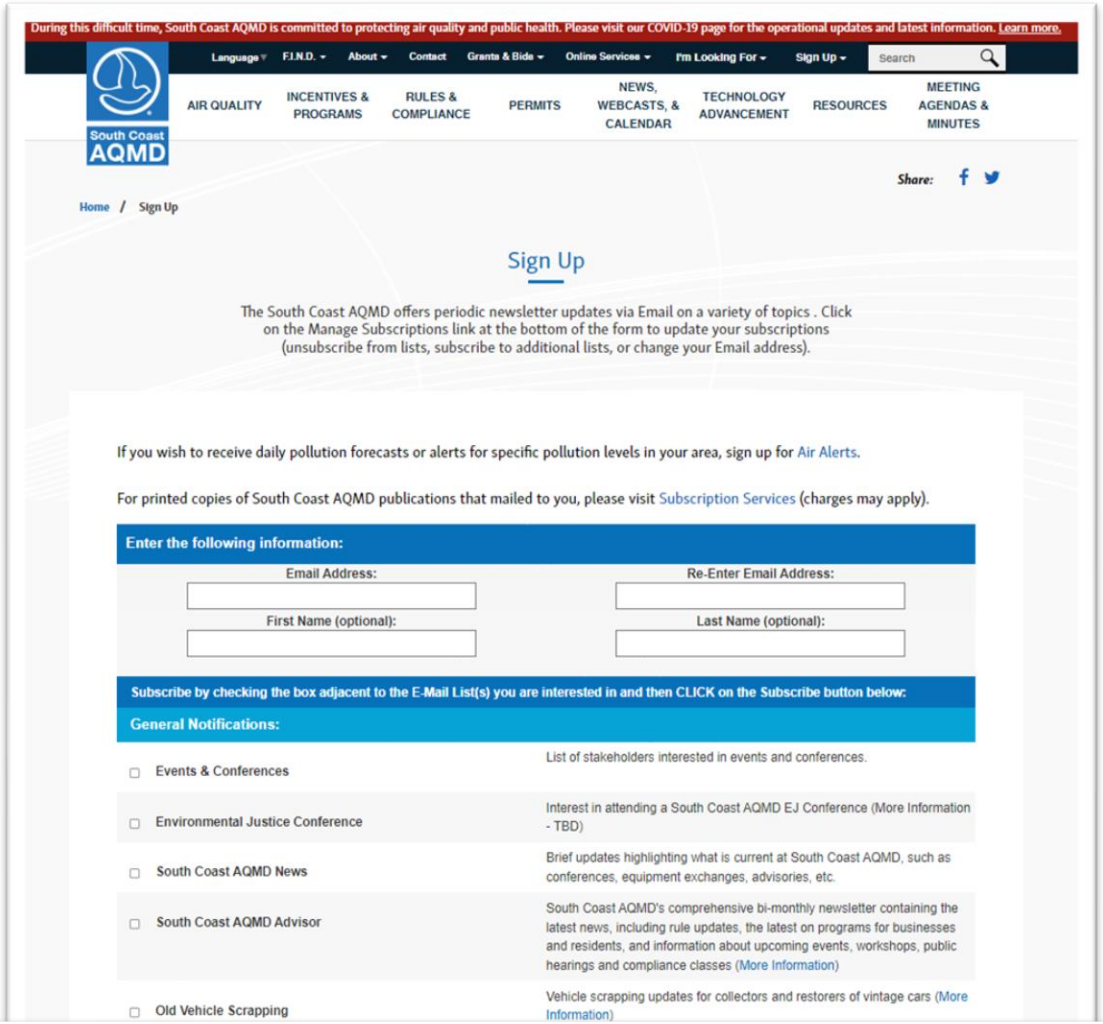
Receiving PAR 1113 Updates

- To receive email updates, sign up at South Coast AQMD sign up page *http://www.aqmd.gov/sign-up*

  Enter email address and name

  Subscribe by scrolling down to "Rule Updates" and check the box for Rule 1113 and click on the subscribe button at bottom of page

  Future meeting notices, links to documents, and any updates will be sent via email



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