

**San Joaquin Valley
Unified Air Pollution Control District**

Best Available Control Technology (BACT) Guideline 4.2.4

Emissions Unit: Mobile Equipment Coating Operation
Equipment Rating: all
Last Update: 9/12/2022

Pollutant	Achieved in Practice or contained in SIP	Technologically Feasible	Alternate Basic Equipment
PM10	1. Coating application methods compliant with District Rule 4612; 2. Spray Booth with exhaust filters; 95% control efficiency		
VOC	Use of coatings and application methods compliant with District Rule 4612	1. Thermal/Catalytic Incineration (98% capture and control) 2. Carbon Adsorption (95% capture and control) (Tech Feasible)	

BACT is the most stringent control technique for the emissions unit and class of source. Control techniques that are not achieved in practice or contained in a state implementation plan must be cost effective as well as feasible. Economic analysis to demonstrate cost effectiveness is required for all determinations that are not achieved in practice or contained in an EPA approved State Implementation Plan.

Proactive Best Available Control Technology Analysis

District BACT Guideline 4.2.4 Mobile Equipment Coating Operation

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I. Introduction

The objective of this project is to proactively update Best Available Control Technology (BACT) guideline 4.2.4, which covers trailer coating operations. This guideline was last updated on December 23, 1996. The scope of this BACT determination will be revised to address mobile equipment coating operations per the definition in Rule 4612.

This proactive update is necessary to incorporate the most stringent emission control standards that have been achieved in practice. Furthermore, the proactive update to this BACT guideline will bring consistency in implementing the BACT standard throughout the regional offices of the District for new and modified Mobile Equipment Coating Operations triggering BACT. The discussion in this document will be limited to the following items:

- Source of emissions
- Top-Down BACT Analysis for each pollutant
- Recommendation

II. Background

BACT Guideline 4.2.4 for trailer coating operations was last updated in December 23, 1996. At the time of the last update, the most current District Rule that helped determine what would be listed in the BACT guideline was District Rule 4602 – Motor Vehicle and Mobile Equipment Coating Operations. Thus, to further understand what was required then, we will discuss Rule 4602 in this section.

Purpose

The purpose of this rule was to limit the emission of volatile organic compounds from the finishing and refinishing of Group I Vehicles and Group II Vehicles and equipment, and from the organic solvent cleaning, and the storage and disposal of solvents and waste solvent materials associated with such finishing and refinishing. This rule also specifies the administrative and recording keeping equipment and the test methods for determining the VOC content and emissions and the quality of coating.

Definitions

Section 3.0 of Rule 4602 Defines many terms used in the rule however we will only discuss the ones most pertinent to the BACT guideline.

- 3.36 Mobile Equipment: any equipment which may be drawn or capable of being used and/or driven on rails or a roadway including, but not limited to, trains, railcars, truck trailers, camper shells, mobile cranes, bulldozers, street cleaners, and implements of husbandry or agriculture.

- 3.45 Pretreatment Wash Primer: any coating which contains a minimum of one-half (0.5) percent acid by weight, is necessary to provide surface etching, and is applied directly to bare metal surfaces to provide corrosion resistance and adhesion.
- 3.63 Topcoat: any single-stage coating applied over a primer, primer surfacer, or an original OEM finish for the purpose of protection or appearance.

With the definitions above we can clearly see that a trailer can be defined as mobile equipment under rule 4602's definitions. Additionally, we acquire a clear definition of what a topcoat and pretreatment wash primers are.

Comparison to Rule 4612 Motor Vehicle and Mobile Equipment Coating Operations

Rule 4602 was replaced by Rule 4612 in September of 2006. Rule 4612 is the most current motor vehicle and mobile equipment coating operations rule at the San Joaquin Valley APCD. The current BACT guideline states that Topcoat and Pretreatment Wash Primers cannot surpass the set pound of VOC per gallon threshold. However, Rule 4612 does not contain definitions for Topcoat and Pretreatment wash Primers; thus this BACT guideline must be updated to reference equivalent definitions. The Rule 4612 equivalent of topcoat is single-stage coating and the equivalent to pretreatment wash primer is pretreatment coating. The VOC content limit for the equivalent coatings are discussed below in Section IV.C.

III. Source of emissions

Surface coatings are applied to a variety of motor vehicle parts and products for protective, decorative, or functional purposes. Volatile Organic Compounds (VOCs) and Particulate Matter (PM) are the pollutants of concern produced by the coating process. VOCs are contained in the coating and are emitted as the water and solvents evaporate to dry the coating. PM₁₀ is produced from the solid portion of the coating which does not adhere to the desired surface.

VOC Emissions from coating operation:

VOC emissions from the coating operation can be reduced by limiting the VOC content of the coatings used and by increasing the amount of the coating transferred to the desired surface (thereby using less coating).

PM₁₀ Emissions from coating operation:

PM₁₀ emissions from the coating operation can be reduced by increasing the amount of the coating transferred to the desired surface (thereby using less coating). Additionally, the paint spray booth with a dry exhaust filter system will control PM₁₀ emissions by filtering air from inside the paint booth before it is exhausted to atmosphere.

IV. Top-Down BACT Analysis

BACT analysis

Step 1 - Identify All Possible Control Technologies

The following BACT clearinghouse references were reviewed to determine whether any motor vehicle parts and products coating operations have been required to employ VOC controls:

- EPA RACT/BACT/LAER clearinghouse
- CARB BACT clearinghouse
- South Coast AQMD (SCAQMD) BACT clearinghouse
- Bay Area AQMD (BAAQMD) BACT clearinghouse
- Sacramento Metropolitan AQMD (SMAQMD) BACT clearinghouse
- San Diego County APCD (SDCAPCD) BACT clearinghouse
- San Joaquin Valley APCD (SJVAPCD) BACT clearinghouse

Also, the following Rules and Regulations were reviewed to determine what VOC emission limits are currently imposed on automotive and mobile equipment coating operations:

- South Coast AQMD Rule 1151 (September 5, 2014)
- Bay Area AQMD Regulation 8, Rule 45 (December 3, 2008)
- Sacramento Metropolitan AQMD Rule 459 (August 25, 2011)
- San Diego County APCD Rule 67.20.1 (June 30, 2010)
- SJVAPCD Rule 4612 (October 21, 2010)

Finally, the District also conducted a survey of permit limits for motor vehicle and mobile equipment coating operations located in the SJVAPCD. The purpose of the survey was to determine what VOC emission control standards are currently being achieved in practice.

A. Survey of BACT Guidelines:

The EPA RACT/BACT/LAER clearinghouse does not include general guidelines, only determinations made by individual agencies. There were no determinations for this class and category.

The CARB BACT clearinghouse did not contain a guideline for this class and category.

The SCAQMD BACT clearinghouse does not include general guidelines, only determinations made in individual projects. There were no determinations for this class and category.

The SCAQMD BACT clearinghouse for non-major polluting facilities has requirements based on the subcategory of product being coated and the amount of VOC emissions. There were no determinations for this class and category.

The BAAQMD BACT clearinghouse has no determinations for this class and category.

The SMAQMD clearinghouse has no determinations for this class and category.

The SDAQMD clearinghouse has no determinations for this class and category.

The SJVAPCD clearinghouse has one BACT guideline for this class and category. The requirements are shown in the table below:

Guideline	Equipment	Control Technology
4.2.4	Trailer coating operations	<p><u>Achieved in Practice:</u> VOC: Using topcoats with low VOC content (2.8 lb/gal less water and exempt compounds) and pretreatment wash primers with low VOC content (6.0 lb/gal less water and exempt compounds)</p> <p>PM10: HVLP spray gun,</p> <p><u>Tech Feasible:</u> VOC:</p> <ol style="list-style-type: none"> 1. Thermal incineration with total enclosure (100% capture efficiency) 2. Catalytic incineration with total enclosure (100% capture efficiency) 3. Carbon adsorption with total enclosure (100% capture efficiency) <p>PM10: Spray booth with exhaust filters</p> <p><u>Alternate Basic Equipment:</u> None specified</p>

Summary of BACT Guidelines:

The only BACT for this class and category is from SJVAPCD, BACT guideline 4.2.4 Trailer Coating Operation.

Based on the above information, the current achieved in practice BACT emissions limitation for trailer coating operations would be:

VOC: Using topcoats with low VOC content (2.8 lb/gal less water and exempt compounds) and pretreatment wash primers with low VOC content (6.0 lb/gal less water and exempt compounds)

PM10: HVLP spray gun

B. Survey of Applicable Rules and Regulations:

The rules and regulations listed in the following table are applicable to the BACT analysis. Each applicable section of the listed rules will be discussed in further detail in the following section.

District/Agency	Rule
CARB	Title 17, Cal. Code Regs. Section 93112 – Airborne Toxic Control Measure (ATCM) for Emissions of Hexavalent Chromium and Cadmium from Motor Vehicle and Mobile Equipment Coatings
Bay Area AQMD	Regulation 8, Rule 45 Motor Vehicle and Mobile Equipment
South Coast AQMD	Rule 1151 Motor Vehicle and Mobile Equipment Non-Assembly Line Coating Operations
San Diego APCD	Rule 67.20.1 Motor Vehicle and Mobile Equipment Coating Operations
San Joaquin Valley APCD	Rule 4612 Motor Vehicle and Mobile Equipment Coating Operations
Sacramento Metro AQMD	Rule 459 Automotive, Mobile Equipment, and Associated Parts and Components Coating Operations
US EPA	40 CFR 63 Subpart HHHHHH – NESHAP for Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources

C. Summary of Applicable Rules and Regulations:

CARB: Title 17, Cal. Code Regs. Section 93112 – Airborne Toxic Control Measure (ATCM) for Emissions of Hexavalent Chromium and Cadmium from Motor Vehicle and Mobile Equipment Coatings

Rule Requirements

This rule prohibits the sale and supply of motor vehicle and/or mobile equipment coating that contains hexavalent chromium or cadmium. This rule also states that no owner or operator of a motor vehicle and/or mobile equipment coating facility shall use or possess a motor vehicle and/or mobile equipment coating containing Hexavalent chromium or cadmium after December 31, 2003.

Each manufacturer of a motor vehicle and/or mobile equipment coating subject to Section 93112 shall clearly display on each coating container or package, the day, month, and year in which the coating was manufactured, or a code indicating such date. In addition,

no person shall erase, alter, deface or otherwise remove or make illegible any date or code-date from any regulated coating container or package without the express authorization of the manufacturer.

Bay Area AQMD: Regulation 8, Rule 45 – Motor Vehicle and Mobile Equipment Coating Operations

Rule Requirements

The purpose of this Rule is to limit the emission of volatile organic compounds from the finishing or refinishing of motor vehicles, mobile equipment and their parts and components.

8-45-300 Standards

Sections 8-45-3XX detail the standards required to comply with Regulation 8, Rule 45. The sections that apply to trailer coating operations will be discussed below.

8-45-301 Coating Limits

No person shall finish or refinish any vehicles, mobile equipment or their parts and components using any coating with a VOC content in excess of the following limits, expressed as grams of VOC per liter (or pounds per gallon) of coating applied, excluding water and exempt solvents, in excess of the following limits unless emissions to the atmosphere are controlled to an equivalent level by air pollution abatement equipment with an overall control efficiency of at least 85% and which meets the requirements of Regulation 2, Rule 1:

Coating Category	BAAQMD Reg 08 Rule 45	
	VOC g/L	VOC lb/gal
Adhesion Promoter	540	4.5
Clear Coating	250	2.1
Color Coating	420	3.5
Multi-Color Coating	680	5.7
Pretreatment Coating	660	5.5
Primer	250	2.1
Primer Sealer	250	2.1
Single-Stage Coating	340	2.8
Temporary Protective Coating	60	3.5
Truck bed Liner Coating	310	2.6
Underbody Coating	430	3.6
Uniform Finish Coating	540	4.5
Any Other Coating Type	250	2.1

8-45-303 Transfer Efficiency

A person shall not apply any coating to any motor vehicles or mobile equipment or their parts and components with spray application equipment unless one of the following methods is used:

- 303.1 Electrostatic application equipment, operated in accordance with the manufacturer's recommendations;
- 303.2 High-Volume, Low-Pressure (HVLV) spray equipment, operated in accordance with the manufacturer's recommendations; or
- 303.3 Any alternative coating application method that achieves a transfer efficiency equivalent to, or higher than, the application methods listed in Section 8-45-303.1 or 303.2. Prior written approval from the APCO shall be obtained for each alternative method used.

8-45-308 Surface Preparation and Solvent Loss Minimization

Any person using organic solvent for surface preparation and cleanup or mixing using or disposing of coating or stripper containing organic solvent:

- 308.1 Shall close containers used for the storage or disposal of cloth or paper used for solvent surface preparation and cleanup.
- 308.2 Shall close containers of fresh or spent solvent, coating, catalyst, thinner, or reducer when not in use.
- 308.3 Shall not use organic compounds for the cleanup of spray equipment, including paint lines, unless equipment for collecting the organic compounds and minimizing their evaporation to the atmosphere is used.
- 308.5 The VOC content of surface preparation solvent shall not exceed 25 g/l (0.2 lb/gal). This limit shall not apply to surface preparation solvent used as bug and tar remover provided that the VOC content of such solvent does not exceed 350 g/l (2.9 lb/gal). Usage of solvent used as bug and tar remover is limited as follows:
 - a. 20 gallons in any consecutive 12-month period for facilities and operations with 400 gallons or more of coating usage per year;
 - b. 15 gallons in any consecutive 12-month period for facilities and operations with 150 gallons or more of coating usage per year; and
 - c. 10 gallons in any consecutive 12-month period for facilities and operations with less than 150 gallons of coating usage per year.

8-45-312 Specialty Coating

The volume of adhesion promoter, uniform finish coating and multi-color coating combined shall not exceed 5.0 percent of all topcoats applied, on a monthly basis.

8-45-316 Filtration

A person shall not apply singly or multi-stage topcoats subject to Section 8-45-301 to any vehicle except when exhausted through properly maintained particulate filtration media. Additionally, a person shall not apply clear coating, color coating, multi-color coating, single-stage coating or uniform finish coating to any vehicle except when exhausted through properly maintained particulate filtration media. This requirement applies to all persons applying coating subject to this Rule at stationary and mobile locations. The Filter system shall meet the requirements of regulation 2 Rule 1, as applicable.

8-45-317 Most Restrictive VOC Limit

If anywhere on the container or any automotive moating, or any label or sticker affixed to the container or in any sales, advertising or technical literature supplied by a person, any presentation is made that indicates that the coating meets the definition of or is recommended for use for more than one of the coating categories listed in Section 8-45-301.3, then the lowest VOC content limit shall apply.

South Coast AQMD: Rule 1151 Motor Vehicle and Mobile Equipment Non-Assembly Line Coating Operations

Rule Requirements

The purpose of this rule is to reduce volatile organic compound (VOC) emissions, toxic air contaminants, stratospheric ozone-depleting compounds, and global warming compound emissions from automotive coating applications performed on motor vehicles, mobile equipment, and associated parts and components.

d. Requirements

1. A person shall not apply any automotive coating to a motor vehicle, mobile equipment, or associated parts or components of a motor vehicle or mobile equipment that contains VOC in excess of the limits specified in the Table of Standards below. Compliance with the applicable VOC content limits shall be based on VOC content, including any material added to the original automotive coating supplied by the manufacturer, as applied, less water and exempt compounds.

Coating Category	SCAQMD Rule 1151 Current Limit	
	g/L	lb/gal
Adhesion Promoter	540	4.5
Clear Coating	250	2.1
Color Coating	420	3.5
Multi-Color Coating	680	5.7
Pretreatment Coating	660	5.5
Primer	250	2.1
Single-Stage Coating	340	2.8
Temporary Protective Coating	60	0.5
Truck Bed Liner Coating	310	2.6
Underbody Coating	430	3.6
Uniform Finish Coating	540	4.5
Any other coating type	250	2.1

2. Most Restrictive VOC Limit

If any representation or information on the container of any automotive coating, or any label or sticker affixed to the container, or in any sales, advertising, or technical literature that indicates that the automotive coating meets the definition of or is recommended for use for more than one of the automotive coating categories listed in paragraph (d) (1), then the lowest VOC content limit shall apply.

3. Alternative Compliance

A person may comply with the provisions of paragraph (d)(1), by using an approved emission control system, consisting of collection and control devices, provided such emission control system is approved pursuant to Rule 203 – Permit to Operate, in writing, by the Executive Officer for reducing emissions of VOC. The Executive Officer shall approve such emission control system only if the VOC emissions resulting from the use of non-compliant automotive coatings will be reduced to a level equivalent to or lower than that which would have been achieved by the compliance with the terms of paragraph (d)(1). The required efficiency of an emission control system at which an equivalent or greater level of VOC emission reduction will be achieved shall be calculated by the following equation:

$$C.E. = \left[1 - \left\{ \frac{(VOC_{LWc})}{(VOC_{LWn,Max})} \times \frac{1 - (VOC_{LWn,Max}/D_{n,Max})}{1 - (VOC_{LWc}/D_c)} \right\} \right] \times 100$$

Where:

C.E. = Control Efficiency, percent

VOC_{LWc} = VOC Limit of Rule 1151, less water and less exempt compounds, pursuant to paragraph (d)(1).

$VOC_{LWn,Max}$ = Maximum VOC content of non-compliant automotive coating used in conjunction with a control device, less water and exempt compounds.

$D_{n,Max}$ = Density of VOC solvent, reducer, or thinner contained in the non-compliant automotive coating containing the maximum VOC. D_c = Density of corresponding VOC solvent, reducer, or thinner used in the compliant automotive coating system = 880 g/L.

6. Transfer Efficiency

- (A) A person shall not apply automotive coatings to any motor vehicle, mobile equipment or any associated parts or components to a motor vehicle or mobile equipment except by the use of one of the following methods:
- i. electrostatic application, or
 - ii. high-volume, low-pressure (HVLV) spray, or
 - iii. brush, dip, or roller, or
 - iv. Spray gun application, provided the owner or operator demonstrates that the spray gun meets the HVLV definition in paragraph (c)(17) 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.
 - v. Any such other automotive coating application methods as demonstrated, in accordance with the provisions of subparagraph (h)(1)(F), to be capable of achieving equivalent or better transfer efficiency than the automotive coating application method listed in clause (d)(6)(A)(ii),
- (B) A person shall not apply any automotive coating by any of the methods listed in subparagraph (d)(6)(A) unless the automotive coating is applied with properly operating equipment, operated according to procedures recommended by the manufacturer and in compliance with applicable permit conditions, if any.

San Diego APCD: Regulation 4, Rule 67.20.1 Motor Vehicle and Mobile Equipment Coating Operations

Rule Requirements

This rule is applicable to all motor vehicles, mobile equipment, non-motorized models, and their associated parts and components.

(d) Standards

(1) VOC content Limits:

A person shall not conduct any motor vehicle and mobile equipment coating operation by using any coating with a VOC content in excess of the following limits:

Coating Category	SDAPCD Rule 67.20.1 Current Limit	
	g/L	lb/gal
Adhesion Promoter	540	4.5
Clear Coating	250	2.1
Color Coating	420	3.5
Multi-Color Coating	680	5.7
Pigmented Coating for Military Tactical Support Vehicles and Equipment	420	3.5
Pretreatment Coating	660	5.5
Primer	250	2.1
Primer for Military Tactical Support Vehicles and Equipment	420	3.5
Primer Sealer	250	2.1
Single-Stage Coating	340	2.8
Temporary Protective Coating	60	0.5
Truck Bed Liner Coating	310	2.6
Underbody Coating	430	3.6
Uniform Finish Coating or Blender	540	4.5
Any other coating type	250	2.1

(2) Most Restrictive VOC Content Limit

If anywhere on the automotive coating container, or any label or sticker affixed to the container, or in any sales, advertising or technical literature, any representation is made that indicates that the coating meets the definition of or is recommended for use for more than one of the coating categories listed in Subsection (d)(1), then the lowest VOC content limit shall apply.

(3) Coating Application Equipment

- (i) Electrostatic spray application; or
- (ii) Flow coat application; or
- (iii) Dip coat application; or
- (iv) Roll coat; or
- (v) Hand application methods; or
- (vi) High-volume low-pressure (HVLV) spray
- (vii) Other coating application methods that are demonstrated to have transfer efficiency at least equal to one of the above application methods, and which are used in such a manner that the operating parameters under which they were demonstrated to achieve such transfer efficiency are permanent features of the method. Such coating methods shall be approved in writing by the Air Pollution Control Officer prior to use.

(4) Cleaning Coating application equipment

A person shall not clean coating application equipment used in motor vehicle and mobile equipment coating operations unless:

- (i) The VOC content of cleaning material does not exceed 25 grams per liter (0.21 lbs/gal), as applied; and
- (ii) The cleaning material is flushed or rinsed through the application equipment, including paint lines, without exposure to air, into a container which has in place a lid that completely covers the container and has no visible holes, breaks or openings; and either
- (iii) The application equipment or equipment parts are cleaned in a container which is open only when being accessed for adding, cleaning, or removing application equipment or when cleaning material is being added, provided the cleaned in a container which is open only when being accessed for adding, cleaning, or removing application equipment or when cleaning material is being added, provided the cleaned equipment or equipment parts are drained to the container until dripping ceases; or
- (iv) A system is used that totally encloses the component parts being cleaned during the washing, rinsing, and draining process

(5) Surface Preparation and Other Cleaning Operations

A person shall not use any material for surface preparation or any other surface cleaning unless its VOC content 25 grams or less per liter of material (0.21 lbs/gal), as applied.

(6) Waste Disposal

A person shall not use coating application equipment or any other means to dispose of waste coatings, coating components, surface preparation materials, or cleaning materials by spraying into the air, except when momentarily purging coating material from a spray applicator cap immediately before or after applying the coating material.

(e) Control Equipment

(1) In lieu of complying with the provisions of Subsection (d)(1) through (d)(5) a person may elect to use an air pollution control system which:

- (i) Has been installed in accordance with an Authority to Construct; and
- (ii) Includes an emission collection system which captures emissions generated from coating, surface preparation, and/or application equipment cleaning and transports the captured emissions to an air pollution control device; and
- (iii) Has an overall control efficiency of at least 85% by weight

San Joaquin Valley APCD: Rule 4612 Motor Vehicle and Mobile Equipment Coating Operations

Rule Requirements

The purpose of this rule is to limit volatile organic compound (VOC) emissions from coatings of motor vehicles, mobile equipment and associated parts and components, and associated organic solvent cleaning, storage, and disposal.

5.1 Coating Limits

Coating Category	SJVAPCD Rule 4612	
	VOC g/L	VOC lb/gal
Adhesion Promoter	540	4.5
Clear Coating	250	2.1
Color Coating	420	3.5
Multi-Color Coating	680	5.7
Pretreatment Coating	660	5.5
Primer	250	2.1
Primer Sealer	250	2.1
Single-Stage Coating	340	2.8
Temporary Protective Coating	60	0.5
Truck bed Liner Coating	310	2.6
Underbody Coating	430	3.6
Uniform Finish Coating	540	4.5
Any Other Coating Type	250	2.1

5.2 Most Restrictive VOC Limit

If anywhere on the container of any automotive coating, or any label or sticker affixed to the container, or in any sales, advertising, or technical literature, any representation is made that indicates that the coating meets the definition of or is recommended for use for more than one of the coating categories listed in Section 5.1, then the lowest applicable VOC content limit in Table 1 shall apply.

5.3 VOC Emission Control System

In lieu of complying with the applicable requirements of Section 5.1, 5.7, or 5.8, a person may use a VOC emission control system that meets all of the following requirements:

- 5.3.1 The VOC emission control system shall be approved, in writing, by the APCO.
- 5.3.2 The VOC emission control system shall achieve an overall capture and control efficiency of at least 85 percent by weight.
- 5.3.3 In no case shall compliance through the use of a VOC emission control system result in VOC emissions in excess of the VOC emissions which would result from compliance with applicable requirements of Section 5.1, 5.7, or 5.8.

5.7 Coating Application Methods

Except for underbody coatings, graphic arts operations, truck bed liner coatings, or any coating use of less than one (1.0) fluid ounce (29.6 milliliters), no person shall apply any coating to any motor vehicle, mobile equipment, or associated parts and components unless one of the following application methods is used:

- 5.7.1 Brush, dip, or roller.
- 5.7.2 Electrostatic spray.
- 5.7.3 High-Volume Low Pressure (HVLP) spray equipment.
 - 5.7.3.1 HVLP spray equipment shall be operated in accordance with the manufacturer's recommendations.
 - 5.7.3.2 A person shall not sell or offer for sale for use within the SJVAB any HVLP spray gun without a permanent marking denoting the maximum inlet air pressure in psig at which the gun will operate within the parameters specified in Section 3.0

5.7.4 Use of a spray gun not permanently marked HVLP. If a spray gun is used, the operator demonstrate that the gun meets the HVLP definition in Section 3.21 in design and use. A satisfactory demonstration must be based on the manufacturer's published technical material on the design of the gun and by a demonstration of the operation of the gun using an air pressure tip gauge designed specifically for the gun in use.

5.7.5 Any other coating application method that is capable of achieving at least 65 percent transfer efficiency, as determined per Section 6.8.8. Written approval from the APCO shall be obtained for each alternative method prior to use. 5.7.6 In lieu of complying with the applicable provisions of Sections 5.7.1 through 5.7.5, an operator may control VOC emissions from coating application with a VOC emission control system that meets the requirements of Section 5.3 around the coating operation.

5.8 Organic Solvent Cleaning Requirements

5.8.1 For solvent cleaning operations other than for bug and tar removal, a person shall not use solvents that have VOC content greater than 25 grams VOC per liter of cleaning material, as calculated using the equation listed in Section 3.45.3.

5.8.2 For bug and tar removal, a person shall not use any material other than bug and tar remover regulated under the Consumer Products Regulation (California Code of Regulations Section 94507 et seq.).

5.8.3 In lieu of complying with Sections 5.8.1 and 5.8.2, a person may control VOC emissions from solvent cleaning with an APCO-approved VOC emission control system for the solvent cleaning operation that meets the requirements of Section 5.3.

SAC Metro AQMD: Rule 459 Automotive, Mobile Equipment, and Associated Parts and Components Coating Operations

Rule Requirements

The purpose of this rule is to limit the emission of volatile organic compounds into the atmosphere from coatings and solvents associated with the coating of motor vehicles, mobile equipment and associated parts and components.

300 Standards

301 Vehicle Coating Limits, Phase II: No person shall apply to any motor vehicle, mobile equipment, or associated parts and components, any coating with a VOC regulatory content, as calculated pursuant to Section 407, in excess of the following limits:

Coating Category	SMAQMD Rule 459	
	VOC g/L	VOC lb/gal
Adhesion Promoter	540	4.5
Clear Coating	250	2.1
Color Coating	420	3.5
Multi-Color Coating		
Mobile Equipment driven or drawn on rails and its associated parts and components	520	4.3
Any other mobile equipment or motor vehicle and its associated parts and components	680	5.7
Pretreatment Coating	660	5.5
Primer	250	2.1
Primer Sealer	250	2.1
Single-Stage Coating	340	2.8
Temporary Protective Coating	60	0.5
Truck bed Liner Coating	310	2.6
Underbody Coating	430	3.6
Uniform Finish Coating	540	4.5
Any Other Coating Type	250	2.1

302 Vehicle Material Limits: No person shall apply to any motor vehicle any of the following materials with a VOC regulatory Content, as calculated pursuant to Section 407, in excess of the following limits:

Coating Category	SMAQMD Rule 459	
	VOC g/L	VOC lb/gal
Gasket/Gasket Sealing Material	200	1.7
Cavity Wax	650	5.4
Deadener	650	5.4
Lubricating Wax/Compound	700	5.8

303 Most Restrictive VOC Limit: If anywhere on the container of any automotive coating, or any label or sticker affixed to the container, or in any sales, advertising, or technical literature supplied by a person, any representation is made that indicates that the coating meets the definition of or is recommended for use for more than one of the coating categories listed in section 301, then the lowest VOC content limit shall apply.

304 Emissions Control Equipment: As an alternative to the coating limits identified in Sections 301 or 302, as applicable, a person may use air pollution control equipment, subject to the approval of the Air Pollution Control Officer, that provides an overall system efficiency of not less than 85% as determined

pursuant to Section 406. Any approved emission control equipment must be maintained and used at all times in proper working condition.

305 Application Equipment Requirement:

305.1 A person shall not apply any coating unless one of the following application methods is used:

- a. Electrostatic application equipment.
- b. High-Volume Low-Pressure spray equipment. The spray gun shall meet one of the following:
 - i. The spray gun shall be permanently labeled as a HVLP; or
 - ii. If the spray gun is not permanently labeled as a HVLP, then the end user shall demonstrate that the spray gun meets the HVLP definition in Section 224 in design and use. A satisfactory demonstration shall be based on the manufacturer's published technical material on the design and by a demonstration technical material on the design of the gun and by a demonstration of the operation of the gun using an air pressure tip gauge from the manufacturer of the gun.
- c. Low Volume Low-Pressure spray equipment
- d. Brush or roll coating, dip coat, or flow coat
- e. Any other application method that achieves a transfer efficiency equivalent to, or higher than, the application methods listed in Sections 305.1(a)-(d) as determined by the methods specified in section 504.9. Written approval from the Air Pollution Control Officer shall be obtained for each alternative application method prior to use.

309 Solvent Cleaning Operations and Storage Requirements: Any person subject to this rule shall comply with the following requirements:

309.1 Closed containers shall be used for the disposal of cloth, sponges, or paper used for solvent cleaning operations and coating removal.

309.2 Volatile organic compound-containing materials shall be stored in closed, vapor-tight containers, when not in use except while adding to or removing them from the containers.

309.3 A person shall not perform cleaning operations using a solvent with a volatile organic compound content in excess of 25 grams per liter (0.21 pounds per gallon), as determined pursuant to Section 409.

309.4 For bug and tar removal, a person shall not use any solvent other than bug and tar remover regulated under the Consumer Products Regulation

(California Code of Regulations Section 94507 et seq.) or a solvent with a volatile organic compound content of no more than 25 grams per liter.

- 310 Coating Remover (Stripper) Requirements: A person shall not perform coating removal with a material containing volatile organic compounds in excess of 200 grams per liter (1.7 pounds per gallon)

US EPA: 40 CFR 63 Subpart HHHHHH – NESHAP for Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources

The purpose of this subpart is to establish national emission standards for hazardous air pollutants for paint stripping and miscellaneous surface coating operations. This subpart applies to auto body refinishing operations, among other area sources, that include motor vehicles and mobile equipment spray-applied surface coating operations; and apply coatings that may potentially contain the target HAP compounds of chromium, lead, manganese, nickel, or cadmium. This subpart also applies to operations using methylene chloride (MECl) for the removal of dried paint.

However, according to Section § 63.11170(a)(2), “...owner or operators of a motor vehicle or mobile equipment surface coating operation, can petition the Administrator for an exemption from this subpart if they can demonstrate that they spray apply no coatings that contain the target HAPS...”. Target HAPs are defined in 40 CFR 63.11180 “Target HAP” as Chromium (Cr), Lead (Pb), manganese (Mn), Nickel (Ni), or cadmium (Cd).

Based on an analysis of active Permits to Operate (PTOs) motor vehicle and mobile equipment coating operations, the District already prohibits via permit condition the use of coatings that include the target HAPs addressed by this subpart for all trailer coating operations. Therefore, the requirements of this subpart are not applicable and no further discussion is required.

Summary of Rule Requirements:

As shown above, the coating application methods and VOC content limits for single stage coatings and pretreatment coatings are the same for all surveyed air district rules. Therefore, it is not necessary to list a specific VOC content limit for individual coatings. Rather, the achieved in practice requirement for VOC will be to use coatings compliance with District Rule 4612.

D. Survey of Permit Requirements:

In order to evaluate what VOC and PM₁₀ emission rates are currently being achieved by trailer coating and mobile equipment operations permitted in the SJVAPCD, permit requirements of several permitted units were reviewed. The most stringent requirements on the permits within the SJVAPCD are summarized as follows:

- Automotive and mobile equipment coatings must be compliant with District Rule 4612
- Coatings cannot contain any of the following Hazardous Air Pollutants (HAPs): Chromium (Cr), Lead (Pb), Nickel (Ni), or Cadmium (Cd), Manganese (Mn)
- Only allowable application equipment is: high-volume low-pressure spray equipment, electrostatic, brush, dip, roll coating application equipment, or other equipment that is district approve by the district in writing.
- All equipment used shall be used in accordance with the manufacturer's recommendations.
- HVLP spray guns must demonstrate that spray gun operates between 0.1 and 10 lb/in², and meet all applicable standards
- All coatings shall be conducted inside the booth with filters in place, fan(s) operating, and doors closed.
- The VOC regulatory content of coatings, as applied, shall not exceed any of the limits stated in District Rule 4612
- For solvent cleaning operations other than for bugs and tar removal, solvents with VOC content greater than 25 g/l (0.21 lb/gal) cannot be used.
- Bug and tar removal products must be regulated under the Consumer Products Regulation (CCR Section 94507 et seq.)
- All equipment must be maintained in good operating condition and operated in a manner to minimize emissions of air contaminants into the atmosphere.

Step 1 – Identify all possible control Technologies

Summary of Permit Requirements to Establish the Achieved in Practice BACT Standard:

Based on the above information and current active Permits to Operate (PTOs) for trailer coating operation, and similar operations such as motor vehicle and mobile equipment coating, and metal products coating, the current most stringent achieved in practice BACT emissions limitation for trailer coating operations would be:

VOC:

1. Coatings compliant with Rule 4612
2. Application methods, solvents, and cleaning materials compliant with District Rule 4612

PM10:

1. Application methods compliant with District Rule 4612
2. Paint Spray Booth with dry exhaust filters with 95% control efficiency

Step 2 - Eliminate Technologically Infeasible Options

There are no technologically infeasible options listed in Step 1. All of the emission control options under consideration are based on either current BACT requirements, current rule requirements, or actual source test data. Therefore, no further discussion is required.

Step 3 - Rank Remaining Control Technologies by Control effectiveness

The following control technologies have been identified and are ranked based on stringency:

VOC:

1. Thermal/Catalytic Incineration (98% capture and control) (Tech Feasible)
2. Carbon Adsorption (95% capture and control) (Tech Feasible)
3. Coatings, application methods, solvents, and cleaning materials compliant with District rule 4612 (Achieved in Practice)

PM10:

1. Spray Booth with dry exhaust filters with 95% control (achieve in practice)
2. Application methods compliant with District Rule 4612 (achieved in practice)

Step 4 - Cost Effectiveness Analysis

This BACT analysis is being performed as a proactive update to this BACT guideline and is not part of a specific permitting action. Therefore, a cost effectiveness analysis is not necessary and will not be included as part of this analysis.

Step 5 - Select BACT

This is a proactive determination that is not part of a specific permitting action. Therefore, selecting BACT is not necessary. However, the following emission control standard has been determined to be achieved in practice and is therefore determined to be the minimum BACT for trailer coating operations:

VOC: Use of coatings and application methods compliant with District Rule 4612

PM10: Use of coating application methods compliant with District Rule 4612 and a spray booth with exhaust filters (95% control efficiency)

V. Recommendation

Adopt the recommended draft BACT guideline.

Appendix

Appendix A: Current BACT Guideline 4.2.4

Appendix B: Proposed Revised Draft BACT Guideline 4.2.4

Appendix A
Current BACT Guideline 4.2.4

**San Joaquin Valley
Unified Air Pollution Control District**

Best Available Control Technology (BACT) Guideline 4.2.4

Emissions Unit: Trailer Coating Operation
Industry Type: Trailer coating
Equipment Rating: all
Last Update: 12/23/1996

Pollutant	Achieved in Practice or in the SIP	Technologically Feasible	Alternate Basic Equipment
PM10	HVLP spray application	Spray booth with exhaust filters	
VOC	Using topcoats with a low VOC content (2.8 lb/gal less water and exempt compounds) and pretreatment wash primers with a low VOC content (6.0 lb/gal less water and exempt compounds)	1. Thermal incineration with total enclosure (100% capture efficiency) 2. Catalytic incineration with total enclosure (100% capture efficiency) 3. Carbon adsorption with total enclosure (100% capture efficiency)	

BACT is the most stringent control technique for the emissions unit and class of source. Control techniques that are not achieved in practice or contained in a state implementation plan must be cost effective as well as feasible. Economic analysis to demonstrate cost effectiveness is required for all determinations that are not achieved in practice or contained in an EPA approved State Implementation Plan.

Appendix B
Proposed Revised Draft BACT Guideline 4.2.4

**San Joaquin Valley
Unified Air Pollution Control District**

Best Available Control Technology (BACT) Guideline 4.2.4

Emissions Unit: Mobile Equipment Coating Operation
Equipment Rating: all
Last Update: 9/12/2022

Pollutant	Achieved in Practice or contained in SIP	Technologically Feasible	Alternate Basic Equipment
PM10	1. Coating application methods compliant with District Rule 4612; 2. Spray Booth with exhaust filters; 95% control efficiency		
VOC	Use of coatings and application methods compliant with District Rule 4612	1. Thermal/Catalytic Incineration (98% capture and control) 2. Carbon Adsorption (95% capture and control) (Tech Feasible)	

BACT is the most stringent control technique for the emissions unit and class of source. Control techniques that are not achieved in practice or contained in a state implementation plan must be cost effective as well as feasible. Economic analysis to demonstrate cost effectiveness is required for all determinations that are not achieved in practice or contained in an EPA approved State Implementation Plan.