
Source Category: Auto Body Refinishing

INTRODUCTION

The purpose of this document is to provide a forum for public review and comment on the evaluation of candidate control measures that may be considered by the States in the Midwest Regional Planning Organization (MRPO) to develop strategies for ozone, PM_{2.5}, and regional haze State Implementation Plans (SIPs). Additional emission reductions beyond those due to mandatory controls required by the Clean Air Act may be necessary to meet SIP requirements and to demonstrate attainment. This document provides background information on the mandatory control programs and on possible additional control measures.

The candidate control measures identified in this document represent an initial set of possible measures. The MRPO States have not yet determined which measures will be necessary to meet the requirements of the Clean Air Act. As such, the inclusion of a particular measure here should not be interpreted as a commitment or decision by any State to adopt that measure. Other measures will be examined in the near future. Subsequent versions of this document will likely be prepared for evaluation of additional potential control measures.

The evaluation of candidate control measures is presented in a series of "Interim White Papers." Each paper includes a title, summary table, description of the source category, brief regulatory history, discussion of candidate control measures, expected emission reductions, cost effectiveness and basis, timing for implementation, rule development issues, other issues, and a list of supporting references. Table 1 summarizes this information for the auto body refinishing category.

SOURCE CATEGORY DESCRIPTION

Auto body refinishing includes the application of coatings subsequent to original equipment manufacture (OEM). (Coating of new cars is not included in this category). Vehicles included in this category are passenger cars, trucks, vans, motorcycles, and other mobile equipment capable of being driven or drawn on the highway. The majority of these operations occur at small body shops that repair and refinish automobiles. The coating applications include washes, primers, primer surfacers, and primer sealers, and topcoats. Emissions of volatile organic compounds (VOC) result from the evaporation of solvents during application, curing, and cleanup. Emissions are typically controlled through use of compliant coatings, increased transfer efficiency, and control of clean-up solvents. Auto refinishing was estimated to account for about 1.0 percent of the total anthropogenic VOC emissions in the MRPO region in 2002.

REGULATORY HISTORY

The U.S. EPA published an Alternative Control Technique (ACT) document for automobile refinishing in May 1994. The ACT with recommended VOC content limits for State consideration in developing ozone attainment plans, and also identified other control options including improving transfer efficiency.

In September 1998, under Section 183 of the 1990 Clean Air Act Amendments, EPA published standards limiting the VOC content in coatings sold for automobile refinishing (40 CFR Part 59, Subpart B). Manufacturers are prohibited from selling coatings after January 1999 that do not comply with the Subpart B limits. EPA estimated that the Part 59 rule would reduce VOC emissions by 37 percent.

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TABLE 1 – CONTROL MEASURE SUMMARY FOR AUTOBODY REFINISHING

Control Measure Summary	VOC Emissions (tons/year) in 5-State MRPO Region	
<p>2002 existing measures: Federal Auto Body Refinishing rules 40CFR Part 59 and RACT in 1-hour ozone nonattainment counties <i>Emission Reductions:</i> 55% reduction from uncontrolled levels in 1-hour nonattainment counties due to RACT and 37% from uncontrolled levels due to Part 59 VOC content limits <i>Control Cost:</i> \$118 per ton for Part 59 rules <i>Timing of Implementation:</i> Part 59 compliance required by January 1999 <i>Implementation Area:</i> Part 59 – Nationwide; RACT only in 1-hour nonattainment counties in IL, IN, and WI</p>	<p>Uncontrolled: 42,545 2002 Reduction: <u>-17,226</u> 2002 Base: 25,319</p>	
<p>Candidate measure: Extend the existing IL/IN/WI RACT regulations beyond 1-hr nonattainment counties <i>Measure ID:</i> SOLV4A <i>Emission Reductions:</i> reduction of 55% from uncontrolled emissions, with an incremental reduction of 15-24 percent from 2002 levels depending on the geographic coverage <i>Control Cost:</i> \$1,354 per ton <i>Timing of Implementation:</i> Assuming 2007 effective date of rule, emission reductions are achieved in 2009 <i>Implementation Area:</i> (1) 8-hr ozone nonattainment areas, (2) 8-hr ozone nonattainment areas plus adjacent counties, or (3) all counties in MRPO region</p>	<p>2002 Base: 25,301 2009 Reduction: <u>-6,168</u> 2009 Remaining: 19,133</p>	
<p>Candidate measure: Adopt More Stringent RACT regulations based on SCAQMD 1151 <i>Measure ID:</i> SOLV4B <i>Emission Reductions:</i> reduction of 89% from uncontrolled emissions, with an incremental reduction of 55-82 percent from 2002 levels depending on the geographic coverage <i>Control Cost:</i> \$2,860 per ton incremental cost from going from IL/IN/WI RACT rules to new SCAQMD 1151 <i>Timing of Implementation:</i> Assuming 2007 effective date of rule, emission reductions are achieved in 2009 <i>Implementation Area:</i> (1) 8-hr ozone nonattainment areas, (2) 8-hr ozone nonattainment areas plus adjacent counties, or (3) all counties in MRPO region</p>	<p>2002 Base: 25,301 2009 Reduction: <u>-20,624</u> 2009 Remaining: 4,677</p>	

- Notes: 1) 2002 emission reductions shown are reductions from uncontrolled levels;
2) 2009 emission reductions shown are reductions for 2002 base emissions, assuming that control measures are implemented statewide;
3) 2009 emissions are not growth-adjusted.

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Several California districts, including the South Coast and Bay Area Air Quality Management Districts (SCAQMD and BAAQMD) have regulated emissions from auto refinishing shops since the late 1980s. These district rules have VOC content limits that are more stringent than the national Part 59 limits, and require the use of electrostatic or high-volume low-pressure (HVLP) spray application techniques. The District rules also require storing solvent laden materials in closed containers and using a coating applicator cleaning device that recirculates solvent, recovers spent solvent, and minimizes evaporation. Currently, SCAQMD Rule 1151 is the most stringent of the California district rules, with VOC content limits for primers, primer surfacers, primer sealers, and several topcoat categories that are about one-half of the limits in Subpart B. SCAQMD updated their rules in December 2005 based on CARB's October 2005 Proposed Suggested Control Measure (SCM) for automotive coatings.

In 2001, the Ozone Transport Commission (OTC) developed a model rule based on the use of high transfer-efficiency painting methods (e.g., high volume low pressure spray guns), and controls on emissions from equipment (e.g., spray gun) cleaning, housekeeping activities (e.g., use of sealed containers for clean-up rags), and operator training. The OTC model rule has the same VOC content limits as the federal rule except for slightly more stringent limits for primer/surfacer coatings and three- or four-stage topcoats. An incremental control effectiveness of 38 percent was estimated for the OTC model rule relative to the National Rule (or 60 percent reduction from uncontrolled levels). This estimate includes a 35 percent reduction from the use of high transfer efficiency spray guns and another 3 percent from the use of enclosed spray gun cleaners.

Illinois, Indiana, and Wisconsin have adopted rules for limiting emissions from the automobile finishing facilities with geographic applicability limited to the 1-hour ozone nonattainment counties. The requirements include VOC content limits that mirror the Subpart B requirements. In addition, the rules include requirements similar to the OTC model rule for use of high transfer-efficiency painting methods and controls on emissions from equipment cleaning, housekeeping activities, and operator training. The Wisconsin rule is estimated to reduce emissions by 55 percent overall from uncontrolled levels. No requirements beyond the Federal Part 59 rules for auto refinishing were identified in Michigan and Ohio.

A comparison of Federal requirements and current State regulations is presented in Attachment 1.

In June 2002, as part of the Urban Air Toxics Strategy under the 1990 Clean Air Act Amendments, EPA identified automobile refinishing as an area source category and candidate for regulation to limit the emissions of 33 toxic pollutants. The schedule for EPA to propose a rule in August 2007 and finalize it in August 2008, with a compliance date of August 2011. To reduce emissions, EPA is reviewing the "best practices" as identified under EPA's Design for the Environment Program. Emission reduction methods include other improved transfer efficiency options, work practices to reduce overspray, alternative coating formulations, etc. EPA could not estimate at this time what specific control measures or VOC reductions might be associated with the area source NESHAP.

The U.S. EPA has been promoting pollution prevention in the auto body refinishing sector for many years. Through Design for the Environment Program, EPA has been working in partnership with the auto refinishing industry to promote best practices and technologies that voluntarily reduce toxic emissions of diisocyanates, organic solvents, heavy metals, and other hazardous air pollutants. The Michigan DEQ has also initiated a voluntary auto body refinishing compliance assistance program. The program provides information regarding best management practices and pollution prevention techniques to minimize environmental impacts. We could not locate any literature that quantifies the amount of VOC reductions that these voluntary programs are (or can) achieve.

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CANDIDATE CONTROL MEASURES

The three main approaches for reducing VOC emissions from auto body refinishing shops are:

- Use of lower-VOC coatings;
- Improving transfer efficiency of spray guns; and,
- Using lower-VOC cleaning solvents and enclosed cleaning devices to minimize solvent evaporation during equipment cleaning.

Two specific candidate control measures are discussed below. The first is based on extending the existing IL/IN/WI RACT regulations from the 1-hr nonattainment counties to the 8-hr nonattainment counties. The second candidate control measure adopts more stringent requirements similar to those in SCAQMD Rule 1151 for all 8-hr nonattainment areas. Optionally, the control measures could be extended to counties adjacent to 8-hr nonattainment areas or to all counties in the MRPO region.

Measure SOLV4A – Extend the existing IL/IN/WI RACT regulations beyond 1-hr nonattainment counties. This measure would extend the existing RACT rules for the 1-hr nonattainment counties to additional areas. Three options are considered – extending RACT to all 8-hr nonattainment counties, to all counties in or adjacent to an 8-hr nonattainment area, and to all counties in the MRPO region. For this analysis, a 29 percent additional reduction will be applied beyond the 37 percent reduction obtained from the Federal Part 59 rule (i.e., a 55 percent reduction from uncontrolled VOC emissions). There would be no incremental reduction in the 1-hr nonattainment counties where the existing RACT rules are currently in place.

Measure SOLV4B – Adopt More Stringent RACT regulations based on SCAQMD 1145. The VOC content limits in the SCAQMD rule are more stringent than the federal rule, the OTC model rule, and the existing IL/IN/WI RACT rules for several types of auto refinish coatings. According to EPA's AIRControlNet database, adoption of a rule similar to SCAQMD Rule 1151 would result in an emissions reduction of 89 percent from uncontrolled levels. Three options for applying the more stringent RACT requirements are considered – applying more stringent RACT in all 8-hr nonattainment counties, in all counties that are in or adjacent to an 8-hr nonattainment area, and in all counties in the MRPO region.

EXPECTED EMISSION REDUCTIONS

We calculated the approximate emission reductions expected from extending the existing IL/IN/WI RACT regulations to additional counties or adopting more stringent requirements similar to SCAQMD 1151 in the following manner:

- Obtained 2002 actual emissions from the MRPO's 2002 inventory (Note: the Wisconsin estimates are much lower than the other four MRPO states. Also, these estimates account for the estimated 37% reduction from products covered by the Federal Part 59 rule and a 55% reduction based on RACT rules for the 1-hr nonattainment counties);
- Calculated uncontrolled levels based on above reductions from Federal Part 59 rule and IL/IN/WI RACT rules;
- Assumed that the IL/IN/WI RACT rules are extended beyond the 1-hr nonattainment counties and that full implementation will be achieved by 2009, resulting in a 55% from uncontrolled levels (29% reduction beyond the reduction provided by the Federal Part 59 rule);

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- Assumed that the SQAQMD Rule 1151 limits are adopted in 2007 by all five MRPO states and that full implementation will occur by 2009, resulting in 89% reduction from uncontrolled levels in affected counties.

Current emissions from auto body refinishing, and the expected emission reductions from the two candidate control measures, are summarized in Tables 2 and 3. As mentioned above, reductions were calculated for three options for geographic implementation - all 8-hr nonattainment counties, all counties in or adjacent to an 8-hr nonattainment area, and all counties in the MRPO region.

If the MRPO States choose to extend the geographic coverage of the existing IN/IL/WI RACT rules, there would be an incremental reduction of 15-24 percent from 2002 levels (which include the Federal Part 59 requirements and 1-hr RACT requirements), depending on the geographic coverage.

If the MRPO States choose to adopt rules similar to the SCAQMD Rule 1151, there would be an incremental reduction of 55-82 percent from 2002 levels, depending on the geographic coverage.

TIMING OF IMPLEMENTATION

States generally provided a 2-year period for compliance with RACT rules. For the purposes of this White Paper, we have assumed that SIP rules would be adopted in early 2007. If the MRPO states chose to extend the existing RACT rules for 1-hr nonattainment areas to additional counties, sources would be required to install high transfer-efficiency painting equipment and institute methods and controls on emissions from equipment cleaning and housekeeping activities, and conduct operator training. Since the VOC content limits in the existing RACT rules are very similar to the Part 59 VOC limits, manufacturers would not need to reformulate products. It seems reasonable to assume that a 2-year period after SIP submittal is adequate for the installation of controls. Thus, emission reductions would occur in 2009 for Measure SOLV4A.

If the MRPO states adopted more stringent RACT rules based on the SCAQMD Rule 1151, manufacturers would be required to reformulate coatings. Manufacturers are already making coatings that meet the requirements of the SCAQMD rule and the lower VOC content requirements in other California districts. Product inventories turn over quickly. Thus, it seems reasonable that a two-year window creates time for manufacturers to reformulate while continuing to sell their existing products in the MRPO region. As a result, the full emission reduction potential achieved by adoption of more stringent RACT based on SCAQMD Rule 1151 could be realized within two years of adoption of the rule (i.e., 2009).

COST EFFECTIVENESS AND BASIS

The existing RACT rules in IL/IN/WI are similar to the OTC Model Rule. The OTC estimated a cost of \$1,354 per ton of VOC reduced based on the use of HVLP spray guns and a gun cleaning system. This value should approximate costs that would be incurred to meet the same limits in the OTC rules.

CARB estimated that the incremental cost-effectiveness for their October 2005 Suggested Control Measure for automotive coatings was \$2,860 per ton of VOC. A similar incremental cost would be expected for those areas that already have the IL/IN/WI RACT rules in place. For other areas where only the Federal Part 50 program applies, the cost effectiveness would be about \$4,200 per ton.

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TABLE 2 – COMPARISON OF 2002 VOC EMISSIONS (tpy) WITH BROADER RACT COVERAGE SCENARIO

		<i>Measure SOLV4A Extend Existing IL/IN/WI RACT Regulations Beyond 1-hr Nonattainment Counties</i>						
		Controls in 8-hr Nonattainment Counties		Controls in 8-hr Nonattainment plus Adjacent Counties		Controls Statewide		
State	Counties	2002	2009 Reduction	2009 Remaining	2009 Reduction	2009 Remaining	2009 Reduction	2009 Remaining
IL	Nonattainment	2,406	20	2,385	20	2,385	20	2,385
	Adjacent	151	0	151	43	108	43	108
	Not adjacent	<u>2,187</u>	<u>0</u>	<u>2,187</u>	<u>0</u>	<u>2,187</u>	<u>625</u>	<u>1,562</u>
	Total	4,743	20	4,723	64	4,680	688	4,055
IN	Nonattainment	6,675	1,531	5,145	1,531	5,145	1,531	5,145
	Adjacent	2,706	0	2,706	773	1,933	773	1,933
	Not adjacent	<u>783</u>	<u>0</u>	<u>783</u>	<u>0</u>	<u>783</u>	<u>224</u>	<u>559</u>
	Total	10,164	1,531	8,634	2,304	7,860	2,528	7,637
MI	Nonattainment	2,157	616	1,540	616	1,540	616	1,540
	Adjacent	354	0	354	101	253	101	253
	Not adjacent	<u>258</u>	<u>0</u>	<u>258</u>	<u>0</u>	<u>258</u>	<u>74</u>	<u>184</u>
	Total	2,768	616	2,152	717	2,051	791	1,977
OH	Nonattainment	5,794	1,655	4,138	1,655	4,138	1,655	4,138
	Adjacent	1,303	0	1,303	372	930	372	930
	Not adjacent	<u>328</u>	<u>0</u>	<u>328</u>	<u>0</u>	<u>328</u>	<u>94</u>	<u>234</u>
	Total	7,424	1,655	5,768	2,028	5,396	2,121	5,303
WI	Nonattainment	60	0	60	0	60	0	60
	Adjacent	61	0	61	17	44	17	44
	Not adjacent	<u>79</u>	<u>0</u>	<u>79</u>	<u>0</u>	<u>79</u>	<u>23</u>	<u>57</u>
	Total	201	0	201	18	183	40	161
MRPO	Nonattainment	17,092	3,823	13,269	3,823	13,269	3,823	13,269
	Adjacent	4,574	0	4,574	1,307	3,267	1,307	3,267
	Not adjacent	<u>3,634</u>	<u>0</u>	<u>3,634</u>	<u>0</u>	<u>3,634</u>	<u>1,038</u>	<u>2,596</u>
	Total	25,301	3,823	21,478	5,130	20,171	6,168	19,133

Note: The 2009 emission estimates presented here are not growth-adjusted.

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TABLE 3 – COMPARISON OF 2002 VOC EMISSIONS (tpy) WITH MORE STRINGENT RACT SCENARIO

			<i>Measure SOLV4B</i>					
			<i>Adopt More Stringent RACT regulation based on SCAQMD Rule 1145</i>					
			Controls in 8-hr Nonattainment Counties		Controls in 8-hr Nonattainment plus Adjacent Counties		Controls Statewide	
State	Counties	2002	2009 Reduction	2009 Remaining	2009 Reduction	2009 Remaining	2009 Reduction	2009 Remaining
IL	Nonattainment	2,406	1,823	583	1,823	583	1,823	583
	Adjacent	151	0	151	125	26	125	26
	Not adjacent	<u>2,187</u>	<u>0</u>	<u>2,187</u>	<u>0</u>	<u>2,187</u>	<u>1,805</u>	<u>382</u>
	Total	4,743	1,823	2,921	1,947	2,796	3,752	991
IN	Nonattainment	6,675	5,418	1,258	5,418	1,258	5,418	1,258
	Adjacent	2,706	0	2,706	2,233	472	2,233	472
	Not adjacent	<u>783</u>	<u>0</u>	<u>783</u>	<u>0</u>	<u>783</u>	<u>646</u>	<u>137</u>
	Total	10,164	5,418	4,746	7,651	2,513	8,298	1,867
MI	Nonattainment	2,157	1,780	377	1,780	377	1,780	377
	Adjacent	354	0	354	292	62	292	62
	Not adjacent	<u>258</u>	<u>0</u>	<u>258</u>	<u>0</u>	<u>258</u>	<u>213</u>	<u>45</u>
	Total	2,768	1,780	988	2,072	696	2,285	483
OH	Nonattainment	5,794	4,782	1,012	4,782	1,012	4,782	1,012
	Adjacent	1,303	0	1,303	1,075	227	1,075	227
	Not adjacent	<u>328</u>	<u>0</u>	<u>328</u>	<u>0</u>	<u>328</u>	<u>270</u>	<u>57</u>
	Total	7,424	4,782	2,642	5,857	1,567	6,128	1,296
WI	Nonattainment	60	46	15	46	15	46	15
	Adjacent	61	0	61	50	11	50	11
	Not adjacent	<u>79</u>	<u>0</u>	<u>79</u>	<u>0</u>	<u>79</u>	<u>65</u>	<u>14</u>
	Total	201	46	155	96	105	162	39
MRPO	Nonattainment	17,092	13,848	3,244	13,848	3,244	13,848	3,244
	Adjacent	4,574	0	4,574	3,776	799	3,776	799
	Not adjacent	<u>3,634</u>	<u>0</u>	<u>3,634</u>	<u>0</u>	<u>3,634</u>	<u>3,000</u>	<u>635</u>
	Total	25,301	13,848	11,452	17,624	7,677	20,624	4,677

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CONTROL EFFICIENCY, RULE PENETRATION, AND RULE EFFECTIVENESS

For purposes of modeling, we have assumed that rules will be adopted in 2007 and that full compliance will occur by the end of 2008. The control efficiency (CE) is the weighted average emission reduction efficiency for the entire category. Because emissions will be controlled via reformulations, the EIIP guidance recommends that the rule effectiveness (RE) can be assumed to be 100 percent for all coating types affected by the rule. Since all products will be expected to comply by 2009, the rule penetration (RP) is also set to 100 percent. In developing the control factor files for this category, we will use a base year 37 percent and a forecast year 55 percent overall VOC emission reduction value in 2009 for counties affected by measure SOLV4A. We will use a base year 37 percent and a forecast year 89 percent overall VOC emission reduction value in 2009 for counties affected by measure SOLV4B.

RULE DEVELOPMENT ISSUES

The Federal Part 59 rule in no way prevents states from adopting more stringent VOC content limits. In California, more stringent regulations have been in place since the mid-1990s. Many of the OTC states have or will soon adopt the OTC Model Rule requiring HVLP spray guns and a gun cleaning system. The MRPO states could use the OTC Model Rule, the existing IL/IN/WI RACT rules, or the SCAQMD Rule 1145 as a framework for developing state-specific regulations.

GEOGRAPHIC APPLICABILITY

We developed three options for geographic applicability for the candidate control measures. The first option is to apply the candidate control measure only in those counties designated as nonattainment for the 8-hr ozone standard. The second option is to apply the candidate control measures to both nonattainment counties and all counties that are adjacent to a nonattainment county. The third option is to apply the candidate control measure to all counties in the 5-state MRPO region.

TEMPORAL APPLICABILITY

Emission reductions would be realized throughout the year.

AFFECTED SCCs

24-01-005-000 Surface Coating – Auto Refinishing

OTHER IMPACTS

No significant adverse environmental impacts are expected as a result of the adoption of these control measures. The proposed changes in paint formulation, application techniques, and cleaning methods will likely reduce the waste streams or impact on other media.

REFERENCES

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2. E.H. Pechan & Associates, Inc. *Control Measure Development Support Analysis of Ozone Transport Commission Model Rules*. March 31, 2001.
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4. E.H. Pechan & Associates, Inc. *Development of Growth and Control Factors for Lake Michigan Air Directors Consortium*. December 14, 2004.
5. Bay Area Air Quality Management District. *Bay Area 2004 Ozone Strategy, Appendix C – Stationary and Mobile Source Measure Descriptions, Draft*. August 2004.
6. E.H. Pechan & Associates, Inc. *AirControlNET Version 3.2, Documentation Report*. September 2003.
7. Kim Teal, U.S. EPA, personal communication with Ed Sabo, MACTEC, March 28, 2005.
8. California Air Resources Board. *Staff Report for the Proposed Suggested Control Measure for Automotive Coatings*. October 2005.

Attachment 1 - Comparison of RACT Regulations												
Source Category: Automobile Refinishing												
<p>Federal Guidance/Requirements: The 1988 ACT document provided one to three options for limits for coating applications used in automobile refinishing. The CAA Section 183, Subpart B regulation set limits for VOC content by coating application. Shown below are the ACT recommended limits and the Subpart B limits for automobile refinishing coatings sold, effective January 1999.</p>												
<u>Coating Application</u>	<u>ACT Range lb VOC/gallon</u>	<u>Subpart B Limits lb VOC/gallon</u>										
Pretreatment wash primers	6.5	6.5										
Primers/Primer surfacers	4.6 – 2.8	4.8										
Primer sealers	3.5 – 4.6	4.6										
Single/two-stage topcoats	5.0	5.0										
Topcoats of more than two stages	5.0 – 5.2	5.2										
Multi-colored topcoats	5.0	5.7										
Specialty coatings	7.0	7.0										
LADCO States												
<p>Illinois – Subpart 218.780 and 219.780 Subpart HH Motor Vehicle Refinishing</p>	<p>Applicability: Chicago and East St. Louis Metropolitan Areas only for refinishing of motor vehicles and mobile equipment and their parts and components</p> <p>Control Requirement: Includes the Subpart B limits on VOC content in coatings used for automobile refinishing consistent with additional requirements for:</p> <table style="margin-left: 40px;"> <thead> <tr> <th style="text-align: left;"><u>Coating Application</u></th> <th style="text-align: center;"><u>lb VOC/gallon</u></th> </tr> </thead> <tbody> <tr> <td>Precoat</td> <td style="text-align: center;">5.5</td> </tr> <tr> <td>Anti-glare/Safety coatings</td> <td style="text-align: center;">7.0</td> </tr> <tr> <td>Plastic parts surface preparation</td> <td style="text-align: center;">6.5</td> </tr> <tr> <td>Other substrates surface preparation</td> <td style="text-align: center;">1.4</td> </tr> </tbody> </table> <p>Does not include Subpart B limit for “Multicolored Topcoats” Requires use of electrostatic or HVLP spray application techniques. Requires storing solvent laden materials in closed containers Requires use of coating applicator cleaning devices that recirculate solvent, recover spent solvent, and minimize evaporation.</p>		<u>Coating Application</u>	<u>lb VOC/gallon</u>	Precoat	5.5	Anti-glare/Safety coatings	7.0	Plastic parts surface preparation	6.5	Other substrates surface preparation	1.4
<u>Coating Application</u>	<u>lb VOC/gallon</u>											
Precoat	5.5											
Anti-glare/Safety coatings	7.0											
Plastic parts surface preparation	6.5											
Other substrates surface preparation	1.4											

Attachment 1 - Comparison of RACT Regulations Source Category: Automobile Refinishing									
Indiana – 326 IAC 8-10 Automobile Refinishing	<p>Applicability: Clark, Floyd, Lake, and Porter counties only for refinishing motor vehicles and mobile equipment</p> <p>Control Requirements: Includes the Subpart B limits on VOC content in coatings used for automobile refinishing with additional requirements for:</p> <table style="margin-left: 40px;"> <thead> <tr> <th style="text-align: left;"><u>Coating Application</u></th> <th style="text-align: right;"><u>lb VOC/gallon</u></th> </tr> </thead> <tbody> <tr> <td>Precoat</td> <td style="text-align: right;">5.5</td> </tr> <tr> <td>Plastic parts surface preparation</td> <td style="text-align: right;">6.5</td> </tr> <tr> <td>Other substrates surface preparation</td> <td style="text-align: right;">1.4</td> </tr> </tbody> </table> <p>Does not include Subpart B limit for “Multicolored Topcoats”</p> <p>Requires use of electrostatic, HVLP, or equivalent application techniques with at least 65% transfer efficiency.</p> <p>Requires storing solvent laden materials in closed containers</p> <p>Requires use of a coating applicator cleaning device that recirculates solvent, recover spent solvent, and minimize evaporation.</p>	<u>Coating Application</u>	<u>lb VOC/gallon</u>	Precoat	5.5	Plastic parts surface preparation	6.5	Other substrates surface preparation	1.4
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Michigan	No specific regulation for automobile refinishing identified. Emissions limited by Federal Subpart B requirements.								
Ohio	No specific regulation for automobile refinishing identified. Emissions limited by Federal Subpart B requirements.								
Wisconsin – 422.095 Automobile Refinishing Operations	<p>Applicability: Kenosha, Kewaunee, Manitowoc, Milwaukee, Ozaukee, Racine, Sheboygan, Washington, and Waukesha counties to auto body, dealer, and fleet repair and paint shops</p> <p>Control Requirements: Includes Subpart B limits</p> <p>Requires use of electrostatic of HVLP spray application techniques.</p> <p>Requires storing solvent laden materials in closed containers</p> <p>Requires use of coating applicator cleaning devices that recirculate solvent, recover spent solvent, and minimize evaporation.</p>								

Other States																																						
California – Bay Area – Rule 45 Motor Vehicle and Mobile Equipment Coating Operations	Applicability: District-wide to the finishing and refinishing of motor vehicles, mobile equipment, and their parts and components other than at OEM manufacturing facilities																																					
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Limits VOC content of surface preparation solvents to 0.6 lbs/gallon unless applied by handheld bottle, then 6.5 lbs/gallon.																																						

California – South Coast 1151 – Motor Vehicle and Mobile Equipment Non-Assembly Line Coating Operations	<p>Applicability: District-wide to the finishing and refinishing of motor vehicles, mobile equipment, and their parts and components other than at OEM manufacturing facilities</p> <p>Control Requirement: Includes similar, but in some cases more stringent limits than Subpart B. Separate limits for coating of transit buses and mobile equipment</p> <table border="1" data-bbox="556 373 1680 779"> <thead> <tr> <th style="text-align: left;"><u>Coating Application</u></th> <th style="text-align: center;"><u>Cars, Trucks, Motorcycles lb VOC/gallon</u></th> <th style="text-align: center;"><u>Buses, Mobile Equip. lb VOC/gallon</u></th> </tr> </thead> <tbody> <tr> <td>Pretreatment</td> <td style="text-align: center;">6.5</td> <td style="text-align: center;">6.5</td> </tr> <tr> <td>Primers/Primer surfacers</td> <td style="text-align: center;">2.1</td> <td style="text-align: center;">2.1</td> </tr> <tr> <td>Primer sealers</td> <td style="text-align: center;">2.1</td> <td style="text-align: center;">2.8</td> </tr> <tr> <td colspan="3">TOPCOATS</td> </tr> <tr> <td> General</td> <td style="text-align: center;">2.8</td> <td style="text-align: center;">3.5</td> </tr> <tr> <td> Metallic/Iridescent Topcoat</td> <td style="text-align: center;">2.8</td> <td style="text-align: center;">3.5</td> </tr> <tr> <td> Multicolored</td> <td style="text-align: center;">5.7</td> <td style="text-align: center;">5.7</td> </tr> <tr> <td> Multistage</td> <td style="text-align: center;">2.8</td> <td style="text-align: center;">2.8</td> </tr> <tr> <td> Specialty Coating</td> <td style="text-align: center;">7.0</td> <td style="text-align: center;">7.0</td> </tr> <tr> <td> Multicolored Multistage</td> <td></td> <td style="text-align: center;">3.5</td> </tr> </tbody> </table> <p>Requires use of electrostatic or HVLP spray application techniques or equivalent. Allows equivalent limit based on use of control system. Requires storing solvent laden materials in closed containers. Requires use of a coating applicator cleaning device that recirculates solvent, recover spent solvent, and minimize evaporation. Rule 1171 limits VOC content of cleaning agents to 0.21 lbs/gallon.</p>	<u>Coating Application</u>	<u>Cars, Trucks, Motorcycles lb VOC/gallon</u>	<u>Buses, Mobile Equip. lb VOC/gallon</u>	Pretreatment	6.5	6.5	Primers/Primer surfacers	2.1	2.1	Primer sealers	2.1	2.8	TOPCOATS			General	2.8	3.5	Metallic/Iridescent Topcoat	2.8	3.5	Multicolored	5.7	5.7	Multistage	2.8	2.8	Specialty Coating	7.0	7.0	Multicolored Multistage		3.5
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<p>Maryland – 26.11.11.19.23 Control of VOC Emissions from Vehicle Refinishing</p>	<p>Applicability: Statewide to motor vehicle and mobile equipment refinishing and parts coated at same location Control Requirements: Includes the Subpart B limits on VOC content in coatings used for automobile refinishing with additional requirements for:</p> <table border="1" data-bbox="464 342 1186 479"> <thead> <tr> <th><u>Coating Application</u></th> <th><u>lb VOC/gallon</u></th> </tr> </thead> <tbody> <tr> <td>Precoat</td> <td>5.5</td> </tr> <tr> <td>Plastic parts surface preparation</td> <td>6.5</td> </tr> <tr> <td>Other substrates surface preparation</td> <td>1.4</td> </tr> </tbody> </table> <p>Does not include Subpart B limit for “Multicolored Topcoats” Requires use of a “controlled air spray system”. Requires storing solvent laden materials in closed containers. Requires use of a coating applicator cleaning device that recirculates solvent, recover spent solvent, and minimize evaporation.</p>	<u>Coating Application</u>	<u>lb VOC/gallon</u>	Precoat	5.5	Plastic parts surface preparation	6.5	Other substrates surface preparation	1.4
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<p>Massachusetts – 310 CMR 7.18 (28) Automotive Refinishing</p>	<p>Applicability: Statewide to automotive refinishing facilities for painting automobiles, motorcycles, light/medium duty trucks, and vans including aftermarket vehicles and new vehicles damaged in transit. Control Requirements: Includes the Subpart B limits on VOC content in coatings used for automobile refinishing with additional requirements for:</p> <table border="1" data-bbox="464 813 1186 885"> <thead> <tr> <th><u>Coating Application</u></th> <th><u>lb VOC/gallon</u></th> </tr> </thead> <tbody> <tr> <td>Surface preparation</td> <td>1.7</td> </tr> </tbody> </table> <p>Does not include Subpart B limit for “Multicolored Topcoats” Requires use of electrostatic or HVLP or equivalent spray application techniques. Requires storing solvent laden materials in closed containers. Requires use of a coating applicator cleaning device that recirculates solvent, recover spent solvent, and minimize evaporation.</p>	<u>Coating Application</u>	<u>lb VOC/gallon</u>	Surface preparation	1.7				
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<p>New Jersey – 7.27- 16.12 Surface Coating Operations at Mobile Equipment Repair and Refinishing Facilities</p>	<p>Applicability: Statewide to mobile equipment repair and refinishing operations Control Requirements: Includes Subpart B limits. Requires use of electrostatic or HVLP or equivalent spray application techniques. Requires storing solvent laden materials in closed containers. Requires use of enclosed spray gun cleaning system with capability to capture any atomized solvent emissions.</p>								