



TECHNICAL SUPPORT DOCUMENT

COMAR 26.11.19.23

Control of VOC Emissions from Vehicle Refinishing

Purpose of the Regulation

The primary purpose of this regulation is to establish operating standards for vehicle refinishing facilities in Maryland through the implementation of VOC content limits for coatings and cleaning solvents used during the preparation, application, and drying phases of vehicle refinishing, coating application standards, work practices standards, and monitoring and recordkeeping standards.

Background

Source Description

Vehicle refinishing includes the application of coatings following the manufacture of original equipment. Vehicles that make up this category include automobiles, trucks, buses, motorcycles (includes mopeds, dirtbikes, etc.), utility bodies, camper shells, and other miscellaneous mobile equipment capable of being driven or drawn on a roadway or rails. Most of these operations occur at small autobody facilities that repair and refinish topcoats. Emissions of VOCs result from the evaporation of solvents during the application, curing, and clean-up processes. Emissions from these processes can be controlled through the use of compliant coatings and solvents, the use of application equipment with increased transfer efficiency, and stringent work practice standards.

Regulatory History

The U.S. EPA published an Alternative Control Technique (ACT) for Automobile Refinishing (1994) which recommended control options such as improved transfer efficiency and VOC content limits from coatings used in vehicle refinishing operations for consideration by states in developing ozone attainment plans. Under section 183(e) of the 1990 Clean Air Act, the U.S. EPA finalized the *National Volatile Organic Compound Emission Standard for Automobile Refinish Coatings* (40 CFR 59, Subpart B) in 1998 which requires manufacturers to limit the VOC content of vehicle refinishing coatings.

In 1995, Maryland adopted COMAR 26.11.19.23 (*Control of VOC Emissions from Vehicle Refinishing*) which limits VOC emissions from automobile refinishing activities through coating content limits, coating application standards, cleanup and surface preparation standards, and monitoring and reporting requirements that reflect standards similar to those in the U.S. EPA ACT guidelines for automobile refinishing.

The 2011 proposed regulation, which is based on a model rule developed in conjunction with member states of the Ozone Transport Commission (OTC) would replace the standards and requirements in the current regulation with new standards and requirements for VOC content limits in auto refinishing coatings, controls on emissions from equipment cleaning, and the use of coating application methods, recordkeeping, maintenance activities, and operator training.

In addition to Maryland, several states have adopted regulations that have set emissions standards for vehicle refinishing facilities by limiting the VOC content of coatings and solvents manufactured and sold for the purpose of vehicle refinishing and placing standards on the application and storage of coatings and solvents used.

Sources Affected by the Regulation

The proposed regulation applies to the following sources:

- Auto body and collision repair shops, fleet operator repair and paint shops, new and used auto dealer repair and paint shops, and aftermarket auto customizing and detailing shops located in the State. According to the 2010 – 2011 State of the Industry Report prepared by *Body Shop Business*, there are an estimated 677 shops currently operating in Maryland¹;
- Manufacturers, suppliers, and distributors of coatings and cleaning solvents intended for use and application to motor vehicles, mobile equipment, and associated components within the State; and,
- Manufacturers, suppliers, and distributors of application equipment and materials storage such as spray booths, spray guns, and sealed containers for cleaning rags for use within the State.

Requirements of the Regulation

The proposed regulation establishes the following VOC content limits for coatings and cleaning solvents as of July 1, 2013:

VOC Content Limits for Automotive Coatings. All affected facilities must use coatings that meet the following VOC limits as specified in the regulation, minus water and exempt compounds*:

Table 1: Proposed VOC Content Limits for Automotive Coatings for Motor Vehicle and Mobile Equipment Refinishing and Recoating

VOC Content Limit for Automotive Coatings		
Coating Category	Maximum VOC Content	
Adhesion promoter	4.5 lbs/gal	540 g/L

Automotive pretreatment coating	5.5 lbs/gal	660 g/L
Automotive primer	2.1 lbs/gal	250 g/L
Clear coating	2.1 lbs/gal	250 g/L
Color coating, including metallic/iridescent color coating	3.5 lbs/gal	420 g/L
Multicolor coating	5.7 lbs/gal	680 g/L
Other automotive coating type	2.1 lbs/gal	250 g/L
Single-stage coating, including single-stage metallic/iridescent coating	2.8 lbs/gal	340 g/L
Temporary protective coating	0.5 lbs/gal	60 g/L
Truck bed liner coating	1.7 lbs/gal	200 g/L
Underbody coating	3.6 lbs/gal	430 g/L

* "Exempt compounds" excludes those compounds which have been determined to have negligible photochemical reactivity by the U.S. Environmental Protection Agency and which are listed in 40 CFR §51.100(s), as amended as defined under the term "Volatile organic compound" in COMAR 26.11.01.01 - *General Administrative Provisions*.

VOC Content Limits for Cleaning Solvents. All affected facilities must use cleaning solvents that meet the following VOC limits as specified in the regulation:

Table 2: Proposed VOC Content Limits for Cleaning Solvents for Motor Vehicle and Mobile Equipment Refinishing and Recoating

VOC Content Limit for Cleaning Solvents		
Solvent Category	Maximum VOC Content	
Cleaning solvent (other than bug and tar removers)	0.21 lbs/gal	25 g/L
Bug and tar removers ^{**}	40% VOC by weight	

^{**} Reflects the VOC limit for Bug and Tar Remover under COMAR 26.11.32.04 - *Control of Emissions of Volatile Organic Compounds from Consumer Products*

In addition, the proposed regulation establishes the following standards and requirements for affected sources as of July 1, 2013:

Application Equipment Standards. All affected facilities must use one of the following application methods when applying an automotive coating:

- Flow or curtain coating;
- Dip coating;
- Brush coating;
- Cotton-tipped swab application;
- Electrodeposition coating;
- High volume-low pressure (HVLV) spraying;
- Electrostatic spray;

- Airless spray; or
- An alternative spray equipment coating application method (subject to approval by the Department).

Work Practice Standards. Affected facilities must clean spray gun equipment used to apply automotive coatings and handle automotive coatings and solvents in accordance with the regulation.

Operator Training Standards. Owners and operators of affected facilities that implement a training program must include work practice standards and training measures as specified in the regulation.

Compliance and Recordkeeping Requirements. All affected facilities are required to keep extensive records on the amount of each coating used, the VOC content of the coatings, purchase records, etc. Facilities using an emission control system must maintain a daily record of system operating parameters such as temperature, pressure drops, and air flow rates to demonstrate compliance.

Container Labeling Requirements. Labels affixed to containers of coatings and coating components must include the coating use category and VOC content limit (actual and regulatory) as supplied in g/L (grams/liter). Labels affixed to containers of cleaning solvents must include the VOC content limit as supplied in g/L.

Product Dating Requirements. Manufacturers of coatings subject to the proposed regulation must display on a label affixed to each container or package the month and year on which the coating was manufactured or code indicating the date.

Sell Through Provision. Allows non-compliant products (coatings, coating components, and cleaning solvents), manufactured prior to the rule's effective date to be supplied and sold in the State provided it meets the product dating requirements in the proposed regulation.

Testing Requirements. Active and passive losses from the use of an enclosed spray gun cleaning system or equivalent cleaning system must be determined in accordance with the requirements in the proposed regulation or an equivalent test method approved in writing by the Department and the U.S. EPA.

Alternative Compliance. Allows for alternative compliance with the use of an emission control device that meets the following requirements:

- An overall control efficiency of 85 percent or greater and complies with the capture and control efficiency standards for emission control systems as referenced in the proposed regulation;
- A written plan submitted to the Department and approved in writing; and

- The emission control device is maintained and used at all times in working condition.

Exemptions. Specific exemptions were incorporated into the proposed regulation to exclude coatings and cleaning solvents for sale outside the State, assembly line coatings, aerosol coatings, coatings used in surface coating processes under COMAR 26.11.19.03 - *Automotive and Light-Duty Truck Coating* and coatings sold in 0.5 fluid ounces or less.

Expected Emissions Reductions

Based upon calculations and emissions estimates by the Department, the proposed regulation has an estimated statewide VOC emissions reduction potential of 65 percent from the vehicle refinishing category of the current baseline emissions inventory. Maryland's 2002 baseline emissions inventory indicates that VOC emissions from vehicle refinishing total 3.7 tons/day. The proposed regulation will reduce 2.4 tons/day of VOC emissions through implementation of the coating limits and standards that have been established in the OTC Model Rule for Motor Vehicle and Mobile Equipment Refinishing and Recoating.

Availability of Complaint Products

The Department found a substantial number of automotive refinishing coatings and cleaning solvents that comply with the VOC content limits for each proposed category. Low-VOC formulations that already exist in the marketplace include waterborne and low-VOC solvent based.

Economic Impact

Economic Impact on Affected Sources

The proposed regulation could have a economic impact on three potential sources: auto body and collision repair shops, fleet operator repair and paint shops, new and used auto dealer repair and paint shops, and aftermarket auto customizing and detailing shops located within the state; manufacturers, suppliers, and distributors of coatings and cleaning solvents intended for use and application to mobile equipment and associated components within the state; and, manufacturers, suppliers, and distributors of application equipment and materials storage for use within the state.

However, the Department believes the economic impact on these sources will be minimal. The Department found a significant number of auto refinishing coatings and cleaning solvents that comply with the proposed VOC content limits are currently available on the market. These coatings and cleaning solvents can be applied using several application methods and are compatible with the workflow of many autobody and collision repair paint shops. In fact, there are a significant number of autobody and collision repair paint shops within the State that currently use complaint auto refinishing coatings. Furthermore, the effective date of the proposed regulation (July 1, 2013)

coupled with the sell-through and alternative compliance provisions found in the regulation should give retailers, distributors, autobody and collision repair shops, and other affected sources flexibility to reduce or offset any implementation costs. The Department believes that while there may be a slight increase in costs as a result of affected sources complying with the proposed regulation, these costs can be absorbed by the facilities without a significant effect on employment, business competitiveness, or added costs to consumers.

Economic Impact on the Department

The economic impact to the Department is expected to be minimal, as any additional workload will be handled by existing permitting and compliance staff.

Economic Impact on Small Businesses

Some small businesses, specifically auto repair and refinishing operations may initially incur additional costs due to equipment upgrades, additional operator training, and/or switching to low-solvent or waterborne coatings in order to comply with the limits and standards in the proposed regulation. Based on survey data compiled by CARB in the 2005 SCM Staff Report, the compliance costs would average \$2,320 per facility with an average annualized compliance cost of \$1,022 per facility². The Department expects the costs associated with compliance to decrease with the increasing availability of compliant automotive coatings and applications equipment which have been used in auto repair and refinishing facilities in states such as California for several years³.

Environmental Impact

While the proposed regulation is not expected to have a significant impact on the environment or the public, the use and implementation of compliant low-VOC automotive coatings and cleaning solvents and stringent application and work practice standards is expected to reduce VOC emissions from vehicle refinishing operations.

Revision to Maryland's SIP

Yes. This action will be submitted to the U.S. Environmental Protection Agency (EPA) for approval as part of Maryland's State Implementation Plan.

Other State or Federal Requirements

The following federal regulations are applicable to vehicle refinishing operations in Maryland⁴:

- 40 CFR Part 59, Subpart B - *National Volatile Organic Compound Emission Standards for Automobile Refinish Coatings* (1998); and,

- 40 CFR Part 63, Subpart HHHHHH (US EPA 6H Rule) - *National Emission Standards for Hazardous Air Pollutants (NESHAP): Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources* (2008).

In addition to those federal regulations, the U.S. EPA has issued one control technique guideline (CTG): *Volatile Organic Compound Emissions from Automobile Refinishing - Background Information for Promulgated Standards* (EPA-453/R-96-011b, October 1988) and one ACT: *Alternative Control Techniques Document: Automobile Body Refinishing* (EPA-453/R-94-031, April 1994) which are also applicable to vehicle refinishing operations in Maryland.

Both documents provide information on coating application processes, sources of VOC emissions and emission reductions, the availability of low-solvent and waterborne coatings formulations, and costs associated with the use of alternative coating formulations and equipment used in automotive refinishing operations. The applicable emission limits, control technologies, and standards discussed in these documents and the federal regulations do not conflict with the emission limits, requirements, and standards in the proposed regulation which are more stringent.

References

1. 2010 – 2011 State of the Industry Report - Body Shop Business:
<http://www.bodyshopbusiness.com/StateOfTheIndustry.aspx>
2. “Staff Report for the Proposed Suggested Control Measure for Automotive Coatings”, California Air Resources Board, October 2005.
3. “Socio-Economic Impact Study: Proposed Amendments to Regulation 8, Rule 45 Motor Vehicle and Motor Equipment Coating Operations”, Bay Area Air Quality Management District, September 2008.
4. U.S. EPA – Technology Transfer Network – Air Toxics Web Site:
<http://www.epa.gov/ttn/atw/>