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Updating the EPA-Proposed VOC-Emission Standards

This article takes an in-depth look at the EPA ruling to reduce product VOC content, the economic effects to businesses complying to a national rule, and the feasibility of compliance by the industry.

The Environmental Protection Agency (EPA) is currently working on a proposed national rule for architectural and industrial coatings, the National Volatile Organic Compounds Emissions Standards for Architectural and Industrial Maintenance Coatings (also known as the Architectural Coatings National Rule). This rule will regulate the emissions of volatile organic compounds (VOCs) from certain product categories.

Architectural coatings regulations, which set the standards for VOC content in products, are already in place in a number of areas. Many states, though, have recommended that the EPA develop a national rule to help reduce compliance problems associated with the interstate transport of noncompliant coatings into nonattainment areas. A national rule would also provide some degree of consistency, predictability and administrative ease for the industry.

Background

According to a recent EPA study, VOC emissions from consumer and commercial products contribute to unacceptably high ozone levels that cause serious health and environmental effects. Exposure to ground-level ozone is associated with a wide variety of human health effects, agricultural crop loss and damage to forests and ecosystems.

Ozone is a major component of smog and is formed in the atmosphere by reactions of VOC and nitrogen oxides (NOx) in the presence of sunlight. To reduce ozone concentrations, emissions of VOC and NOx must be reduced. Architectural coatings, such as paint, coatings and solvents, are major contributors to rising ozone levels.

Section 183(e) of the Clean Air Act, as amended in 1990, requires the EPA to control VOC emissions from certain categories of consumer commercial products. The proposed rule is centered around VOC content levels for 55 individual architectural-coating categories. The EPA has determined that the proposed standards would reduce annual VOC emissions by 20% from 1990 levels.

Architectural coatings are applied to stationary structures and their interior and exterior appurtenances, and are intended for field application, not application in a coating shop or maintenance facility. These coatings protect the substrates to which they are applied from corrosion, abrasions, decay, ultraviolet light damage, or water penetration.

Architectural coatings also cover a wide variety of specialized functions, aside from substrate protection or aesthetic enhancement. Concrete curing or release compounds are applied during construction to facilitate structural performance. Fire-retardant, nuclear and traffic-marking coatings provide important public safety functions. Taking these economic, protective, safety and aesthetic benefits into foremost consideration, regulating the VOC content level of these varied coatings on a national level presents enormous economic and feasibility challenges for small manufacturers.

Economic and Technological Challenges

Economic impact will be felt in the industry, especially by the specific entities named in the proposed rule. The costs involved in reformulating current products to comply with the new regulations are of major concern. Another issue is the technical feasibility of reformulating products to conform to lower-VOC specifications while maintaining the products' end-use effectiveness.

Because VOCs are emitted whenever the product is used, the regulation will be applied at the manufacturer and importer levels. Processors might also be affected by the regulation. Processors would include individuals who add organic thinner to the coating in a commercial or industrial setting at the point of application. Including processors among those entities to be regulated would disallow an applicator from using organic solvents to thin a coating beyond a manufacturer's recommendation and thus raising the VOC level beyond specifications.

The primary concern about the proposed rule centers around the economics involved in complying with a new national regulation. Many of the current coating products are the result of extensive research and market testing costing hundreds of thousands of dollars, and they might have taken more than 10 years to develop to meet local and state specifications. The costs involved in staffing additional chemists and other specialists to reformulate a current product could put a small manufacturer out of business. If a product is reformulated and marketed without sufficient lead time for field testing, the potential costs involved in responding to consumers' complaints and warranty claims regarding the possible poor performance of the lower-VOC coatings are concerns to be considered.

Regulation could also lead to discontinuation of product lines and loss of a significant percentage of a company's market share. The economic impact of regulation will also be felt by the consumer in the form of increased product cost and the possible need for special training in the use of reformulated products. Replacing existing application equipment with more specialized equipment is yet another potential expense.

Aside from the economic issues that manufacturers will face, reformulating certain products to meet lower VOC levels might not be technically feasible. Although most of the limits in the new rule are feasible, the resultant water-based products might not perform as well as the solvent-based, higher-VOC products.

Concrete sealers and curing compounds are responsible for the structure's integrity, and their performance could be jeopardized if reformulated to a water-based coating. Wood finishes must properly seal and penetrate a

wood surface, and the VOC content for this specialty product is necessarily high because a waterborne finish would tend to raise the wood grain and defeat the product's purpose. Compliance with the new rule will thus encompass a wide range of potential costs that will be felt by manufacturers, importers and processors.

Variances, Exceedence Fees and Exemptions

Imposing a national rule to encompass all architectural coatings products presents economic and feasibility difficulties when an individual manufacturer's circumstances might be impacted negatively by the regulations. The EPA has allowed for such instances by providing variances and exemptions from compliance if a manufacturer or product meets certain criteria specified in the regulations.

For example, manufacturers can apply to the EPA for a temporary variance from compliance with the standards if they can demonstrate economic hardship, or that public interest would be served. The EPA recognizes that certain interruptions in the availability of raw materials or manufacturing processes might affect the ability to continuously comply. By allowing this variance, the EPA hopes to benefit smaller manufacturers who are likely to have fewer research and development resources and help them come into compliance in the short term.

Manufacturers will also be given the option of paying a fee, based on the amount that the VOC content levels are exceeded, instead of achieving the specified VOC levels. This exceedence fee option provides transition time for those manufacturers that desire additional time to obtain lower-VOC technologies, or a less-costly compliance approach for manufacturers selling low-volume products.

The exceedence fee rate is intended to provide compliance flexibility, but also to encourage eventual reformulation to meet the standards. As an example of the application of the exceedence fee, enamel nuclear coatings that must meet strict safety specifications would require extremely high-cost testing to reformulate, possibly up to $30,000 per reformulation. According to an industry representative's calculation, the exceedence fee would increase the cost of their nuclear coating by only about 40¢ per gallon, since the coating currently costs $75 per gallon. The exceedence fee allows manufacturers to keep a noncompliant product on the market for an indefinite period of time.

The EPA will also recognize some low-volume, specialty-niche products for which it would not be cost effective to reformulate because these products process unique compositions and specialized uses. Anti-graffiti, fire-retardant or resistive, graphic-arts (sign paint) and swimming-pool coatings are among these specialty coatings that are used in relatively low volumes and in a limited range of circumstances.

The EPA has built into the regulations several exemptions that will be allowed in various situations. The proposed standards do not apply to coatings manufactured or imported prior to January 1998 and do not apply to coatings manufactured explicitly for export outside the United States. Coatings sold in nonrefillable aerosol containers are exempted because one of the options for this product to comply involves reformulation of the propellant.

Also exempted are coatings that are collected and redistributed at community-based paint exchanges because these exchanges occur between users, not manufacturers. The EPA considers these paint exchanges to be a form of recycling and would like to encourage this practice.

Coatings that are sold in containers with a volume of one liter or less are also excluded to allow manufacturers to keep certain selected products on the market. By providing options for variances, exceedence fees and exemptions, the EPA hopes to minimize the economic and technical issues that will arise during the transition period toward compliance with the new regulations.

Compliance

In response to industry concerns over insufficient lead time to meet the requirements of the newly proposed regulations, the EPA has extended the compliance date to January 1, 1998. The proposed rule requires that containers for all architectural coatings display on the label or lid the date of manufacture or a code indicating the date that EPA enforcement personnel will be able to interpret, as well as the maximum VOC content in the coating.

The labeling requirement will allow the EPA to verify compliance with VOC

content levels and will inform consumers. In addition, containers of industrial-maintenance coatings must include the words "Not Intended for Residential Use" on the label or lid to discourage consumers from using a high-VOC-content coating where a lower-VOC residential coating will suffice.

Record-keeping and reporting requirements will be imposed on all manufacturers and importers to allow determination of compliance. Enforcement personnel can then compare the VOC content level of the product to the VOC content statement on the product's label, and there will be no further need for record keeping or reporting beyond the initial notification.

The idea behind the initial report is to notify the EPA of all manufacturers and importers subject to the standards. However, if the manufacturer or importer chooses to take advantage of the optional provisions of the rule, applying for a variance, exceedence fee or low-volume exemption, further specific reporting will be required.

In Conclusion

There is wide spread controversy over the proposed national architectural coatings rule. Insufficient lead time to achieve compliance because of the time required for reformulation and market testing is one concern. Economic hardships would fall particularly on smaller businesses that do not have the immediate resources for redeveloping a product to meet new specifications.

In some instances, it simply might not be technologically feasible to reformulate a product that has been developed for a specialized purpose. The EPA has been sensitive to the concerns of industry and has responded by making considerable changes to the proposed rule resulting in less stringent requirement. The new rule will hopefully achieve a balance between the concerns of the industry with the need to keep VOC emissions low enough to avert the adverse effects of excessive ground level ozone to safeguard health and the environment. ◍

For more information on AIM regulations, contact the authors at 312/407-7888.