



# Virginia Department of Planning and Budget **Economic Impact Analysis**

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**9 VAC 5-10 General Definitions**  
**Department of Environmental Quality**  
**Town Hall Action/Stage: 6316 / 10117**  
October 18, 2023

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The Department of Planning and Budget (DPB) has analyzed the economic impact of this proposed regulation in accordance with § 2.2-4007.04 of the Code of Virginia (Code) and Executive Order 19. The analysis presented below represents DPB's best estimate of the potential economic impacts as of the date of this analysis.<sup>1</sup>

## **Summary of the Proposed Amendments to Regulation**

The State Air Pollution Control Board (Board) proposes to revise the definition of volatile organic compound (VOC) to specifically exclude trans-1,1,1,4,4,4-hexafluorobut-2-ene (also known as HFO-1336mzz(E)), which is used in a variety of applications in foam expansion or blowing agents.

## **Background**

The federal Clean Air Act (Act) requires the U.S. Environmental Protection Agency (EPA) to prescribe national ambient air quality standards to protect public health. The Act also mandates that each state adopt and submit to EPA a state implementation plan which provides for the implementation, maintenance, and enforcement of the standards. Ozone, one of the pollutants for which there is a federal standard, is in part created by emissions of VOCs. Therefore, in order to control ozone, VOCs are addressed in Virginia's state plan and regulations.

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<sup>1</sup> Code § 2.2-4007.04 requires that such economic impact analyses determine the public benefits and costs of the proposed amendments. Further the analysis should include but not be limited to: (1) the projected number of businesses or other entities to whom the proposed regulatory action would apply, (2) the identity of any localities and types of businesses or other entities particularly affected, (3) the projected number of persons and employment positions to be affected, (4) the projected costs to affected businesses or entities to implement or comply with the regulation, and (5) the impact on the use and value of private property.

VOC is defined in the regulation as “any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate, which participates in atmospheric photochemical reactions. This includes any such organic compounds which have been determined to have negligible photochemical reactivity other than the following: ...” The regulation then includes a long list of organic compounds that are excluded from those considered to be VOCs.

The Chemours Company submitted a petition to the EPA on November 30, 2016, requesting that HFO-1336mzz(E) be exempted from the federal regulatory definition of VOC. If it can be demonstrated that a particular VOC is “negligibly reactive” — that is, if it can be shown that a VOC is not as reactive and therefore does not have a significant effect on ground-level (tropospheric) or upper-level (stratospheric) ozone — then EPA may remove that substance from the definition of VOC. The petition was based on the argument that HFO-1336mzz(E) has low reactivity, and may be used in a variety of applications in foam expansion or blowing agents where it has significant performance and energy-saving advantages. Chemours specifically developed HFO-1336mzz(E) to support reductions in emissions of greenhouse gases.<sup>2</sup>

After scientific review and public comment, EPA took final action on February 8, 2023, to respond to the petition by exempting HFO-1336mzz(E) from the federal regulatory definition of VOC. This action was based on consideration of the compound's low contribution to tropospheric ozone and the low likelihood of risk to human health or the environment, including stratospheric ozone depletion, toxicity, and climate change. This delisting became effective on April 10, 2023.

### **Estimated Benefits and Costs**

Long-term ozone exposure is associated with increased respiratory illnesses, metabolic disorders, nervous system issues, reproductive issues (including reduced male and female fertility and poor birth outcomes), cancer and increased cardiovascular mortality. In the short term, inhaling high levels of ozone can cause shortness of breath, wheezing and coughing; asthma attacks; increased risk of respiratory infections; increased susceptibility to pulmonary

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<sup>2</sup> Source: Department of Environmental Quality

inflammation; and increased need for people with lung diseases, like asthma or chronic obstructive pulmonary disease, to receive medical treatment and to go to the hospital.<sup>3</sup>

The proposed amendment may result in improved public health since the revision may encourage the use of HFO-1336mzz(E) in place of products that are more reactive and thereby produce more ozone. Excluding this substance as a VOC would make it easier and less expensive for industry to use it. Companies that use this substance in place of more reactive substances may also benefit by reducing their VOC emissions and concomitant reductions in permitting and other regulatory requirements. Facilities may take advantage of the low volatility of this substance to reduce its VOC emissions and thereby be able to expand production without triggering new source review permitting.

### **Businesses and Other Entities Affected**

Businesses that could use HFO-1336mzz(E) would be particularly affected. These include those that could use HFO-1336mzz(E) in foam blowing, refrigeration, as well as applications in solvents and aerosol propellants, and other minor uses, including industrial gas manufacturing, semiconductor machinery manufacturing, all other miscellaneous chemical product and preparation manufacturing, polystyrene foam product manufacturing, urethane and other foam product (except polystyrene) manufacturing, air conditioning and warm air heating equipment and commercial and industrial refrigeration, equipment manufacturing, motor vehicle parts manufacturing, ship building and repairing, boat building, and all other miscellaneous manufacturing.<sup>4</sup> Pursuant to a survey conducted by the Department of Environmental Quality (DEQ), there are no known producers of HFO-1336mzz(E) or other products for which this substance could replace in Virginia. Though no facilities in the Commonwealth are known at this time to be manufacturing or utilizing this substance, DEQ estimates that there are approximately 45 permitted facilities that meet the above criteria and may potentially use this substance. According to the agency, 19 of these facilities are small businesses.

The Code of Virginia requires DPB to assess whether an adverse impact may result from the proposed regulation.<sup>5</sup> An adverse impact is indicated if there is any increase in net cost or

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<sup>3</sup> Source: <https://www.lung.org/clean-air/outdoors/what-makes-air-unhealthy/ozone#how>

<sup>4</sup> Source: Department of Environmental Quality

<sup>5</sup> Pursuant to Code § 2.2-4007.04(D): In the event this economic impact analysis reveals that the proposed regulation would have an adverse economic impact on businesses or would impose a significant adverse economic impact on a locality, business, or entity particularly affected, the Department of Planning and Budget shall advise the Joint

reduction in net revenue for any entity, even if the benefits exceed the costs for all entities combined. If in the future some firms choose to use HFO-1336mzz(E) instead of another product due to the substance being declared not a VOC, then producers of the other products may lose revenue. As mentioned above, DEQ's survey indicated that there are no known manufacturers of these products in the Commonwealth. Thus, an adverse impact is not indicated.

### **Small Businesses<sup>6</sup> Affected:<sup>7</sup>**

The proposed amendment does not appear to adversely affect small businesses.

### **Localities<sup>8</sup> Affected<sup>9</sup>**

The proposed amendment may particularly affect Arlington County, Fairfax County, Loudoun County, Prince William County, City of Alexandria, City of Fairfax, City of Falls Church, City of Manassas, and City of Manassas Park as those localities collectively are considered a nonattainment area and have lower ozone emitting thresholds than the rest of Virginia.<sup>10</sup> Thus, firms in those localities may have greater incentive to switch to using HFO-1336mzz(E). The proposed amendment does not appear to directly affect costs for local governments.

### **Projected Impact on Employment**

As mentioned above, the proposed amendment may enable some facilities to take advantage of the low volatility of HFO-1336mzz(E) to reduce its VOC emissions and thereby be

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Commission on Administrative Rules, the House Committee on Appropriations, and the Senate Committee on Finance. Statute does not define "adverse impact," state whether only Virginia entities should be considered, nor indicate whether an adverse impact results from regulatory requirements mandated by legislation.

<sup>6</sup> Pursuant to § 2.2-4007.04 of the Code of Virginia, small business is defined as "a business entity, including its affiliates, that (i) is independently owned and operated and (ii) employs fewer than 500 full-time employees or has gross annual sales of less than \$6 million."

<sup>7</sup> If the proposed regulatory action may have an adverse effect on small businesses, Code § 2.2-4007.04 requires that such economic impact analyses include: (1) an identification and estimate of the number of small businesses subject to the proposed regulation, (2) the projected reporting, recordkeeping, and other administrative costs required for small businesses to comply with the proposed regulation, including the type of professional skills necessary for preparing required reports and other documents, (3) a statement of the probable effect of the proposed regulation on affected small businesses, and (4) a description of any less intrusive or less costly alternative methods of achieving the purpose of the proposed regulation. Additionally, pursuant to Code § 2.2-4007.1, if there is a finding that a proposed regulation may have an adverse impact on small business, the Joint Commission on Administrative Rules shall be notified.

<sup>8</sup> "Locality" can refer to either local governments or the locations in the Commonwealth where the activities relevant to the regulatory change are most likely to occur.

<sup>9</sup> § 2.2-4007.04 defines "particularly affected" as bearing disproportionate material impact.

<sup>10</sup> Source: DEQ

able to expand production without triggering new source review permitting. If this occurs, there may be a moderate increase in employment to facilitate the increase in production.

### **Effects on the Use and Value of Private Property**

As discussed above, the proposed amendment may enable some facilities to take advantage of the low volatility of HFO-1336mzz(E) to reduce its VOC emissions and thereby be able to expand production without triggering new source review permitting. This could increase the value of these firms. The proposal is not likely to substantively affect the costs related to the development of real estate.