FACT SHEET

Proposed Revision to the Regulatory Definition of Volatile Organic Compounds – Exclusion of *trans*--1,1,1,4,4,4-hexafluorobut-2-ene, and HFO-1336mzz(E); (also known as HFO-1336mzz-E)

ACTION

- On April 21, 2022, the U.S. Environmental Protection Agency (EPA) proposed revisions to the regulatory definition of volatile organic compounds (VOC) under the Clean Air Act. This action proposes to add *trans*-1,1,1,4,4,4-hexafluorobut-2-ene (also known as HFO-1336mzz-E; CAS RN 66711-86-2) to the list of compounds excluded from the regulatory definition of volatile organic compound (VOC) because it makes a negligible contribution to ground-level ozone formation.

- HFO-1336mzz(E) may be used in a variety of applications in foam expansion or blowing agents where it has significant performance and energy-saving advantages. The global warming potentials (GWP) for HFO-1336mzz(E) are estimated as 26, 7, and 2 for time horizons of 20, 100, and 500 years, respectively and can serve as a replacement for several higher global warming potential (>700 GWP) compounds for use in polyurethane rigid insulating foams, among other applications.

- HFO-1336mzz(E) also has a lower stratospheric ozone depletion potential than other alternatives, and based on the available toxicity data, it is less harmful compared with other chemicals used for the same purpose.

- While greater reliance on HFO-1336mzz(E) may have environmental benefits, manufacturers and formulators of polyurethane foams and refrigeration equipment would benefit from access to HFO-1336mzz(E) to meet VOC limits on their products without impairing performance.

- This proposal is based on consideration of HFO-1336mzz(E)'s negligible contribution to ground-level ozone and the low likelihood of risk to human health or the environment associated with its use.

- HFO-1336mzz(E) and its atmospheric breakdown product trifluoroacetic acid (TFA) are members of the broad class of compounds known as per- and poly-fluoroalkyl substances (PFAS), even though they are not among the PFAS currently listed or targeted for specific Agency action.

- EPA is seeking public comment on whether and how EPA should consider information on and properties of PFAS compounds beyond those properties related to the VOC program.

- This action proposes to allow, but would not require, states to remove regulatory controls on HFO-1336mzz(E) that are part of State Implementation Plans (SIP) designed to help states attain and maintain the ground-level ozone standards. This enables industry to use HFO-1336mzz(E) with fewer restrictions.

- This proposed rule will be open for public comment for 60 days after publication in the Fede*ral Register*.

BACKGROUND

- Some VOCs contribute significantly to the formation of ground-level ozone. Exposure to ozone can cause serious respiratory illness.

- A compound may be excluded as a VOC as a result of public petitions and scientific data that demonstrate its negligible effect on the formation of ground-level ozone. Since 1977, EPA has removed 62 specific compounds or classes of compounds from the list of VOCs that contribute to ozone formation.

- The Chemours Company submitted a petition to the EPA on November 30, 2016, requesting that *(2E)*-1,1,1,4,4,4-hexafluorobut-2-ene (HFO-1336mzz(E); CAS number 66711-86-2) be exempted from the regulatory definition of VOC. The petition was based on the argument that HFO-1336mzz(E) has low photochemical reactivity relative to ethane, which is a criterion used in the VOC program for delisting. HFO-1336mzz(E) has a low maximum incremental reactivity (MIR) (i.e., 0.011 g of O_3/ g of HFO-1336mzz(E)) when compared to the MIR of ethane (0.28 g O_3 / g of ethane).

- EPA has carefully reviewed all available scientific data before proposing to exclude this compound from regulation as a VOC.

- Due to its low photochemical reactivity, HFO-1336mzz(E) is considered to be negligibly reactive in the formation of ground-level ozone and its removal from regulation as a VOC is not expected to contribute to violations of the national ambient air quality standards (NAAQS).

HOW TO COMMENT

- EPA will accept comments for 60 days after the proposal is published in the *Federal Register*.

- Comments, identified by Docket ID No. EPA-HQ-OAR-2021-0420 may be submitted by one of the following methods:
    - Go to https://www.regulations.gov/ and follow the online instructions for submitting comments.
    - Send comments by email to a-and-r-docket@epa.gov, Attention Docket ID No. EPA-HQ-OAR-2021-0420.
- Out of an abundance of caution for members of the public and our staff, the EPA Docket Center and Reading Room are closed to the public, with limited exceptions, to reduce the risk of transmitting COVID-19. Our Docket Center staff will continue to provide remote customer service via email, phone and webform.
    - We encourage the public to submit comments via https://www.regulations.gov/ or email, as there may be a delay in processing mail and faxes. Hand deliveries and couriers may be received by scheduled appointment only.
    - For further information on EPA Docket Center services and their current status, please visit us online at https://www.epa.gov/dockets.

FOR MORE INFORMATION

- Interested parties can download a copy of the proposed rule from EPA's website at the following address: https://www.epa.gov/ozone-pollution/ozone-volatile-organic-compound-voc-exemptions-rules.
- Today's action and other background information are also available electronically at https://www.regulations.gov/, EPA's electronic public docket and comment system.

For further information about this action, contact Dr. Souad Benromdhane of EPA's Office of Air Quality Planning and Standards, at (919) 541-4359 or by e-mail at benromdhane.souad@epa.gov.