

FACT SHEET

Air Quality: Revision to the Regulatory Definition of Volatile Organic Compounds – Exclusion of (Z)-1-chloro-2,3,3,3-tetrafluoropropene (HCFO-1224yd(Z))

ACTION

- On November 4, 2024, 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 (Z)-1-chloro-2,3,3,3-tetrafluoropropene (HCFO-1224yd(Z); CAS number 111512-60-8) to the list of compounds excluded from the regulatory definition of VOC because it makes a negligible contribution to ground-level ozone formation.
- HCFO-1224yd(Z) may be used in refrigeration which uses a turbo-type refrigerator, a binary generator, a heat recovery heat pump, etc. As a refrigerant, this compound will not be emitted into the atmosphere on a continuous basis in significant amounts. Refrigerators are initially charged and then serviced with HCFO-1224yd(Z), with minimal losses of refrigerant to the atmosphere over time. These refrigerators are also subject to EPA's Significant New Alternatives Policy regulations related to servicing and venting.
- In comparison to existing alternatives, the environmental impact of HCFO-1224yd(Z) is estimated to be low. The global warming potential for HCFO-1224yd(Z) is 0.88 for a time horizon of 100 years, and it is relatively short-lived in the atmosphere, with a lifetime of approximately 20 days. Other compounds used for the same applications have global warming potentials that can be as high as 14,800.
- HCFO-1224yd(Z)'s ozone depletion potential is almost zero (0.00023), and based on the available toxicity data, it is less harmful compared with other chemicals used for the same purpose.
- This proposal is based on consideration of HCFO-1224yd(Z)'s negligible contribution to ground-level ozone and the low likelihood of risk to human health or the environment associated with its acceptable end uses.
- This action proposes to allow, but would not require, states to remove regulatory controls on HCFO-1224yd(Z) that are part of State Implementation Plans (SIP) designed to help states meet the ground-level ozone standards.

- This proposed action will be available for public comment for 60 days after publication in the *Federal 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 63 specific compounds or classes of compounds from the list of VOCs that contribute to ozone formation.
- The AGC Chemicals Americas, Inc. submitted a petition to EPA on July 29, 2020, requesting that HCFO-1224yd(Z) be exempted from the regulatory definition of VOC. The petition was based on the argument that HCFO-1224yd(Z) has low photochemical reactivity relative to ethane, which is a criterion used in the VOC program for delisting. HCFO-1224yd(Z) has a low maximum incremental reactivity (MIR) (0.052 ± 0.011 grams of ozone formed per gram of HCFO-1224yd(Z) emissions) when compared to the MIR of ethane (0.28 grams of ozone formed per gram of ethane emissions).
- EPA has carefully reviewed all available scientific data before proposing to exclude this compound from the list of VOC.
- Due to its low photochemical reactivity, HCFO-1224yd(Z) is considered to be negligibly reactive in the formation of ground-level ozone.

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-2023-0295 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-2023-0295.
 - Mail your comments to: EPA Docket Center, Environmental Protection Agency, Mail Code: 28221T, 1200 Pennsylvania Ave, NW, Washington, DC 20460, Attention Docket ID No. EPA-HQ-OAR-2023-0295.
 - Deliver comments in person to: EPA Docket Center, 1301 Constitution Ave., NW, Room 3334, Washington, DC. Note: In-person deliveries (including courier deliveries) are only accepted during the Docket Center's normal hours

of operation. Special arrangements should be made for deliveries of boxed information.

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 proposal and other background information are also available electronically at <https://www.regulations.gov/> and 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.