

FACT SHEET

Revisions for the Measurement of Atmospheric Ozone (Chemiluminescence Method)

ACTION

- On October 5, 2023, the U.S. Environmental Protection Agency updated a standard parameter used to measure concentrations of ozone. This parameter, called the absorption cross-section value, is used in ultraviolet (UV)-based ozone analyzers and Standard Reference Photometers (SRPs).
- This change in ozone absorption cross-section may increase measured ozone concentrations by up to 1.2%. Given the existing sources of potential variability in monitoring data, EPA does not expect a predictable effect on reported data.
- EPA is revising 40 Code of Federal Regulations (CFR) Appendix D to Part 50 - Reference Measurement Principle and Calibration Procedure for the Measurement of Ozone in the Atmosphere (Chemiluminescence Method) to include the updated value. This will:
 - update the current ozone absorption cross-section to $1.1329 \times 10^{-17} \text{ cm}^2 \text{ molecule}^{-1}$ or $304.39 \text{ atm}^{-1} \text{ cm}^{-1}$, with an uncertainty of $0.94 \text{ atm}^{-1} \text{ cm}^{-1}$ at 0°C and 1 atmosphere (atm),
 - update two references in the regulations, and
 - add the reference for the updated absorption cross-section value.
- The ozone absorption cross-section value will improve the accuracy of surface ozone monitoring measurements and reduce the uncertainty in measured ozone concentrations.

BACKGROUND

- The new value reflects advances in science and measurement technology and is more accurate and precise than the value established in 1961.
- An international group reviewed absorption cross-section measurements in 2019. That group reached consensus on an updated value. This value is being implemented worldwide with a target date of January 1, 2025, to begin implementation and January 1, 2026, for full implementation.
- The Gas Analysis Working Group of the Consultive Committee for Metrology in Chemistry and Biology (CCQM-GAWG) of the Bureau of Weights and Measures in France (BIPM) and the National Institute of Standards and Technology (NIST) brought the need to update the cross-section value to EPA's attention.

FOR MORE INFORMATION

- For further information about the rulemaking, contact Joann Rice at EPA's Office of Air Quality Planning and Standards at (919) 541-3372.