



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NATIONAL EXPOSURE RESEARCH LABORATORY
RESEARCH TRIANGLE PARK, NC 27711

March 7, 2014

OFFICE OF
RESEARCH AND DEVELOPMENT

MEMORANDUM

SUBJECT: Request for Peer-Review/Advisory on the Proposed Promulgation of an Additional Federal Reference Method (FRM) for Ozone (O₃)

FROM: Timothy J. Buckley, Director */signed/*
Human Exposure and Atmospheric Sciences Division (HEASD)
National Exposure Research Laboratory (NERL)

TO: Ed Hanlon
Designated Federal Officer
Clean Air Scientific Advisory Committee
EPA Science Advisory Board Staff Office (1400F)

This memorandum is to request that the Clean Air Scientific Advisory Committee (CASAC) Air Monitoring and Methods Subcommittee (AMMS) conduct a peer-review/advisory of ORD's intent to propose a new, additional Federal Reference Method (FRM) for Ozone (O₃).

Background

In conjunction with the O₃ National Ambient Air Quality Standards (NAAQS) Review, ORD is developing the scientific and technical portion of the Federal Register (FR) rule-making notice regarding O₃ monitoring methodology. It is for this purpose that ORD requests that the CASAC AMMS provide a peer-review (advisory) on our recommendation to add a second FRM for O₃. ORD is proposing the addition of a new FRM for O₃ because analyzers implementing the existing FRM, based on the Ethylene-Chemiluminescence method, are no longer being manufactured or supported. The last O₃ FRM analyzer was designated by EPA in 1979, and most designated O₃ FRM analyzers are now either inoperative or too old to serve as an FRM.

Each of the six criteria air pollutants has at least one FRM that serves as the standard protocol for measuring ambient concentration of the respective pollutant. Also, the FRM is used to assess the quality of the monitoring data to determine whether a given geographic region is in full regulatory compliance with the appropriate primary and/or secondary NAAQS. Furthermore, the FRM serves as the 'gold standard' against which the field- and laboratory-based performance of

emerging monitoring technologies (i.e., Federal Equivalent Method [FEM] candidates) is compared. Given the importance of these three key FRM roles, it is crucial to ensure that when a new FRM is proposed as an additional (or replacement) FRM, that its measurement performance is as good or exceeds that of the current FRM.

For these reasons, we are recommending adoption of the Nitric Oxide (NO)-Chemiluminescence method as a second (additional) FRM for O₃. The existing FRM needs to be retained to ensure continued authorization for the use of existing FEMs that were designated based on comparisons to it. The proposed method's principle of operation is similar to that of the current O₃ FRM (Ethylene-Chemiluminescence) and our analysis of the field and laboratory performance of the NO-Chemiluminescence method indicates that it closely parallels the FRM. The NO-Chemiluminescence method has the added benefit that it is a current FEM and is fully-qualified for promulgation as an FRM. As an FEM, the (NO)-Chemiluminescence method is a well-established method which has been validated through field and laboratory testing and designated as an equivalent method based on comparison to the current FRM.

The documents to be reviewed include the technical portion of the package for the Ozone National Ambient Air Quality Standard (NAAQS) Review that focuses on ORD's recommended second FRM for Ozone (Recommended Method: NO-Chemiluminescence – currently a Federal Equivalent Method (FEM)). The existing FRM for Ozone (Ethylene-Chemiluminescence Method) is no longer being manufactured or supported, and has not been commercially available for more than 20 years. EPA ORD notes that it has compared the performance of the NO-Chemiluminescence Method to the Ethylene-Chemiluminescence Method, and ORD is recommending that the NO-Chemiluminescence Method be promoted to FRM Status.

The review package for the CASAC AMMS contains the following attachment :

- Draft FRM: *Appendix D-1 to 40 CFR —REFERENCE MEASUREMENT PRINCIPLE AND CALIBRATION PROCEDURE FOR THE MEASUREMENT OF OZONE IN THE ATMOSPHERE – NO CHEMILUMINESCENCE (NO-CL) METHOD*

Additional information may be provided upon request.

Specific Request

ORD and NERL request that the CASAC AMMS provide responses to the attached charge questions pertaining to the promulgation of an additional FRM for O₃.

Charge Questions

1. What is the AMMS view on adding an additional O₃ FRM (as Appendix D-1 of the 40 CFR Part 50 Federal Regulation) for the purpose of establishing a new FRM that is implemented in analyzers currently in production status? This new O₃ FRM will serve as

an additional FRM to supplement the current Ethylene-Chemiluminescence method, which is no longer being produced or supported.

2. What is the AMMS views on establishing the Nitric Oxide-Chemiluminescence (NO-CL) method (currently an FEM) as the new, additional O₃ FRM?
3. Do any other ozone measurement methods exist that the AMMS recommends for consideration of possible promulgation as a new (additional) O₃ FRM?

Request for Guidance/Opinion on Emerging Measurement Methodologies

4. What is the AMMS views on the use of low-cost sensor technology to supplement regulatory ozone monitoring (i.e., in rural areas)?

If you have any questions about this request, please contact Eric S. Hall, National Exposure Research Laboratory (NERL), Human Exposure and Atmospheric Sciences Division (HEASD) at hall.eric@epa.gov or (919) 541-3147.

Attachments

Cc: Jennifer Orme-Zavaleta, Director
National Exposure Research Laboratory (NERL)