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09/25/2003 01:38 AM

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Subject: EPA Information Correction Request

1. THIS REQUEST UNDER THE EPA INFORMATION QUALITY GUIDELINES (IQG) IS SUBMITTED BY:

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Texas Academy of Science

Guadalupe County representative:
Alamo Area Council of Governments (AACOG) AIR Advisory Committee
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2. INFORMATION WHICH YOU BELIEVE DOES NOT COMPLY WITH THE OFFICE OF MANAGEMENT AND BUDGET OR EPA INFORMATION QUALITY GUIDELINES, INCLUDING SPECIFIC CITATIONS TO THE INFORMATION AND TO THE GUIDELINES, IF APPLICABLE.

Ozone concentrations measured at CAMS 23 in San Antonio, Texas, during summer 2002 were accepted by EPA, despite protests from me and others that the ozone analyzer was faulty and provided data that does not meet acceptable scientific standards.

Erroneous data from this instrument are accessible from various EPA web sites, including tabulated data and misleading visualizations on the EPA AIR NOW web page.

This error was not made known to the public until I independently found it, even though the problem was well known to various local, Texas and possibly EPA officials.

I calculated a mean ozone concentration error of +10.4 ppb by comparing nocturnal minima for 2002 with nocturnal minima in previous years. This method assumes little change in traffic patterns that lead to ozone titration by NO in automobile exhaust, which is a reasonable assumption.

The TCEQ calculated a mean error of +10 percent by comparing data from CAMS 23 with data from CAMS 58. This method is less reliable due to the effect of the plume from a large power plant. However, the result is very similar to the error I independently identified.

According to the Cal/Span spreadsheet sent by Dr. Dave Sullivan at TCEQ, CAMS 23 had more than 80 "WARNING" flags during the summer of 2002. There are many examples of strings of such WARNING flags with no calibration or no 'PASSED' flag. This history of WARNING flags coupled with the obvious instrument error (highest ozone in Texas on some days) raises serious questions about why these data were sent to EPA. WHY THE EPA ACCEPTS SUCH DATA WITH NO QUESTIONS ASKED

RAISES TROUBLING QUESTIONS FOR THE ENTIRE OZONE MONITORING PROGRAM. How many other instruments perform as erratically as the analyzer at CAMS 23?

3. EXPLANATION OF HOW THE INFORMATION DOES NOT COMPLY WITH THE INFORMATION QUALITY GUIDELINES.

The EPA claims for itself a standard far higher than the one it practices:

"In meeting the public demand for high quality environmental data, EPA Headquarters, Regional and State representatives inherently have a responsibility to provide accurate data." (See <http://www.epa.gov/cdx/iecp.html>.)

The ozone analyzers used by the EPA and State agencies have a typical accuracy of +/-1 ppb. Thus, an error of 10 ppb is clearly not "accurate data."

The EPA allows a calibration tolerance in ozone measurements of +/- 20 percent. When I disclose this to elected officials, the media and various scientists, the response is always laughter, especially when I then state that THIRD GRADE STUDENTS CAN PROVIDE HIGHER QUALITY OZONE MEASUREMENTS (+/- 10 percent) THAN THE EPA USING IMPROVED PAPER TEST STRIPS DEVELOPED WITH

FUNDING FROM NSF AND
NASA (SEE WWW.GLOBE.GOV).

I have measured column ozone since 1989 to within 1% of the world ozone standard. This is the expected accuracy in my field.

4. RECOMMENDATION FOR CORRECTIVE ACTION.

1. Peer Review Panel

The EPA +/-20% calibration tolerance for ozone and other gas analyzers must be changed to comply with the "best available monitoring" requirements of the Clean Air Act and customary definitions of accuracy. I recommend that EPA assign an independent panel of scientists to review the current standard at the earliest possible date. I recommend that this panel consider a reasonable calibration tolerance not to exceed +/-5 percent. I am willing to serve on the panel or testify before it.

2. Correct the EPA Data Base

EPA should immediately remove from its web site and from consideration all data from CAMS 23 that was known to be deficient by the TCEQ regulators and possibly the EPA. There is abundant internal TCEQ correspondence concerning this error that will be produced should this request require an appeal.

5. EXPLANATION OF HOW THE ALLEGED ERROR AFFECTS OR HOW A CORRECTION WOULD BENEFIT YOU.

1. Model Studies

The Clean Air Act mandates the modeling being employed by the AIR Technical Committee on which I serve. Bad data from CAMS 23 impacts model results and must be removed.

2. Improved Ozone Measurement Accuracy

Deleting data known to be faulty will dramatically raise the standard of EPA ozone measurements here in Texas and nationwide.

The +/-20% calibration tolerance encourages sloppy practices by instrumentation technicians. Why should a technician try for 10%, much less 2%, when 20% will pass? This alone is a major objection to the +/-20% rule.

At least 7 States have complained to the EPA about operational problems with the EPA-recommended Dasibi ozone analyzer, whose manufacturer is no longer in business. There are two papers on this subject. High humidity and temperature are the most common factors causing problems. Mercury vapor contamination can also cause very large errors. Reports describe Hg vapor contamination from various sources, including broken thermometers (one on a roof and another inside the shelter) and a broken fluorescent lamp. Requiring higher standards will require replacement of old instruments.

3. Compliance with Existing Standards

Requiring EPA to abide by standards already in place will greatly enhance the agency's regulatory credibility. For example, in accordance with the charter provided by the Federal Clean Air Act (CAA), the EPA mandates that data be "...representative of the atmospheric conditions being measured" (NAMS/SLAMS Network...Quality Assurance Project Plan for Air Monitoring in Texas, TCEQ, A-7, page 1, 2002). The CAA itself discusses the need for quality measurements (see below). It is my impression from conversations with TCEQ's Dr. Dave Sullivan that he does not view CAMS 23 as having provided quality measurements from 2000-2002. Indeed, he has briefed AACOG in this regard and advised the Alamo Area Council of Governments that "correcting data" for all three years will increase the San Antonio ozone design value. Internal correspondence from Sullivan to TCEQ colleagues even suggests rejecting all the bad data as a possible option. This nicely demonstrates the confusion caused by the EPA +/-20% calibration tolerance.

Please contact me with any questions.

Best regards,

Forrest M. Mims III

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Measurements of and scientific papers about total ozone, total water vapor, solar ultraviolet, aerosol optical thickness and many other Sun and sky parameters since 1988.

The letter over the signature block does not necessarily represent the views of any listed organization.