



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
Office of Air Quality Planning and Standards  
Research Triangle Park, North Carolina 27711

JAN 23 1995

MEMORANDUM

SUBJECT: CAL3QR Model

FROM: William F. Hunt, Director *William F. Hunt*  
Emissions, Monitoring, and Analysis Division, OAQPS  
(MD-14)

TO: Ronald A. Kreizenbeck, Acting Director  
Environmental Services Division

This is in response to your memorandum regarding the regulatory status of the CAL3QR model. The Guideline on Air Quality Models (Revised) recommends CAL3QHC in Section 6.2.2 for carbon monoxide screening analysis. This section of the modeling guideline further allows the use of CAL3QHC as a refined model for carbon monoxide analysis on a case-by-case basis. As a result of a court suit by the New York City Department of Environmental Protection, an enhanced version of CAL3QHC, entitled CAL3QR, was recently developed by this office. CAL3QR is a refined model, as opposed to a screening technique, that performs calculations identically to those in CAL3QHC; since mixing height calculations have had to be included, those are done in a manner consistent with ISCST2. What the enhancements add are: (1) the ability to routinely consider a full year of hourly meteorological data, and (2) considerable flexibility in treating hourly variations in emissions. CAL3QR though is not a required model, but is a refined version of CAL3QHC.

It is not our intent to issue national guidance on CAL3QR, since use of the model is to be considered on a case-by-case basis as indicated in the modeling guideline. Furthermore, we believe that the principles embodied in current guidance on meteorological inputs for point source modeling is adequate for mobile source modeling. It is our intent to include the final version of CAL3QR in the same file on the SCRAM electronic bulletin board system where the CAL3QHC model resides.

The CAL3QHC model was evaluated in an EPA sponsored carbon monoxide intersection model evaluation study in New York City. Using the Protocol for Determining the Best Performing Model, EPA selected CAL3QHC as the recommended carbon monoxide intersection model as part of the Supplement B revisions to the modeling guideline. The selection process involved a great deal of public comment. Since the CAL3QR model is basically the same as

CAL3QHC with the enhancements noted above, the evaluation and selection process can be transferred without reservation. The CAL3QR model was first uploaded to the "comments" area of the Support Center for Regulatory Air Models (SCRAM) electronic bulletin board system on September 29, 1994. Based on the comments received, coding for CAL3QR was revised and a new version of the code was uploaded to SCRAM for comment on January 13. Thus, opportunity for comment and review by the technical community on the CAL3QR model has been successfully provided.

As you note in Attachment 1 of your memorandum, the CAL3QHC model underpredicted measured CO concentrations in the New York City intersection model evaluation study when on-site meteorology and the MOBILE4.1 emissions factor model were utilized. The underprediction was approximately 30 percent. Since the MOBILE5a CO emission factors are about 20 percent higher than those obtained for the year of the New York City intersection model evaluation with MOBILE4.1, the CAL3QR model with actual meteorological input should perform well with MOBILE5a. Also, your memo indicates that the New York City intersection model evaluation was conducted for a limited number of intersections under a limited set of meteorological conditions. The New York City intersection model evaluation study was very comprehensive and included six intersections which were located in urban street canyons, near low rise buildings, and along rivers. There was a full range of meteorological conditions (stabilities, wind speeds) recorded at these intersections. Given limitations of extramural funds and an outcome that is highly predictable, we have no plans to reproduce the performance evaluation for CAL3QR.

We agree that neither CAL3QHC nor CAL3QR have been evaluated for PM-10 air quality impacts. Thus, these models do not have any regulatory status for PM-10 at this time. We prepared draft guidance for PM-10 hot spot modeling of roadways and distributed it for public comment. All the public commenters agreed with the choice of the CAL3QHC model for roadway PM-10 hot spot modeling. We plan to develop revised roadway PM-10 hot spot modeling guidance based on the CAL3QHC and CAL3QR models in the next couple of months which will be announced in the Federal Register and subject to public comment.

I hope this memorandum clarifies for you the regulatory status of the CAL3QR model. Since the use of CAL3QR is to be considered on a case-by-case, we have no problem with the issuance of a Region X policy on the use of this model; however, please be aware that other Regional Offices may have views that

differ from yours. If you have any further questions or comments, please contact Tom Braverman of my staff at (919) 541-5383.

cc: Judy Tracy, OGC  
Breda Phillips, OAQPS (MD-15)  
Regional Modeling Contacts, I-X

Model Clearinghouse Information Storage and Retrieval System

Record Information Report

Record Number: 95-X -02 Fiscal Year: 1995 Region: 10 Last Update:  
Name: CAL3QR - Status 12/03/97

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State(s): Generic  
Pollutant(s): CO  
PM-10  
Regulation(s): Generic  
Source(s): Roadway  
Model(s): CAL3QHC  
Subject(s): Emission Rates for Model Input  
Performance Evaluations  
Screening Procedures  
Urban/Rural: Urban Only  
Oral/Written: Written  
Terrain: Low Terrain (below stack height)  
Guideline: Guideline & Non-guideline  
Database: Both Off-site & On-site  
Involvement: Review and Comment

Record Comments:

Response to Reg. X from EMAD Division Dir. (Hunt) concerning status of CAL3QR.

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