Wilson

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

SEP 22 1993

**MEMORANDUM**

**SUBJECT:** Detroit Modeling Protocol, Model Clearinghouse Review Comments

**FROM:** Ellen Baldridge, Computer Specialist Ellen Baldridge
Model Application Section, SRAB, TSD (MD-14)

**TO:** Sheila Breen, Environmental Engineer
Air Toxics and Radiation Branch, ARD, Region V (AT-18J)

We have reviewed the Detroit Urban Airshed Model (UAM) work plan. The following are our comments. The overall approach is consistent with other UAM work plans. In general the work plan described an excellent overall approach with many details on meteorological file development, diagnostics, sensitivity analyses and performance evaluations. However, the strengths in these areas raise a concern regarding the overall weakness with how emissions are discussed/treated in the work plan.

| Page | Comment |
|---|---|
| 1-1 | The background should reference the Environmental Protection Agency (EPA) UAM guidance document and the commitment to follow the guidance. Also in the background, it would be an improvement if what is required in the November 1993 timeframe in lieu of not delivering the Empirical Kinetics Modeling Approach (EKMA) based State implementation plans (SIP) was described. There was no mention of the fact that since UAM was selected the final SIP is due November 1994 instead of November 1993. Doesn't the July 1991 guidance mention this? |
| 1-2 | In section 1.3 the second bullet should indicate an initial control strategy to evaluate the effects of the Clean Air Act mandated controls that will be in place by the attainment date. Then evaluate alternative control strategies, if a need for additional controls is indicated. |
| 1-2 | In section 1.3 the third bullet should indicate 1994 as the date by which the documentation will be provided. The SIP is due in 1994; 1996 is the attainment date. |

2-1 In section 2.2, instead of "rectify model performance problems," perhaps "validate and correct input data" is a more accurate statement.

2-11 Performance statistics should be calculated using the formulas documented in the UAM guidance document. Specifically the accuracy should be calculated as observed minus predicted. This will satisfy the recommendations of the UAM guidance as well as provide consistency for comparing model performance among UAM applications. Please insist on this.

2-17 The discussion on future boundary conditions is troublesome as it opens the door for considerable game-playing. Regional modeling is not included among the four bullets. It is the recommended approach for estimating effects of upwind controls on boundary conditions. While we recognize limitations with regional modeling approaches, a regional modeling approach could provide a useful means for estimating "relative" changes in present boundary conditions. The procedures recommended in the draft protocol are less well established. If they are adopted, a discussion of why they are superior to use of regional modeling data should be required in the protocol.

2-4 Since CSUMM is not the recommended method for developing windfields, the guidance requests written justification and documentation of the method and its implementation. Regional Offices should obtain sufficient information to verify that the suggested method is scientifically defensible and has been applied correctly before approving the method for SIP usage. For future reference Texas has requested Region VI review and approval of the use of CSUMM for developing the windfields for the Houston/Beaumont area. Simulation of coastal breezes was one example cited that CSUMM emulated better than DWM.

2-14 ±15 - 20 percent is correct for unpaired peak accuracy. See page 57 of UAM guidance document.

Over the past year, the Office of Air Quality Planning and Standards has developed a Geographical Information System program to generate spatial allocation data for the Biogenic Emissions Inventory System (BEIS), Emissions Preprocessor System (EPS), and gridded terrain height data for DWM. These data are available on the Support Center for Regulatory Air Models Bulletin Board System (SCRAM BBS). They may be used as input to the processors or used to validate data input prepared through other methods.

cc: N. Meyer C. Wayland D. Wilson
N. Possiel R. Scheffe