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

12 NOV 1992

MEMORANDUM

SUBJECT: Allowable Emissions and Current Modeling Guidance

FROM: Chet Wayland, Environmental Scientist Chet Wayland
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TO: Joseph A. Tikvart, Chief
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In response to the recent concern over the use of allowable emissions for future year projections in association with the State implementation plan (SIP) attainment demonstrations for ozone, an analysis of the existing modeling and emissions guidance was performed to ensure consistency. The documents in question are Procedures for Preparing Emissions Projections (EPA-450/4-91-019) and Guideline On Air Quality Models (Revised) (EPA-450/2-78-027R). The issue of projection of allowable emissions for SIP modeling is discussed in both and is summarized below.

Procedures for Preparing Emissions Projections (page 13)

"Any emission projection made for use in SIP modeling shall use an allowable emission rate for that purpose. Methods used to estimate future activity levels are not affected by the choice between actual and allowable emission rates. Thus, allowable emissions are not based on the maximum worst case condition, with the plant operating at full load (8760 hrs/yr), but are calculated by multiplying the **anticipated** operating rate by the **maximum** allowable emission rate."

Guideline On Air Quality Models (Revised) (page 9-4, 9-5, 9-6)

"In stationary point source applications for compliance with short term ambient standards, SIP control strategies should be tested using the emission input shown on Table 9-1. When using a refined model, sources should be modeled sequentially with these loads for every hour of the year. To evaluate SIP's for compliance with quarterly and annual standards, emission input data shown on Table 9-1 should be used again."

Ozone is not a source-specific emission, but is formed by the combination of precursors of NOx and VOC (and some degree CO)

through photochemical reactions. Therefore, the precursor emissions (VOC, NOx, CO) would be considered as other background sources. Ozone is also measured for compliance under a short term ambient standard (daily maximum hourly value). Table 9-1 defines the emission requirements for other background sources based on a short term standard as (1) **"maximum allowable emission limit or federally enforceable permit limit"** and (2) **"annual operating level when actually operating, averaged over the most recent 2 years unless it is determined that this period is not representative** and (3) **"continuous operation unless source operation is constrained by a federally enforceable permit condition".**

In the case of ozone modeling, each of the three emission requirements listed above should be adhered to with some interpretation as follows:

(1) The maximum allowable emission limit or federally enforceable permit limit requires no interpretation. This is simply the emission limit (e.g. pounds of VOC per gallon of solids applied) allowed by the operating permit and is the only way to completely test the control strategy under any enforceable limit or regulation.

(2) The annual operating level should be interpreted as the anticipated operating level for the peak ozone season (e.g., summer) as this period is more representative of the operating conditions under which ozone formation occurs.

(3) As discussed above, ozone is primarily formed through photochemical reactions with various precursors driven by sunlight. Many sources operate continuously and the majority of the remaining sources operate during normal daytime conditions. Therefore, continuous operation should be interpreted as the anticipated operation during the peak ozone season.

Using these interpretations with respect to the operating level and operating schedule (factors), Table 9-1 can be viewed as saying that an **anticipated** operating rate and a **maximum** allowable emission limit should be used for emission input for SIP modeling.

Summary

In comparing the two guidance documents with respect to emission input for SIP modeling exercises, it is fairly clear that the guidance is consistent. The uncertainty in the guidance is more an issue of semantics and interpretation than an inconsistency. Both require an anticipated operating rate (not maximum) and a maximum allowable emission limit or rate. The Procedures for Preparing Emissions Projections guidance defines the anticipated operating rate as a combination of the anticipated operating level and operating schedule, respectively, while defining the permitted limit as the enforceable emissions rate. The Guideline On Air Quality Models (Revised) actually defines each component individually as an operating level, operating factor (schedule) and the permitted limit as an emission limit. Therefore, with some interpretation and judgement, there does not appear to be any inconsistency between previous modeling guidance published initially in 1986 and the most recent guidance on emission projections published in May 1991.

cc: S. Holman
N. Meyer
D. Wilson

FY-93 MODEL CLEARINGHOUSE MEMORANDA

Date	Region	Subject
10/7/92	IV	Response to Proposal to Allow Credit for a Stack Height Increase at the Dade County Resource Recovery Facility, Dade County, Florida
10/28/92	V	Demonstrating Attainment of the Ozone National Ambient Air Quality Standards (NAAQS) with the Urban Airshed Model (UAM) for Detroit
10/28/92	VII	Demonstrating Attainment of the Ozone National Ambient Air Quality Standards (NAAQS) with the Urban Airshed Model (UAM) for St. Louis
10/28/92	IV	Attainment Demonstrations using the Empirical Kinetics Modeling Approach (EKMA)
11/5/92	I	Proposal to Use ISCRDT to Model Intermediate Terrain (Boise Cascade, Rumford, Maine)
11/12/92	VIII	Denver PM-10 State Implementation Plan (SIP) Modeling Issues