UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5

DATE: JUN 24 1992

SUBJECT: Episode Selection for Detroit Moderate Ozone Nonattainment Area

FROM: Rebecca Calby, Regional Meteorologist
Regulation Development Branch
Air and Radiation Division (AR-18J)

TO: Edwin Meyer, Acting Chief
Source Receptor Analysis Branch
Technical Support Division (MD-14)

Section 182(b)(1) of the Clean Air Act Amendments of 1990 (CAAA) requires all States with areas designated and classified as moderate nonattainment for ozone to submit State Implementation Plans (SIPs) providing for reductions in ozone precursors as necessary to attain the National Ambient Air Quality Standards (NAAQS) for ozone. As a result, Michigan is required to submit an attainment demonstration SIP for the Detroit moderate nonattainment area. According to United States Environmental Protection Agency (USEPA) policy, intrastate moderate areas may apply the Empirical Kinetic Modeling Approach (EKMA), however the use of a photochemical grid model such as the Urban Airshed Model (UAM) is preferred for such a demonstration. The Michigan Department of Natural Resources (MDNR), with financial and technical assistance from the regulated community, has begun preliminary work on applying UAM for the Detroit area. Because this project is slightly behind other national UAM modeling inititives, the project's partcipants are expeditiously preparing the modeling protocol and in doing so have uncovered a potential problem which they are requesting USEPA's assistance in resolving. The purpose of this memorandum is to present the issue, present Region 5's position on the issue, and request a response from you as to how best to resolve the matter.

Episode selection is one of the first issues that needs to be resolved before the modeling effort can proceed. Following USEPA's guidance on regulatory application of UAM, the modeling subcommittee tentatively selected the periods of July 4-7, 1988, and August 1-4, 1988, for the days to be modeled. Several participants in the modeling study expressed concern that the peak ozone concentration measured on July 6, 1988, (.204 parts per million (ppm)) was an abnormally high exceedance and that if this day turned out to be the controlling episode day in terms of strategies necessary to achieve attainment, southeastern Michigan would be subject to controls more appropriate for a severe ozone nonattainment area rather than a moderate area with a design value of 0.144. The situation is somewhat complicated by the fact that the three most appropriate days to model for this type of meteorological regime are: July 6, July 7, and July 5, 1988, in that order. The participants in the modeling project are entirely willing to model and demonstrate attainment for the July 5th and July 7th episodes, as well as another high concentration episode from a different meteorological regime, but believe it is unreasonable, given that the ozone NAAQS allow for some

exceedances of the standard, to be responsible for demonstrating attainment for the July 6, 1988, episode day.

If it can be determined to be consistent with other UAM applications nationwide, Region 5 would not require MDNR to demonstrate attainment of the NAAQS for the episode day with the highest peak hourly ozone concentration monitored from 1987 through the present, i.e., July 6, 1988, because of the degree by which the day's peak hourly ozone concentration exceeded all others monitored since 1987. This recommendation is made with the understanding that the other proposed episode days cover the majority of the remaining high ozone exceedances, including the days ranking numbers 2 and 3 in that particular regime and ranking numbers 1 and 2 in the other meteorological regime. Region 5 is requesting that the Office of Air Quality Planning and Standards determine if our proposed resolution of this issue is consistent with the goals and requirements of the CAAA. Because this project is currently behind schedule, its participants would appreciate a response from USEPA on this issue as quickly as possible. If you have any questions or need additional information on this subject, please contact me at 886-6065 or Patrick Dolwick at 886-6053.

Attachments

cc: Craig Fitzner, Chief
Emissions Information and Modeling Unit
Michigan Department of Natural Resources

Attachment - Episode Rankings

Meteorological Regime #1: High pressure system centered over or east of southeastern Michigan. Winds generally have a southerly component.

	Rank	Peak hourly ozone concentration	# of exceeding sites	Date
?	1	0.204 ppm	10	7/06/88
*	2	0.168 ppm	6	7/07/88
*	3	0.147 ppm	6	7/05/88
	4	0.150 ppm	2	7/22/87
	5	0.147 ppm	2	7/24/89

Meteorological Regime #2: Low pressure or occluded frontal system influencing southeastern Michigan. Winds are variable.

	Rank	Peak hourly ozone concentration	# of exceeding sites	Date
*	1	0.145 ppm	5	8/03/88
*	2	0.144 ppm	4	8/02/88
	3	0.132 ppm	4	6/19/87
	4	0.127 ppm	2	8/04/88
	5	0.143 ppm	1	6/20/91

* indicates has been selected tentatively as an episode day