

May 25, 1995

MEMORANDUM

SUBJECT: Technical Guidance for Removing Areas from the  
Northeast Ozone Transport Region (OTR)

FROM: John S. Seitz, Director  
Office of Air Quality Planning and Standards (MD-10)

TO: Director, Air, Pesticides and Toxics Management  
Division, Regions I and IV  
Director, Air and Waste Management Division,  
Region II  
Director, Air, Radiation and Toxics Division,  
Region III  
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Region V  
Director, Air, Pesticides and Toxics Division,  
Region VI  
Director, Air and Toxics Division  
Region VII, VIII, IX, and X

As you may know, EPA has received several requests for guidance on what showing a state would be required to make to remove an area from the OTR. In response to these requests, we have developed the attached "opt-out" guidance which sets forth the type of technical demonstration needed to support an opt-out petition.

We are recommending a 2-part analysis based on wind trajectories for days when the ozone standard was exceeded anywhere in the OTR and an examination of mobile source inventories and vehicle travel. The guidance includes a methodology for the wind trajectory analysis and a discussion of the general approach a State should use in evaluating mobile source impacts. We strongly encourage the States to work closely with the appropriate Regional Office to ensure a consistent understanding of the methodologies being used for the complete analysis, particularly in cases where the State would like to consider an alternative protocol.

In the future, EPA will be establishing procedures for public participation, including notice and comment, regarding opt-out petitions that are officially submitted to EPA. In evaluating an opt-out request, the Office of Air Quality Planning

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and Standards will consult with the Ozone Transport Commission (OTC) for its recommendation in light of the technical data presented. In addition, EPA will work with the States to explore alternatives to OTR opt-out which might address specific State concerns while still achieving air quality objectives in the Northeast.

The OTR and the OTC were established in the 1990 Clean Air Act in recognition of the longstanding ozone nonattainment problems in the Northeast. The EPA believes that the OTC has been very effective in assessing the regional ozone air quality problems and recommending strategies for control of the interstate pollution. The development of the memorandum of understanding nitrogen oxides and the OTC low emission vehicle program are outstanding examples of State initiative and regional cooperation. These control programs will provide significant air quality benefits throughout the OTR. It is our hope that the Northeastern States will continue working together through the OTC to solve ozone attainment and maintenance issues.

If you have any questions, please feel free to call me or Sally Shaver. The contact person for this policy is Carla Oldham at (919) 541-3347.

cc: Air Branch Chief, Regions I-X  
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## Attachment

### TECHNICAL GUIDANCE FOR REMOVING AREAS FROM THE NORTHEAST OZONE TRANSPORT REGION

This document provides guidance on the type of technical demonstration needed to support a request to remove (opt out) a State, or portions of a State, from the Northeast Ozone Transport Region (OTR) under section 176A of the Clean Air Act (Act). This guidance is not binding, and EPA will consider any comments it may receive on the approach described in this guidance when it conducts rulemaking on a State's opt-out request.

#### **I. Background**

Section 176A of the Act gives EPA the authority to establish an interstate transport region whenever the Agency has reason to believe that interstate transport of a pollutant from one State to another contributes significantly to a violation of a national ambient air quality standard (NAAQS) in one or more States. In addition, section 176A allows EPA, on its own motion or upon petition from the Governor of any State, to remove a State or portion of a State from a transport region where EPA has reason to believe that control of emissions in the State will not contribute significantly to attainment of the standard in any area in the transport region.

While future transport regions may be established under section 176A, section 184 of the Act established the OTR upon enactment on November 15, 1990. The OTR is comprised of the States of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, and the consolidated metropolitan statistical area that includes the District of Columbia and a portion of Virginia. The OTR is the only interstate transport region for any pollutant that has been established to date.

Section 184 also mandates specific control programs for the OTR which are applicable in both nonattainment and attainment areas. If a State or portion of a State is removed from the OTR, under section 176A, these additional control programs will no longer be mandatory. However, if a State has chosen to rely on any of the programs in an approved attainment or maintenance plan, then the State would need to continue implementing the measures.

#### **II. Technical Approach and Rationale**

To determine whether interstate transport of ozone or ozone precursors from areas within one State in the OTR is significantly contributing to nonattainment problems elsewhere in the OTR, EPA recommends a two-part analysis. The first part would address the extent to which the control of pollutants emitted within the area for which the State seeks an opt-out contributes to attainment in another State in the OTR. In particular, it would examine the wind patterns during periods when the ozone NAAQS was exceeded in other OTR States. If it can be shown that the wind is not likely to come from portions of the State seeking opt-out during any such periods, this would provide technical support for concluding that reducing emissions in those portions of the State would not assist other areas in the OTR in reaching attainment. A methodology for this analysis is provided in Section III of this guidance.

The second part of the analysis would address the extent to which vehicles residing or registered in the potential opt-out area travel to another OTR State and thereby emit pollutants within the other State. This guidance does not provide a specific methodology for addressing this aspect of interstate contribution. However, EPA believes that any such analysis should account for the quantity of emissions from vehicles traveling either permanently or temporarily to other States, calculated in light of the level of emissions control that would likely apply to such vehicles if the areas in which they originate are removed from the OTR. The analysis should address the extent to which reducing emissions from those vehicles at that level to the control level required pursuant to sections 176A and 184 would contribute to attainment in a nearby State.

The EPA will carefully consider the technical information submitted by the State. However, EPA notes it has previously concluded that pollutants emitted in virtually every area of the OTR have the potential to contribute directly, via wind trajectories, to an air quality problem in another State in the OTR. See final rule on OTC low emission vehicle program, 60 Fed. Reg. 4712, 4720-22, 4726-4727 (January 24, 1995).

### **III. Trajectory Analysis Procedure**

This section describes a procedure suitable for conducting a trajectory analysis to support an opt-out petition. States seeking to opt out from the OTR should consult with the appropriate U.S. EPA Regional Office before performing the supporting technical analysis. This consultation should be used to reach a consistent understanding of the methodology to be followed. Case-by-case deviations from the general procedure

described herein are possible. If such deviations are contemplated, they should be described in a written protocol prepared by the State petitioning for opt out. The alternative protocol should be approved by the appropriate U.S. EPA Regional Office.

1. Choose for consideration in this analysis a consecutive 3-year period plus all days being modeled in the 4 Urban Airshed Model (UAM) attainment demonstration applications within the OTR. An example of an acceptable period for trajectory modeling might be the ozone seasons of 1991-93 plus all UAM preliminary and episode days in 1987, 1988, 1989, and 1990.

For the three chosen years construct "forward" trajectories beginning two days prior to each day of the ozone season (April 1 - October 31 inclusive) for which an exceedance of .12 parts per million ozone is observed anywhere within the OTR. In addition, construct forward trajectories beginning two days before each episode day modeled with the UAM in the OTR.

2. The forward trajectories described in step 1 should originate at the geographic center of the portion of the State seeking to be removed from the OTR. For example, if Maine were seeking to remove the northern part of Maine, the forward trajectory should be originated in the center of that portion of the State. If an entire State is seeking to be removed from the OTR, trajectories should generally be constructed to originate at two or more locations: (1) at locations corresponding to large concentrations of precursor emissions, (2) at a site located at the geographic center of the State, and (3) from any additional locations requested by the Regional Office.

3. Each forward trajectory should be constructed as follows.

(a) Consider two or more vertical layers in the atmosphere: a "surface layer," with measurements made 10-100 meters (m) above ground level (AGL) and an "aloft layer," with measurements made >100-2000 m AGL. Evaluating both surface trajectories and trajectories aloft is recommended in recognition of the importance of nighttime wind shear affecting the origin of air one or more days previous to an observed exceedance.

(b) For each exceedance and UAM modeling day, construct trajectories beginning 2 days prior at 6 am, 12 noon, 6 pm, and 12 midnight, local standard time. Each trajectory should be constructed in 3-hour segments for a period of 48 hours. It is necessary to consider several trajectories per day to account for differing effects of wind shear at

different times of day.

In summary, corresponding with each day having an observed exceedance in the OTR, a minimum of 8 trajectories will be computed (4 beginning times x 2 altitudes). These trajectories will be initiated two days prior to the observed exceedance. Thus, if an exceedance is observed on a Wednesday, 8 trajectories would be initiated on the preceding Monday--2 (one surface layer and one aloft) at 6 am, 2 at noon, 2 at 6 pm, and 2 at midnight. The number of trajectories constructed per exceedance or UAM modeling day will be 16 or more, if removal of an entire State from the OTR is being sought.

#### **IV. Interpretation of Trajectory Analysis**

After the wind trajectories are generated, their paths should be compared with the location and time of observed exceedances of the ozone standard in other OTR States. If none of the trajectories traverse another OTR State within 100 kilometers of a site having observed exceedances and within  $\pm 3$  hours of the time of the observed exceedance, the trajectory analysis would support removing the area in question from the OTR.

#### **V. Summary**

In summary, a State seeking to be removed from the OTR, wholly or in part, should submit to EPA a two-part technical analysis to demonstrate that control of emissions in the specified areas would not contribute to attainment elsewhere in the OTR. States are strongly encouraged to consult with their U.S. EPA Regional Office during development of the technical analysis.

The first part of the analysis should consist of a trajectory analysis to show that air parcels originating in the portion of the State seeking opt-out do not pass near sites with observed exceedances of the ozone NAAQS in other OTR States. (Near is defined as within 100 kilometers and within  $\pm 3$  hours of the observed exceedance.) An acceptable protocol for this analysis is provided above. Alternative protocols may be used if approved in advance by the appropriate U.S. EPA Regional Office.

The second part of the technical analysis should be an examination of mobile source inventories and vehicle travel. States must show that the control of emissions under sections 176A and 184 of vehicles traveling into other OTR States would not contribute significantly to attainment in those States.

