08/16/1978 VOC590816781

Category: O — Designations

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

DATE: AUG 16 1978

SUBJECT: Clarification of Attainment/Nonattainment Evaluation Guidance

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TO: Director, Air and Hazardous Materials Division, Region I, III-X
Director, Environmental Programs Division, Region II

Enclosed is clarification of the approved procedure for the determination of the necessary reduction to achieve the oxidant standard. This memorandum is the result of a work group recommendation as revised at the last branch chief's meeting at the Southern Pines workshop. Please distribute this to all appropriate State and local agencies in your Region.

If you have any questions regarding this memorandum, please contact John Calcagni at (FTS) 629-5365.

Enclosure

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Enclosure

CLARIFICATION OF ATTAINMENT/NONATTAINMENT EVALUATION GUIDANCE

I. SELECTION OF DESIGN VALUE

The present guidance regarding selection of an oxidant design value generally is appropriate. EPA will expect the design value to be the highest of the three second high values obtained during the last 3 years (1975, 76, and 77). The only variations from this will be:

A. In the case where a major hydrocarbon control program has been initiated and has resulted in significant actual emission reductions in the 1975-1977 time period. In this case, the latest second high value can be used. However, the burden of proof is on the State to demonstrate that significant actual emission reductions have occurred due to the implementation (not simply the adoption) of a control program and that the air quality improvements are consistent with, and can be attributed to, the emission reductions. Generally, the emission reduction should be equal or greater than the air quality improvement. It is not appropriate to use the latest second high rather than the highest second high of the last 3 years if there has not been a commensurate reduction in emissions. (For example, a 10 percent difference in air quality levels cannot be attributed to a 3 percent reduction in actual emissions.)

B. In certain situations where transport influences the design value to a point that the highest second high value is not the worst case. This case is described in greater detail in Item V.

C. In cases where less than 3 years of data exist. In that case, EPA will accept the highest second high of the available years of data.

II. SELECTION OF A PRESENT TRANSPORT VALUE

The procedure set forth in guidelines based on an upwind monitor is by far the most desirable technique for selection of a transport value. This procedure is to use upwind data collected on the day of the design value. The most desirable surface data to use are data collected shortly after the breakup of the nocturnal inversion. Review of ambient data from primarily rural areas suggest that the 10-12 a.m. LST average value is appropriate. Alternatively, a more precise fixed time of nocturnal inversion breakup can be determined with the assistance of a meteorologist by reviewing specific local parameters such as time of sunrise, ambient air quality data, vertical temperature profiles, and surface temperature.

In the absence of upwind air quality data, several less satisfactory alternatives are available.

One alternative is to assume that both future and present transport are equal to background. This is most appropriate in circumstances where the urbanized area is isolated and not likely to be subject to significant transport from other urban areas.

In circumstances where transport obviously is a major factor, the recommended alternative approach is to consider O3 data collected at rural sites shortly after breakup of a nocturnal inversion (e.g., 10-12 LST) on the highest O3 days in the city under review. At least 5 days should be considered. A range for the rural values is thus determined. The median value of this range should be considered the present transport value. This helps safeguard against the selection of an unrepresentative value. For example, if rural data suggest transport values ranging from 0.06-0.10 ppm (0.06, 0.06, 0.08, 0.09, 0.10ppm), a present transport value of 0.08 ppm would be assumed.

The third alternative is to ignore both present and future transport considerations. Providing the design value is twice the standard or greater, calculations obtained ignoring the effects of present and future transport will yield results similar to the previously described preferred approach.

III. SELECTION OF A FUTURE TRANSPORT VALUE

The generally acceptable range for future transport is 0.08-0.04 ppm (attainment of the standard by the upwind urban area). Isolated urbanized areas (at a distance greater than 36 hours travel time of an air parcel) whose air quality levels are not influenced by air masses which have passed over major urban areas, can use 0.04 ppm. The selection of a value within this range will be a subjective judgment on the part of the State with concurrence by the Regional Office with the isolation of the city in question as the key criterion.

IV. CHOICE OF AN ADDITIVITY FACTOR

A presumptive value of 0.45 (0.5 to one significant figure) should be assumed unless documentation can be presented supporting the use of a different value.

Documentation supporting the use of another value could be based on guidance contained in EPA-450/2-77-021b or, or better yet, through simulations with OZIPP (a computerized, city specific version of EKMA) using locally applicable data. However, if the capability for running OZIPP exists, consideration of transport can be made more satisfactorily using OZIPP than by using the additivity concept.

Because simulations to date suggest that additivity may increase as precursor concentrations decrease and/or as NMHC/NOx ratios decrease, it is inappropriate to assume an additivity value in future years less than the currently assumed one.

V. CONSIDERATION OF OTHER DAYS IN ADDITION TO THE DAY WITH THE HIGHEST SECOND HIGH

A consideration in establishing the baseline air quality is the desire to identify and base the plan on the ambient conditions which will result in attainment of the standard under all circumstances. In areas influenced significantly by transport, it may well be that the day requiring the greatest

percent reduction will differ from the day with the second high value. For example, if the highest second high value were 0.24 ppm and transport on that day were 0.16 ppm, this would be less stringent than a design day of 0.20 ppm with a transport value of 0.06 ppm.

If an urban area intends to demonstrate attainment by 1982, then it will be necessary to review a sufficient number of the high ozone days to ensure that the proposed plan provides for a sufficient level of control to ensure attainment. Note that this analysis will only be necessary in cases where upwind data which are specific for each day are used in development of a transport value.

If an urban area is seeking an extension to 1987 based on an evaluation of the last three years, the Region has the option to accept his demonstration. It will not be necessary at this time to insist on the evaluation of a number of high days to determine if the higher percent reduction is necessary since the plan is subject to revision in 1982.

VI. APPROVABILITY OF THE USE OF APPENDIX J

Present guidance permits the use of Appendix J. However, there has been much adverse comment in the technical community regarding its adequacy; and its limitations are well known. Therefore, States should be discouraged from using Appendix J because it is not the best technique available. States should also be advised that EPA has proposed to rescind Appendix J in its proposed revision to the NAAQS for ozone. Regional Offices should not use Appendix J in any calculations made for any urbanized area since it will not be considered appropriate after the standards is revised.

VII. APPROPRIATE NMHC/NOx RATIOS

If no data exist, the default value of 9.5:1 should be applied when employing EKMA. If an area intends to develop a city specific value, the guidance contained in EPA-450/2-77-02b pp 3-21 through 3-24 should be carefully followed. There is a good deal of concern with the use of a single day's NMHC data at a single site being used. This is especially true if the NMHC values are less than 0.5 ppm C. Regions should carefully review these data prior to accepting a city specific NMHC/NOx ratio different than 9.5:1.

For estimates of future conditions, unless it can be clearly demonstrated to the contrary, States should presume that the change in NOx concentrations are not likely to be significant. Therefore, it will be appropriate to assume a constant NOx concentration (i.e., lower future NMHC/NOx ratio).

VIII. SELECTION OF THE URBANIZED AREA

The urbanized area should generally conform to the boundaries defined by the U.S. Bureau of Census although States, with Regional Office concurrence, do have a certain degree of flexibility in defining the specific boundaries of the urban area. However, the areas must be large enough to cover the entire urbanized area and adjacent fringe areas of development. In situations where

urbanized areas are contiguous or in close proximity, States should be encouraged to consolidate the urban areas for the purpose of the attainment/nonattainment demonstration. In no case should an urbanized area be divided into smaller subunits, even if the urbanized area straddles more than one State.