

March 15, 2002

MEMORANDUM

SUBJECT: Use of the Ambient Ratio Method for Modeling Significant Ambient Impacts of NO₂.

FROM: Daniel J. deRoeck,
Integrated Implementation Group, ITPID (C339-03)

TO: Richard Daye,
Air RCRA, and Toxics Division, Region VII

In your January 10, 2002 email to me, you asked for clarification of Table C-4, Significance Levels for Air Quality Impacts in Class II Areas, on page C.28 of the draft New Source Review Workshop Manual (1990). Specifically, you asked whether the significance level actually applied to NO_x (as written in the table) rather than NO₂, and how this would affect the use of the national default NO₂/NO_x value of 0.75 for significant impact modeling (an NO₂ annual impact of 1.0 µg/m³).

The table on page C.28 should read "NO₂" rather than "NO_x" since the issue deals with ambient projections relevant to the national ambient air quality standard and PSD increments for nitrogen dioxide. A table similar to the one used in the Manual lists the pollutant as "NO₂." See 40 CFR 51.165(b)(2).

As for modeling for significant impact, we believe that it is appropriate for you to allow the use of the ambient ratio method for NO₂/NO_x, as described in EPA's Guideline on Air Quality Models at 40 CFR part 51 appendix W, section 6.2.3. The most typical use of this method has been for multi-source modeling for the NAAQS or PSD increment analysis. This method is described for use in obtaining annual average estimates of NO₂ from point sources for new source review analyses, including PSD. The method provides that once a violation of either the NAAQS or PSD increment for NO₂ is modeled, assuming all NO_x emitted as NO₂, then it is appropriate to refine the analysis by using the NO₂/NO_x ratio of 0.75 (annual national default) to more accurately estimate predicted ambient NO₂ concentrations in the area of concern.

Although the method makes no mention of using the conversion ratio until a modeled violation is projected, we believe it is appropriate to apply the ratio earlier in the modeling process to determine whether the PSD applicant's own modeled impacts are significant for NO₂. Otherwise, a source known to have only an insignificant impact on NO₂ would be required to perform comprehensive modeling analyses (NAAQS and increment) prior to claiming that its own impact, being insignificant, does not cause or contribute to a modeled violation.

Provided the applicant properly follows the assumption that all NO_x emitted is NO₂, we see no technical basis for not allowing the NO₂/NO_x ratio value of 0.75 for significance modeling for single sources. For similar reasons, use of the ratio should also be allowed in determining whether a single source's impact is above or below the PSD significant monitoring concentration for NO₂.

This issue has been coordinated through the OAQPS Model Clearinghouse. If you have any questions regarding this interpretation of the appropriate PSD modeling approach for ambient NO₂, please call me at 919-541-5593 or e-mail at dderoeck@epa.gov.

cc: Bill Harnett
Warren Peters
Joe Tikvart
Regional Modelers, Regions I-X
NSR Contacts, Regions I-X