UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JAN 4 2012

OFFICE OF
AIR AND RADIATION

Mr. Robert Ukeiley
435R Chestnut Street, Suite 1
Berea, Kentucky 40403

Dear Mr. Ukeiley:

The Environmental Protection Agency has reviewed the July 28, 2010 petition (Petition) you submitted on behalf of the Sierra Club requesting that the EPA initiate rulemaking to designate air quality models for ozone and fine particles ($PM_{2.5}$) for use by all major sources applying for a prevention of significant deterioration (PSD) permit. The Administrator asked that I respond on her behalf. In light of our review, the EPA believes it is appropriate to engage in a rulemaking process to consider whether updates to EPA's *Guideline on Air Quality Models* as published as Appendix W of 40 CFR Part 51 (Appendix W) are warranted. Therefore, the EPA is granting the Petition to engage in rulemaking to evaluate updates to Appendix W and, as appropriate, incorporate new analytical techniques or models for ozone and secondary $PM_{2.5}$. This is not to suggest that the EPA agrees with the specific contentions and allegations in the Petition; however, the EPA will take the information in the Petition under advisement in the rulemaking process.

The EPA has initiated actions that will support rulemaking to address modeling and technical analysis of ozone and $PM_{2.5}$ within Appendix W, including scheduling the 10th Conference on Air Quality Modeling in March 2012 where we intend to discuss methods for addressing ozone and secondary PM2.5 impacts; and beginning work on a draft guidance for PM2.5 permit modeling, both of which are described in more detail below. These guidelines are periodically revised to ensure that new model developments or regulatory requirements are incorporated.

The EPA will use the existing process and procedures under Section 320 of the Clean Air Act (CAA) to complete the appropriate rulemaking process to update Appendix W in response to this Petition. Section 320 requires the EPA to conduct a conference on air quality modeling at least every three years and give special attention to appropriate modeling necessary for carrying out the provisions in Part C of Title I of the CAA relating to PSD. The EPA has used these conferences to develop standardized air quality modeling procedures particularly in connection with PSD permitting. The EPA's *Guideline* was originally published in April 1978. Section 165(e)(3)(D) of the CAA requires the Administrator to adopt regulations specifying with "reasonable particularity each air quality model or models to be used under specified sets of conditions for purposes of this part." To carry out these requirements, in June 1978, the *Guideline on Air Quality Models* was incorporated by reference in regulations promulgated for PSD [40 CFR 51.24]. 43 FR 26388, 26398 (June 19, 1978); 51 FR 32176 (Sept. 1986); 53 FR 392 (Jan. 6, 1988). The 1990 CAA Amendments provided for continued authority to conduct air quality modeling

conferences and associated revisions to Appendix W that form the basis for the EPA's continuing efforts to prescribe with "reasonable particularity" air quality models, and meteorological and emission data bases, suitable for modeling National Ambient Air Quality Standards (NAAQS) and increments. See CAA § 320, 42 U.S.C. §7620.

The EPA most recently used this process to update Appendix W with provisions that incorporated two new dispersion models. The 7th Conference on Air Quality Modeling was held in June 2000 with the purpose of receiving comments on the EPA's proposed rule from April 2000 to add several new modeling techniques to Appendix W. Based on public comments from this conference, Appendix W was substantially revised through notice and comment rulemaking with a final rule in April 2003 that adopted the CALPUFF model for long range transport to address impacts on federal Class 1 areas and a subsequent final rule in November 2005 that replaced the Industrial Source Complex (ISC3) model with the *A*MS/*E*PA *R*egulatory *MOD*el (AERMOD) for near-field regulatory assessments.

The complex chemistry of ozone and secondary formation of $PM_{2.5}$ are well-documented and have historically presented significant challenges to the designation of particular models for assessing the impacts of individual stationary sources on the formation of these air pollutants (NARSTO, 2000; NARSTO, 2004; Seinfeld and Pandis, 1998; Cohan and Napelenok, 2011). Because of these considerations, the EPA's judgment in the past has been that it was not technically sound to designate with particularity specific models that must be used to assess the impacts of a single source on ozone concentrations.[1] Instead, the EPA has chosen to satisfy the requirements of Section 165(e) (3) (D) of the CAA through a process of determining particular models or other analytical techniques that should be used on a case-by-case basis. As stated in Section 5.2.1.c of Appendix W, the "[c]hoice of methods used to assess the impact of an individual source depends on the nature of the source and its emissions." Under this guideline, the appropriate methods are determined in consultation with the EPA Regional Office on a case-by-case basis. 40 C.F.R. Part 51, Appendix W, section 5.2.1.c. A modeling protocol should be developed and approved by the EPA Regional Office, the state/local agency, and the applicant to ensure that the analysis conducted will conform to the recommendations, requirements, and principles of Appendix W. 40 C.F.R. Part 51, Appendix W, section 3.2.2. Given the complexities of ozone formation, this case-by-case consultation process has been as reasonably particular as the EPA considered justified in the past. Appendix W section 5.2.2 provides similar direction for such a case-by-case consultation process in addressing secondary $PM_{2.5}$ and encourages control agencies with jurisdiction over areas having potential air quality issues related to secondary $PM_{2.5}$ to use models which integrate chemical and physical processes important to the formation, transport, and decay of sulfates and nitrates, such as Models-3/CMAQ.

However, recent advances in photochemical modeling science suggest that it may now be reasonable for the EPA to provide more specific, generally-applicable guidelines that identify particular analytical techniques or models that may be used under specific circumstances for assessing the impacts of an individual source on ozone concentrations and on the secondary formation of $PM_{2.5}$. These advances have resulted in some methods that may allow for tracking the formation and transport of ozone and secondary $PM_{2.5}$ impacts from specific emissions sources and calculating the contribution of sources and

[1] We note that this technical judgment has no effect on the obligation of sources subject to PSD to conduct a source impact analysis and demonstrate that a proposed source or modification will not cause or contribute to a violation of any NAAQS or applicable increment. 40 CFR 51.166(k); 52.21(k). That is, the inclusion of a process rather than a specific preferred model in Appendix W does not relieve the source of the requirement to make this demonstration, which necessarily involves an analysis.

precursors to ozone and $PM_{2.5}$ at individual receptor locations. In fact, the EPA engaged the modeling community on these developments at the 9th Conference on Air Quality Modeling in October 2008 by devoting a session to photochemical modeling with instrumented techniques such as "source apportionment" to promote understanding of their emerging capabilities by the regulatory modeling community.

The EPA has scheduled the 10th Conference on Air Quality Modeling for March 13-15, 2012, in Research Triangle Park, North Carolina. We intend to issue the *Federal Register* notice announcing the conference in early 2012 which will outline the agenda with the topic of chemistry models and related techniques for addressing impacts of ozone and secondary $PM_{2.5}$ being a major session and focus of the EPA's efforts to engage the regulatory modeling community. This modeling conference will serve as the initial venue for gaining public input to begin the rulemaking process of updating Appendix W. As was the case in promulgating new dispersion models (CALPUFF and AERMOD) in 2003 and 2005, the EPA expects to form a similar workgroup to conduct the necessary evaluations and inter-comparisons of technical approaches and models to inform the rulemaking process and provide sufficient technical justification for those technical approaches and/or models that are ultimately determined to be appropriate for incorporation into Appendix W. This workgroup will be critical in informing the rulemaking process, and the reports and other findings will be made publicly available and be central to discussion at future modeling conferences. Consistent with the past practice described earlier, the EPA expects such discussion to occur at the 11th Conference on Air Quality Modeling with consideration of the specifics of the EPA's proposed rule to update Appendix W.

Furthermore, as this complex rulemaking process proceeds, the EPA will be taking additional steps in the interim to enhance understanding of acceptable techniques for evaluating impacts of individual source emissions on ozone concentrations and secondary $PM_{2.5}$ formation. The EPA is preparing and will be seeking input on draft guidance for $PM_{2.5}$ permit modeling that we intend to release for public comment in mid-January 2012. This guidance is necessary in the interim to inform case-by-case determination of appropriate methods as sources should now conduct a $PM_{2.5}$-based analysis under NSR and PSD to demonstrate compliance with the $PM_{2.5}$ NAAQS rather than relying upon a PM_{10}-based analysis in accordance with past EPA guidance. 76 FR 28646, 28648, 28659 (May 18, 2011); Memorandum from Director of Office of Air Quality Planning and Standards, "Modeling Procedures for Demonstrating Compliance with $PM_{2.5}$ NAAQS" (March 23, 2010). In addition, with respect to both ozone and $PM_{2.5}$, the EPA will also be taking steps to emphasize the importance of the existing consultation process and to provide greater clarity to states and the regulated community regarding our expectations for a complete and successful process of consulting with the EPA's Regional Offices pursuant to Appendix W sections 5.2.1.c and 5.2.2.1.c to identify the most appropriate analytical techniques to be used on a case-by-case basis for addressing the impacts of individual sources on ozone concentrations and secondary $PM_{2.5}$ formation.

The Petition also suggests that the EPA should take the position that it neither has nor will use a "significance" test as part of the PSD compliance demonstration for the ozone NAAQS. The Petition further implies that the Petitioner interprets significance levels to be inconsistent with EPA's PSD regulations at 40 CFR 52.21(k) because that regulation refers to proposed sources or modifications that cause or contribute to a violation, but does not include the word "significantly" as a modifier for "cause or contribute to a violation." Petition at 13. The EPA has not established a significant impact level (SIL) for ozone in its regulations (40 CFR 51.165(b), 51.166(k) (2), 52.21(k) (2)) or identified a specific SIL for ozone in any guidance. However, footnote 1 to sections 51.166(I) (5) (I) of the EPA's regulations says the following: "No de minimis air quality level is provided for ozone. However, any net emission

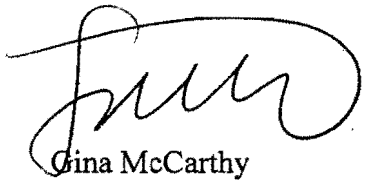
increase of 100 tons per year or more of volatile organic compounds or nitrogen oxides subject to PSD would be required to perform an ambient impact analysis, including the gathering of air quality data." The EPA included a similar note in a guidance listing Significant Impact Levels. The 1990 NSR Workshop Manual, page C.28 footnote b says the following with respect to the then-applicable one-hour ozone NAAQS: "No significant ambient impact concentration has been established. Instead, any net emissions increase of 100 tons per year of VOC subject to PSD would be required to perform an ambient impact analysis." Based on these statements, this 100 tons per year (TPY) value has been used by some permitting authorities in a manner similar to a SIL to assess whether a detailed air quality analysis should be conducted for ozone. While these statements suggest a less rigorous analysis may be appropriate for sources emitting less than 100 TPY of these precursors, they have not been revisited by the EPA since the promulgation of the 8-hour ozone NAAQS and do not reflect a categorical conclusion by the EPA that every source emitting less than 100 TPY of NO_x or VOCs will not cause or contribute to a violation of the current ozone NAAQS. The EPA believes it unlikely a source emitting below these levels would contribute to such a violation of the 8-hour ozone NAAQS, but consultation with an EPA Regional Office should still be conducted in accordance with section 5.2.1.c. of Appendix W when reviewing an application for sources with emissions of these ozone precursors below 100 TPY.

The EPA will take the Petition's recommendation regarding the appropriateness of a significance level for the NAAQS compliance demonstration for ozone under advisement. Nevertheless, EPA believes it generally has authority to use significance levels and that use of such levels can be consistent with the PSD requirements. For example, if modeling becomes applied more routinely as part of the required NAAQS compliance demonstration for ozone, we believe that it may become appropriate to define a SIL for ozone to help facilitate that demonstration. The EPA recently promulgated a SIL for $PM_{2.5}$ and explained in that action why we believe the CAA does not preclude the EPA from establishing significance values to effectively implement the PSD requirement to demonstrate that a source's emissions will not cause or contribute to a violation of a NAAQS or PSD increment. 75 FR 65864, October 20, 2010. The Petition also states that "if the EPA insists on setting a significance level, it should be no more than 0.3 parts per billion." The EPA will take this recommendation under advisement as we consider whether to establish a SIL or similar value for ozone.

Finally, the Petition requested that the EPA finalize the proposed $PM_{2.5}$ increments (72 FR 54112, September 21, 2007). The EPA promulgated the final rule in 2010 (75 FR 65864, October 20, 2010) to establish several components for making PSD permitting determinations for $PM_{2.5}$ including increments, SILs, and a significant monitoring concentration. This final rule became effective on December 20, 2010.

Thus, for the reasons set forth above, the EPA grants the Petition for rulemaking as described in this response. We appreciate your interest in these matters and look forward to your contributions to the upcoming 10th modeling conference and subsequent rulemaking process.

Sincerely,



Gina McCarthy
Assistant Administrator