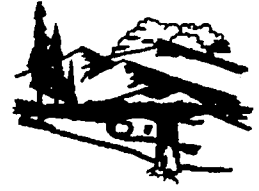


EPA-HQ-OAR-2006-0605

JAN 23 2008



Department of Environmental Quality



To protect, conserve and enhance the quality of Wyoming's environment for the benefit of current and future generations.

Dave Freudenthal, Governor

John Corra, Director

January 17, 2008

U. S. Environmental Protection Agency
Air and Radiation Docket
Environmental Protection Agency
Mailcode 2822T
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Re: Docket ID: EPA-HQ-OAR-2006-0605

To Whom It May Concern:

The Wyoming Department of Environmental Quality (WDEQ) appreciates the opportunity to submit comments on EPA's proposed rule, titled, "Prevention of Significant Deterioration (PSD) for Particulate Matter Less Than 2.5 Micrometers (PM_{2.5}) - Increments, Significant Impact Levels (SILs), and Significant Monitoring Concentration (SMC)."

Implementation of NSR for PM_{2.5}

In 1997, EPA issued a guidance document "Interim Implementation for the New Source Review Requirements for PM_{2.5}," John S. Seitz, Director, Office of Air Quality Planning and Standards, EPA, October 23, 1997. The 1997 guidance stated that sources would be allowed to use implementation of a PM₁₀ program as a surrogate for meeting PM_{2.5} New Source Review (NSR) requirements until certain difficulties were resolved. These difficulties included the lack of necessary tools to calculate the emissions of PM_{2.5} and related precursors, the lack of adequate modeling techniques to project ambient impacts, and the lack of PM_{2.5} monitoring sites. Deficiencies noted in the 1997 memo have not been fully addressed. The lack of emission factors was addressed by EPA in 40 CFR Part 51 Clean Air Fine Particle Implementation Rule; Final Rule (page 20655). EPA's response appears to be directed towards PM_{2.5} emissions from point sources. The WDEQ agrees that the collection of PM_{2.5} emission data needs to be a collaborative effort and a network needs to be developed to share test results amongst the States and EPA. However, there are other source categories that emit fugitive PM_{2.5} emissions. States do not have the resources to develop fugitive PM_{2.5} emission factors and the WDEQ recommends that EPA should be responsible for developing fugitive direct PM_{2.5} emission factors.

The proposed rule states the NSR part of the implementation rule was anticipated to be finalized in September of 2007 and is yet to be promulgated. This rule addresses PM_{2.5} major source thresholds, significant emissions rates for direct and precursor PM_{2.5}, condensable emissions, and PM_{2.5} test methods. To fully implement a successful NSR PM_{2.5} program, States need to have all the tools available.

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Secondary Particulates and Condensable Emissions

The proposed rule is silent on whether the contribution from the condensable fraction of PM_{2.5} direct emissions and the contribution from secondary particulate formation of PM_{2.5} should be included when modeling PM_{2.5} increment consumption or SILs analyses.

The WDEQ believes the condensable fraction of PM_{2.5} direct emissions should be included in the Class I and Class II increment analyses and SILs analyses for PM_{2.5}. Condensables are primarily emitted from point sources and with available test methods are quantifiable. Condensable emissions are treated in the models (AERMOD and CALPUFF) the same as filterable emissions. Assuming EPA test methods are available, including the condensable fraction of PM_{2.5} direct emissions in the Class I and II PM_{2.5} modeling analyses is recommended.

The WDEQ does not believe secondary particulate formation of PM_{2.5} should be included in any Class I or Class II increment or SILs analyses. Class I modeling is performed using CALPUFF. The use of CALPUFF to determine a source's far-field impact of secondary particles depends heavily on the accuracy of the chemical transformation mechanisms built into the model. Chemical mechanisms within CALPUFF have been described as outdated and inadequate¹. Nitrate and sulfate formation is believed to be overestimated in cold conditions because the default chemistry scheme (MESOPUFF II) was developed using temperature points that were all above 50°F². On the other hand, in-cloud formation of sulfate is approximated using relative humidity to simulate the effect of cloud water, which may greatly underestimate the sulfate formation.

The inclusion of secondary particle formation in a PM_{2.5} increment analysis could lead to errors due to imbalances between emitted pollutants and background ammonia levels. An example would be a modeling domain that includes 4,000 tons of NO_x and SO₂ emissions, but only 500 tons of the SO₂ are increment-consuming emissions. Only 500 tons of SO₂ would be input to the model, and excess nitrate formation could be predicted because of the relative lack of both sulfate formation and scavenging of the background ammonia.

Class II modeling is a near-field analysis and generally does not provide adequate residence time for secondary sulfate and nitrate formation. The regulatory model for near-field analysis is AERMOD, which does not have a chemistry algorithm. CALPUFF has the chemistry algorithm but is recommended for far-field analysis, which generally is distances greater than 50 km. The use of CALPUFF for near-field modeling raises the same issues as cited for the Class I analyses.

In summary, atmospheric chemistry algorithms in CALPUFF with respect to secondary formation of sulfate and nitrate need to be improved as well as a protocol developed for modeling increment consuming emissions before secondary emissions are considered in the Class I and Class II increment and SILs analyses for PM_{2.5}. EPA should specify in the final rule what is to be included when modeling PM_{2.5} for increment consumption or SILs analyses.

¹R. Morris, 2005. *Review of "Protocol for the Application of the CALPUFF Model for Analysis of Best Available Retrofit Technology" Revised Draft dated September 20, 2005 prepared for VISTAS*

²T. Moore, 2005. *Regional Modeling for Stationary Source Control Strategy Evaluation*, WESTAR Conference on BART Guidelines and Trading

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Air Quality Related Values (AORV) Review

The WDEQ agrees with EPA's proposal to develop PM_{2.5} increments for Class I areas and to apply the requirement to evaluate PM_{2.5} impacts on AQRVs in Class I areas.

Proposed Baseline Dates

The WDEQ agrees with EPA's proposal to set new baseline dates for PM_{2.5} as of the effective date of the promulgated rule and with EPA's proposal not to use the respective PM₁₀ baseline dates. Resurrecting PM_{2.5} inventories based on the PM₁₀ baseline dates would be insurmountable.

Revocation of PM₁₀ Annual Increments

The WDEQ agrees with the EPA proposal to adopt the 24-hour and annual PM_{2.5} increments and to revoke the annual PM₁₀ increments. Counting and tracking increment is confusing enough without adding the confusion of potentially overlapping PM standards. EPA is only beginning to understand the intricate science of fine and coarse particles as well as urban and rural PM source mixes. The cleanest approach is to establish a single new PM_{2.5} increment and work from there. EPA can develop a coarse fraction increment, once EPA establishes coarse PM NAAQS. In addition, EPA vacated the annual PM₁₀ NAAQS upon promulgation of the annual PM_{2.5} NAAQS. Since the health based standard for annual PM₁₀ has been removed, this further supports the removal of the PM₁₀ annual increment.

Significant Impact Levels (SILs)

The WDEQ agrees with the EPA proposal to codify SILs for PM_{2.5}. The WDEQ also urges EPA to codify the Class I SILs for NO_x, SO₂ and PM₁₀ proposed in 1996. Permitting agencies rely on the 1996 proposed levels as well as the promulgated Class II SILs in PSD permitting actions.

Proposed Effective Dates for the PM_{2.5} Increments

The WDEQ agrees with the EPA proposal to delay the effective date of the rule by a year instead of 60 days. States will need time to establish a process and revise rules.

Proposed Schedule for Revoking the PM₁₀ Annual Increment

The WDEQ agrees with the proposal to revoke the PM₁₀ annual increments from any SIP on or after the date EPA approves the SIP for PM_{2.5} increments.

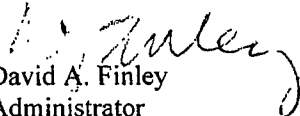
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Transition Period

The WDEQ agrees with the EPA proposal to give states the discretion to continue the existing PM₁₀ increment program or to begin implementing the new PM_{2.5} increment programs during the transition period.

If you have any questions regarding WDEQ's comments, please contact Chad Schlichtemeier of my office at (307)777-5924

Regards,


David A. Finley
Administrator
Air Quality Division