

What's New in Modeling?

7th Missouri Air Compliance Seminar

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Air Quality Modeling ...

- for pre-construction permit issuance has changed more in the last two years than it did for the previous fifteen or twenty
 - New averaging time implementation for 1-hour SO₂ and NO₂ NAAQS
 - Increased stringency of PM_{2.5} NAAQS and March 2013 draft guidance to address secondary formation
 - January 22, 2013, DC Circuit Court vacatur of the PM_{2.5} Significant Monitoring Concentration and Significant Impact Level

On-going challenges for industry

- Implementation of EPA guidance changes on nearby source inclusion for all pollutants (referencing March 2011 NO₂ memorandum)
 - “Significant concentration gradient”
- “Background concentrations are still a problem”
 - Lack of representative background data nationally
 - Sounds familiar, doesn’t it?

On-going challenges for industry

- Continued uncertainty with respect to ozone and PM_{2.5} permit modeling
 - EPA commitment to respond to 2011 Sierra Club consent decree
 - Guidance?

Recent EPA changes to modeling paradigms

- January 2014 SO₂ Technical Assistance Documents for Phase II designations
 - <http://epa.gov/airquality/sulfurdioxide/pdfs/SO2ModelingTAD.pdf>
 - <http://epa.gov/airquality/sulfurdioxide/pdfs/SO2MonitoringTAD.pdf>
 - SO₂ NAAQS presentation

Recent EPA changes to modeling paradigms

- October 2013 draft SO₂ SIP development guidance
 - Potential use of longer emission limit averaging times for short term NAAQS (e.g. 30-day averages for 1-hour standard)

Important Upcoming Events (straight from USEPA – RTP)

- PM_{2.5} “non-draft” guidance release
 - was planned for end of February 2014 (or January 2014 or fall 2013)
 - internal management review by end of March 2014
 - publication in April

PM_{2.5} guidance update

- March 2013 draft guidance produced significant technical comments on a wide variety of issues:
 - use of two different modeling systems for a single modeling project
 - qualitative vs. quantitative secondary evaluations
- Non-draft guidance will look similar to the draft,
 - “Slight revision” to address increment analyses
 - 2nd Tier NAAQS analysis revision (i.e. background for 24-hour standard – potential use of seasonal or other adjustments)

Important Upcoming Events

- Potential upcoming rulemaking on Significant Impact Level (SIL) and Significant Emission Rates (SER) that address the January 2013 vacatur
 - Concepts include “modeled SER” for precursors vs. “applicability SER”

Important Upcoming Events

- 11th Modeling Conference
 - Spring 2015
 - Rulemaking to revise Air Quality Modeling Guideline (aka 40 CFR Part 51 Appendix W) draft released after the conference
 - Planned to be final in fall 2016

Air Quality Modeling ...

- is going to change even further in the next few years with the addition of ozone and PM_{2.5} precursor “modeling” requirements for permits and the proposed Appendix W update
- Stay tuned for these changes and corresponding guidance on implementation from EPA

Questions

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Additional PM_{2.5} Background Information/ Timeline

- Links to EPA guidance, Court opinion, and other relevant information

Detailed PM_{2.5} Regulatory / Legal Background

- July 18, 1997 – PM_{2.5} 24-hour and Annual National Ambient Air Quality Standards Issued
- October 23, 1997 – PM₁₀ surrogate policy instituted
- September 21, 2006 – EPA revised PM_{2.5} 24-hour NAAQS
- 2008 – 2010 – Legal challenges to the PM₁₀ surrogate policy and subsequent policies/rulemakings by EPA

Detailed PM_{2.5} Regulatory Background

- March 23, 2010 - EPA guidance memorandum - "Modeling Procedures for Demonstrating Compliance with PM_{2.5} NAAQS"
 - <http://www.epa.gov/region07/air/nsr/nsrmemos/pm25memo.pdf>
- October 20, 2010 – EPA published a final rule establishing regulations for PM_{2.5} under Clean Air Act § 165 and 166, specifically addressing:
 - Increments
 - Significant Impact Levels (SILs)
 - Significant Monitoring Concentration (SMC)
 - <http://www.gpo.gov/fdsys/pkg/FR-2010-10-20/pdf/2010-25132.pdf>

Detailed PM_{2.5} Regulatory Background

- May 18, 2011 - EPA published final rule on Implementation of New Source Review for PM_{2.5} that repealed the PM₁₀ surrogacy policy
- January 4, 2012 – EPA granted an administrative petition from Sierra Club that requested EPA initiate rulemaking to establish air quality models for ozone and PM_{2.5} permitting
- December 14, 2012 – EPA revised PM_{2.5} annual standard
 - <http://www.gpo.gov/fdsys/pkg/FR-2013-01-15/pdf/2012-30946.pdf>

Detailed PM_{2.5} Regulatory / Legal Background

- *January 22, 2013 – US District of Columbia Court of Appeals vacated EPA's PM_{2.5} SIL and SMC rulemaking*
 - [http://www.cadc.uscourts.gov/internet/opinions.nsf/3964717CAD7BDA0085257AFB0055425F/\\$file/10-1413-1416378.pdf](http://www.cadc.uscourts.gov/internet/opinions.nsf/3964717CAD7BDA0085257AFB0055425F/$file/10-1413-1416378.pdf)
- March 4, 2013 – EPA issues draft guidance for PM_{2.5} Permit Modeling
 - http://www.epa.gov/scram001/guidance/guide/Draft_Guidance_for_PM25_Permit_Modeling.pdf

Future EPA Plans

- April 2014 - EPA's new planned date for "non-draft" PM_{2.5} Permit Modeling guidance issuance
- Spring 2015 – EPA plans to undertake rulemaking to complete update of 40 CFR Part 51 Appendix W (Air Quality Modeling Guideline)

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Other important technical issues

- Use of reduced wind speeds (AERMINUTE)
 - Modeling projects previously showed modeled compliance; now do not “pass” the same NAAQS
- $\text{NO}_2 / \text{NO}_x$ in-stack ratios
- On-going revisions to the AERMOD model
 - v13350 has errors that EPA is fixing