HOT TOPICS: Complying with the NAAQS for Sulfur Dioxide

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The New NAAQS

• New Short-term NAAQS
  – Sulfur Dioxide (2010) 1 Hour Average (3,24 and Annual)
  – Nitrogen Dioxide (2010) 1 Hour Average (Annual only)
• Other New NAAQS
  Ozone (2008) Reduced 8 Hour Average (2013)
  Lead (2008) Reduced Quarterly Average (1/10)
  PM2.5 (2006) Reduced 24 Hour Average (1/2)
  Carbon Monoxide No change

These combined make existing and new sources subject to tremendous pressure on emissions.
SO₂ NAAQS

• Compliance with the old secondary NAAQS (1300 µg/m³ 3-Hour average [500 ppb], High Second High) was difficult enough. This NAAQS is retained as the secondary.

• New primary NAAQS of 196 µg/m³ (75 ppb) as a 1 Hour average results in a 7.7 times more restrictive standard. New standard is 99% over three years.

• EPA is interpreting that you use the 98% of the measured background concentration with the 99% of the modeled concentration.

• The old 24 Hour and Annual Average NAAQS have been proposed as secondary NAAQS.
SO2 NAAQS

• This NAAQS is the 99% of the days with at least 1 hour above the level of the NAAQS, i.e. 4th highest value averaged over three years.

• Focus of attainment demonstrations to be on modeling, which is said to be a continuation of past policy with enhanced use.

• Any new monitors by December 2012, with 3 years of data by 2015.

• State attainment decisions by June 2011, Revised attainment decisions by June 2012.

• Attainment by 2017.
SO$_2$ NAAQS

- Federal Reference Method for SO2 being modified.
- When networks of monitors need to be designed, preamble suggest SCREEn3 or AERSCREEN (beta version only)
- Suggests AERMOD for modeling with strict Guidance.
- Monitoring will be required on a Population Weighted Emissions Index (PWEI) basis
- Monitored data to be supplied on a 5 minute average basis.
Draft SO$_2$ Attainment Demonstration Guidance

- Issued October 2011
- Comments by December 2, 2011
- Next Step?
- Focus of Comments:
  - Guidance Should be Rule
  - Changes to Guideline on Air Quality Modeling require Rulemaking
  - Only Monitoring Should be used to establish Non-Attainment
  - Use of Maximum Hour Emissions
Revision from 30 day rolling average to max one hour average permit limits will be punitive.

Sole use of AERMOD in will lead to gross over prediction of nonattainment.

Use of 98% of measured data as background is highly conservative

Use of airport data in many cases will not be representative

Use of GEP rather than actual stack height does not reflect ambient air quality

EPA’s handling of calm winds is highly conservative
Paths to Compliance

• Do your own modeling
• Raise your stack height
• Buy more land around source
• Increase plume height with more heat
• Scrubbers to reduce SO$_2$ emissions may not help because the heat of the plume (and thus the plume rise) is reduced
• Fuel sulfur content
• Monitoring on your own to prove that your facility meets the NAAQS.
Secondary NAAQS

- Don’t think that this is the end for SO$_2$ or NO$_2$.
- EPA has been evaluating and submitting to CASAC the bases for secondary NAAQS to protect water bodies and soils against deposition of acids. The old acid rain effect.
- The most recent Policy Assessment (February 2011) concludes that 20 to 75 µeq/L (micro equivalents per Liter measured in rainwater) of deposition is the appropriate range of the standard. The standard would be a three to five year average.
- Standard would apply to NOy and SOx.
Secondary NAAQS

- EPA proposed (Monday August 1 Federal Register) that the old standards for SO2 and NO2 be used as the secondary NAAQS:
  - SO\textsubscript{2}: 99\textsuperscript{th} percentile one hour average of 75 ppb (196 µg/m\textsuperscript{3})
  - NO\textsubscript{2}: Annual average 53 ppb (100 µg/m\textsuperscript{3})
  - NO\textsubscript{2}: 98\textsuperscript{th} percentile one hour average of 100 ppb (188 µg/m\textsuperscript{3})
Regulatory Oversight

- States are responsible for meeting and maintaining the NAAQS.
- Federal agencies with “conformity” requirements can will be greatly affected by the new SO$_2$ NAAQS.