

Air Quality Modeling Challenges Workshop



The United States Environmental Protection Agency's (EPA's) stringent National Ambient Air Quality Standards (NAAQS) for SO₂, NO₂, PM_{2.5}, and ozone, as well as promulgation and implementation of new dispersion modeling guidance, provide a host of compliance challenges for industrial sources. Given that these NAAQS are more stringent than the previous standards they replaced, the customary degree of overestimation that is designed into the present Modeling Guideline (40 CFR Part 51, Appendix W) methods have limited the ability of regulators and applicants to conduct accurate and unbiased air quality compliance assessments. Due to the shrinking margin of compliance associated with these new standards, the skill and application procedures of regulatory models such as AERMOD are more severely tested, and refined methods for modeling and also for incorporating background concentrations are needed. The use and implementation of effective NAAQS modeling techniques is critical as regulators and environmental non-governmental organizations are likely to increasingly use modeling to assess and seek reductions of air quality impacts from industrial sources.

In the past year, there have been some changes in modeling approaches that tend to make it easier to conduct permitting, and EPA has also announced a model development program for AERMOD. This workshop will thoroughly review these latest developments, as well as new refined modeling approaches such as:

- Urban dispersion for large industrial areas
- Consideration of moist plume thermodynamics (AERMOIST)
- Consideration of infrequent high emission conditions in probabilistic modeling (Randomly Reassigned Emissions – RRE – processing)
- Updates to NO₂ modeling
- The latest developments in low wind speed approaches in modeling
- Updates to building downwash modeling developments
- Methods to account for impacts of ozone and PM_{2.5} precursor emissions.

Main Presenter: Mr. Robert Paine, CCM, QEP

Mr. Paine has 43 years of experience in atmospheric dispersion modeling and has been involved in the design, coding, and evaluation of several advanced air quality dispersion models, including AERMOD, which is now preferred by EPA for short-range dispersion modeling. He has worked with trade organizations as well as research groups such as EPRI to develop refined approaches to modeling that will be covered in the workshop. Mr. Paine has been involved in providing oral and written testimony for the NAAQS proposals and for modeling refinements, and has dealt with the implementation of refined modeling procedures on many permitting projects.