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Air Quality Dispersion Modeling

Dispersion modeling uses mathematical formulations to characterize the atmospheric processes that disperse a pollutant emitted by a source. Based on emissions and [meteorological inputs](#), a dispersion model can be used to predict concentrations at selected downwind receptor locations. These air quality models are used to determine compliance with National Ambient Air Quality Standards (NAAQS), and other regulatory requirements such as New Source Review (NSR) and Prevention of Significant Deterioration (PSD) regulations. These models are addressed in Appendix A of EPA's *Guideline on Air Quality Models* (also published as [Appendix W \(PDF\)](#) of 40 CFR Part 51), which was originally published in April 1978 to provide consistency and equity in the use of modeling within the U.S. air quality management system. These guidelines are periodically revised to ensure that new model developments or expanded regulatory requirements are incorporated.

This site provides links for dispersion models and other related tools and information as follows:

Preferred/Recommended Models - Refined air quality models that are currently listed in [Appendix W \(PDF\)](#) (45 pp, 803 K, [About PDF](#)) and are required to be used for State Implementation Plan (SIP) revisions for existing sources and NSR and PSD programs.

Alternative Models - Models, not listed in [Appendix W \(PDF\)](#), that can be used in regulatory applications with case-by-case justification to the Reviewing Authority as noted in Section 3.2, "*Use of Alternative Models*", in [Appendix W \(PDF\)](#).

Screening Tools - Models that are often applied before applying a refined air quality model to determine if refined modeling is needed.

Related Programs - Programs and utilities that are used in support of some of the dispersion models listed here. Note that utilities designed for use with particular models will be found with those models.

The EPA's Air Quality Modeling Group uses dispersion models as part of its modeling analyses for which information can be found at **Modeling Applications and Tools** and provides guidance on the use of these models for permit modeling available at **Modeling Guidance and Support**. Additional information about dispersion models can be found at **Air Modeling Resources**.

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