Air Quality Dispersion Modeling Short Course

AGENDA

Day 1

Course Topics and Descriptions

1 hour	Program Overview and Objectives Leveling of Expectations
1 hour	Introduction to the Air Pollution Regulatory Process and Dispersion Modeling: The Why and How of Dispersion Modeling

Participants will be given an introduction to the various regulatory issues associated with the use of dispersion modeling. Instructor will discuss the "Why and How of Dispersion Modeling". A short Quiz will be given at the end of the session.

Break (30 min)

1 hour	Introduction to Gaussian Modeling

Participants will be given an introduction to the Gaussian Dispersion Modeling by defining each parameter in the model equation and the implications of each parameter to the physical states and conditions. A short Quiz will be given at the end of the session.

Lunch Break (1 hr)

1.5 hour	History and Development of Dispersion Models

Instructor will discuss the various dispersion models used to assess the impact of a facility on the air quality of the surrounding area. Several preferred/recommended and alternative dispersion models will be described with focus on the EPA approved ISCST3 model, and how it is applied to the air quality regulatory process.

Break (30 min)

1.5 hour	Discussion of the permitting and reporting process: Federal Clean Air Act, CERCLA / EPCRA
30 min	Quiz

Time for questions will be left at the end of each session, but course attendees are encouraged to ask questions at anytime.

Day 2

1 hour	Review of Previews Topics
	Informal Discussion

1 hour Calculation of model parameters
- Details of Gaussian Equation
- σ_y, σ_z, $H + \Delta h$, Q, C_{10}, X and Y
- Special cases
- Point and Line (Area) Source Modeling

Instructor will discuss the details of the Gaussian Dispersion Model and the individual parameters in the equation. Various special cases of the equation will be discussed including point, line and area source modeling.

Break (30 min)

1 hour Meteorological Data Processing
- Vector Averaging for wind speed and direction
- Power Law
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Participants will have practical exercises on how to calculate input parameters to the Gaussian Dispersion Model including wind vector calculations and the power law.

Lunch Break (1 hour)

1 hour Application of dispersion modeling to emission factor development

Instructor will discuss how dispersion models are used to develop emission factors and the advantages in the use of dispersion modeling compared with other methods.

Break (30 min)

2 hours Gaussian modeling with Microsoft Excel

Practical Exercises/Quiz (30 min)

Participants will have practical exercise utilizing the Gaussian modeling equation through spreadsheet software calculations in Microsoft Excel.

Day 3

1 hour   Review of Previous Topics and Informal Discussion

1 hour   Introduction to ISCST3 with BREEZE

Participants will now have hands-on exercises on the EPA approved ISCST3 computer modeling program developed by Trinity Consultants, Inc. The instructor will go through the discussions of each program menu.

                              Break (30 min)

1.5 hrs   Building, Running, and Trouble Shooting models using BREEZE

Each participant will build the model by inputting the parameters necessary, run the program and trouble shoot errors associated with the dispersion modeling software.

                              Lunch Break (1 hour)

1.5 hours   Point Source Dispersion Modeling

This portion will introduce participants with the use of actual field sampling data, process them to conform to the requirements of the software and go through the process of building, running and troubleshooting models to generate interpretable outputs. A simple point source algorithm will be used as an example.

                              Break (30 min)

1.5 hours   Area Source Dispersion Modeling

Actual almond harvesting source sampling data will be used to perform area source dispersion modeling and generate outputs. Modeling outputs will be compared with other methods used to generate emission factors for almond harvesting.

                              Evaluation/Course Wrap Up and Feedback

                              Dismissal