

Training Outline for Air Dispersion Modelers

This outline is to be used by the lead worker in training new employees as dispersion modelers. The training outline was developed so that all dispersion modelers will have a uniform and thorough background. The self-paced training will depend on the individual's previous air quality experience and educational background, and may take up to six months to complete.

Familiarization with DNR/AQB

(Schedule for New Employee Orientation, complete paperwork, meet key staff and supervisors, building/equipment orientation, review organizational chart, aqbweb, timesheets, GroupWise, iowacleanair.com)

Background (optional, depending on the individual)

Why air quality is important?
Why perform dispersion modeling?
Reading assignments and questions
APTI AQ Orientation course

Meteorology Overview

(Wind, turbulence, vertical structure, plume types, mixing height, boundary layer, stability class, transport, dispersion)
APTI Course SI409: Basic Air Pollution Meteorology
On-line Meteorology Course (for non-meteorology majors)

Meteorological Data for Dispersion Modeling

(NWS surface and upper air, DNR met data sets, PCRAMMET/AERMET familiarization-when applicable)
Stability Class exercise using "Meteorological Monitoring Guidance for Regulatory Modeling Applications" (EPA-454/R-99-005)

Introduction to Dispersion Modeling

(Significance levels, NAAQS, H2H concept, downwash, GEP, SCREEN3)
APTI Course SI410: Introduction to Dispersion Modeling
SCREEN3 Tutorial
"Screening Procedures for Estimating the Air Quality Impact of Stationary Sources, Revised" (EPA-450/R-92-019)
"SCREEN3 Model User's Guide" (EPA -454/B-95-004)

Plume Rise/Gaussian Models

(Momentum, buoyancy, stack tip downwash, buoyant plume rise, momentum plume rise, merged stacks)
APTI Course SI-406: Effective Stack Height/Plume Rise

ISCST3

(Editing an existing input file, creating an input file from scratch, reading output, source types)

“User’s Guide for the Industrial Source Complex (ISC) Dispersion Models (Revised), Volume I – User Instructions” (EPA-454/B-95-003a) Chapters 1-3.

Front-end software tutorial

Downwash

“Practical Guide to Atmospheric Dispersion Modeling” (Trinity) Chapter 8 on downwash

“User’s Guide to the Building Profile Input Program” (EPA-454/R-93-038)

Downwash exercise

Attend Trinity’s BREEZE training course

Existing Modeling Guidance and Regulations

(Overview of 1990 CAAA, CFR, IAC, SIPS, NSR)

40 CFR 51 Appendix W with questions to answer, dispersion techniques/merged stacks

“Draft New Source Review Workshop Manual” Chapter C

SCRAM website

AQB Guidance documents, checklists

Begin working on “simple” construction permitting projects with oversight.

AERMOD

T-030-00: Workshop on EPA’s AERMOD Modeling System (3 VCR tapes)

AERMET GIS Application

Air Pollution Control Introduction

APTI Course SI431: Air Pollution Control Systems for Selected Industries

APTI Course SI413: Control of Particulate Emissions