



# NATIONAL AIR QUALITY TRAINING PROJECT

---

## TECHNICAL TRAINING NEEDS SUMMARIES

### **FINAL REPORT**

**SEPTEMBER 2011**

**MARAMA**

**Mid-Atlantic Regional Air  
Management Association, Inc.**

## TABLE OF CONTENTS

---

List of Acronyms .....	iii
Introduction and Purpose .....	v
Definitions .....	vi

### *Technical Training Needs Summaries*

INTRODUCTION TO AIR POLLUTION CONTROL .....	2
AMBIENT MONITORING, QA/QC, & DATA ANALYSIS.....	3
EMISSION INVENTORIES .....	7
MODELING, FORECASTING, & DATA ANALYSIS .....	10
PLANNING AND REGULATION DEVELOPMENT.....	13
PERMIT WRITING .....	16
INSPECTION AND ENFORCEMENT.....	21
AIR TOXICS AND HAZARDOUS AIR POLLUTANTS.....	26
MOBILE SOURCES .....	30
CLIMATE CHANGE.....	31

## LIST OF ACRONYMS

---

AERMOD	American Meteorological Society and the U.S. Environmental Protection Agency Regulatory Model Improvement Committee ( <b>AERMIC</b> ) Model
AERSCREEN	AERMOD Screening Model
AQ	Air Quality
AQS	Air Quality System
BACT	Best Available Control Technology
CAA	Clean Air Act
CALPUFF	California Puff Air Dispersion Model
CAM	Compliance Assurance Monitoring
CAMx	Comprehensive Air Quality Modeling with extensions
CARB	California Air Resources Board
CEMS	Continuous Emission Monitoring
CMAQ	Congestion Mitigation and Air Quality Improvement Program
CO <sub>2</sub>	Carbon Dioxide
CO <sub>2e</sub>	Equivalent Carbon Dioxide
COMS	Continuous Opacity Monitoring System
CPMS	Continuous Parameter Monitoring System
CSAPR	Cross-State Air Pollution Rule
ENERGY STAR EnMS	ENERGY STAR Energy Management System
EPA	U.S. Environmental Protection Agency
FIRE	Factor Information Retrieval Software
GHG	Greenhouse Gas
HAP	Hazardous Air Pollutant
HAZWOPER	Hazardous Waste Operation and Emergency Response
HYSPLIT	Hybrid Single Particle Lagrangian Integrated Trajectory Model
I/M	Vehicle Inspection and Maintenance
ICE	Internal Combustion Engines
ISO	International Organization for Standardization
MM5	PSU/NCAR Mesoscale Model Version 5
MOVES	Motor Vehicle Emission Simulator
NAA	Non-Attainment Areas
NAAQS	National Ambient Air Quality Standards
NESHAP	National Emission Standards for Hazardous Air Pollutants
NNSR	Non-Attainment New Source Review
NSPS	New Source Performance Standards
NSR	New Source Review
OBD	On-Board Diagnostics
ODS	Ozone Depleting Substances
PAQO	Primary Quality Assurance Organization
PM	Particulate Matter
PPE	Personal Protective Equipment
PSD	Prevention of Significant Deterioration
QA/QC	Quality Assurance/Quality Control
RMP	Risk Management Plan

## LIST OF ACRONYMS (continued)

---

SBCSD	World Business Council for Sustainable Development
SCREEN3	Single source Gaussian plume model
SIP	State Implementation Plan
SMOKE	Sparse Matrix Operator Kernel Emissions
SOPs	Standard Operating Procedures
TAP	Toxic Air Pollutant
UNIX/LINUX	Multitasking and multiuser operating system
UNMIX	EPA receptor model
VOC	Volatile Organic Compound
WATER9	Wastewater treatment model
WBCSD	World Business Council for Sustainable Development
WRF	Weather Research and Forecasting Modeling
WRI	World Resources Institute

# MARAMA National Air Quality Training Guide

## Technical Training Needs Summaries

### INTRODUCTION AND PURPOSE

The purpose of this report is to identify the typical training needs for the ten functions that are commonly found within federal, state, and local agency air programs. For each of the ten functions, information has been included to identify typical core knowledge, skills, and abilities for each function, and the implied training needs. Each state or local air quality agency is encouraged to modify these to reflect their organizational structure and functions as well as the types of activities assigned to various staff members.

This document is a training tool and not a human resources tool. This document is not intended to serve as a job classification or job description document for any particular agency job, but rather to serve as a national example to be modified as needed for state or local use. This tool is to be used to assist regional, state, and local air agencies to ascertain what skills need to be the focus of technical training and to help managers know what courses their staff need for technical training.

The ten functions are listed as follows:

#### Functions Requiring Air Pollution Training

- Introduction to Air Pollution Control
- Ambient Monitoring, QA/QC, & Data Analysis
- Emissions Estimation & Inventory Development
- Modeling, Forecasting, & Data Analysis
- Planning/ Regulation Development
- Permit Writing
- Inspection & Enforcement
- Air Toxics / Hazardous Air Pollutants
- Data Mobile Sources
- Climate Change

The following information is included in this report:

- List of frequently used acronyms or abbreviations has been developed as a reference tool for the user of this guide.
- Definitions are included for the above functions and additional areas of expertise.
- Tabular listing of the professional competencies that includes core knowledge, skills, and abilities for each function along with suggested training needs for each of the work tasks within each function.

For most of the functional areas, the tables of knowledge, skills, and abilities and training needs are divided into basic and advanced levels. These are termed Levels 1 and 2. The general assumption is made that those in Level 2 would have about 3 years or more of experience in the field. This may or may not be appropriate for any particular air pollution control agency and is used here simply to give a rough indication that experience is assumed for the Level 2 skills and training needs.

There are numerous skills and abilities and significant knowledge that are not covered in these tables. These may include the ability to work independently, the ability to organize complex tasks, supervisory skills, communications skills, etc. The focus of this effort is on technical skills needed in a national air quality management training program.

## DEFINITIONS

<b>Introduction to Air Pollution Control</b>	These courses are designed for regulatory personnel who are new or will be beginning their career in the air quality regulatory field.
<b>Pollution Control Foundations</b>	These courses present fundamental information on the formation and control of various air pollutants.
<b>Ambient Monitoring, QA/QC, &amp; Data Analysis</b>	These courses are designed for individuals within a regulatory agency whose role is to provide sampling and laboratory analysis of ambient air samples. Course topics also include quality assurance/quality control and analysis of ambient air quality data.
<b>Emissions Estimation &amp; Inventory Development</b>	These courses are designed for regulatory personnel who have or will have the responsibility to develop emissions inventories.
<b>Modeling, Forecasting, &amp; Data Analysis</b>	These courses are designed for individuals who will be conducting or interpreting the results of air quality models.
<b>Planning/ Regulation Development</b>	These courses are designed for individuals who will be preparing State Implementation Plans or regulatory language.
<b>Permit Writing</b>	These courses are designed for personnel of state and local permitting agencies who must review and interpret permit applications and prepare permits. There are also relevant courses listed under stationary sources, for example, depending on the individual assignments.
<b>Inspection &amp; Enforcement</b>	These courses are designed for inspectors who determine compliance with air pollution control requirements in permits, regulations, and orders. There are also relevant courses listed under stationary sources, for example, depending on the individual assignments.
<b>Air Toxics / Hazardous Air Pollutants</b>	These courses are designed for individuals who implement programs designed to reduce emissions of toxic or hazardous air pollutants. There are also relevant courses listed under stationary sources, for example, depending on the individual assignments.
<b>Stationary Sources</b>	These courses provide information for regulatory personnel in permits, compliance/enforcement, or planning programs.
<b>Source Sampling and Monitoring</b>	These courses are designed for regulatory personnel who have or will have the responsibility to evaluate source test methods, approve test protocols, and review source test results as required under various federal and state regulations. In addition, these courses are designed for regulatory personnel who have the responsibility to establish requirements in permits or regulatory language for continuous emissions monitoring or compliance assurance monitoring or to evaluate data provided in response to such requirements.
<b>Mobile Sources</b>	These courses are designed for individuals who implement programs designed to reduce emissions from mobile sources, both on-road and off-road.
<b>Climate Change</b>	These courses present information on greenhouse gas emissions estimation and control and fundamental scientific information about climate change.

# *Technical Training Needs Summaries*

---

## INTRODUCTION TO AIR POLLUTION CONTROL

**LEVEL 1** – Beginner – New hire with scientific college degree, new hire with limited work experience.

SKILLS	KNOWLEDGE AND UNDERSTANDING	TRAINING NEEDS ASSOCIATED WITH SKILLS
Ability to interpret basic air quality concepts and become familiar with the goals of the CAA and the state/local air quality programs	<ul style="list-style-type: none"> <li>• Understanding the need for programs to implement the regulations and rules that are developed from state and federal laws to protect air quality standards and air quality related values</li> </ul>	<ul style="list-style-type: none"> <li>• Basic air pollution control or air quality management orientation</li> <li>• Basic introduction to the Clean Air Act</li> <li>• Basic introduction to the health effects of air pollution</li> </ul>
Ability to interpret the basic science and math concepts associated with air pollution	<ul style="list-style-type: none"> <li>• Understanding the need to interpret and calculate air quality related data (emissions data, flow data, etc.) correctly</li> </ul>	<ul style="list-style-type: none"> <li>• Basic environmental science as applied to air quality management</li> <li>• Basic math as applied to air quality management</li> </ul>
Ability to interpret how pollutants are regulated	<ul style="list-style-type: none"> <li>• Basic knowledge of federal and state Regulated Pollutants, precursors and pollutants that may be regulated dually (for example methanol is a HAP and VOC)</li> </ul>	<ul style="list-style-type: none"> <li>• Basic air quality regulations</li> </ul>
Ability to delineate the principles and practices associated with air pollution control	<ul style="list-style-type: none"> <li>• Basic understanding of                             <ul style="list-style-type: none"> <li>○ Air pollution permitting and compliance history</li> <li>○ How the functions (or work) within the air quality programs are inter-related with the common goal of complying with the CAA and state and local regulations</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Air permitting introduction class</li> <li>• Air pollution basic principles and practices class</li> </ul>
Safety Skills	<ul style="list-style-type: none"> <li>• Knowledge of hazards that may be encountered in the performance of one's duties in the office or in the field</li> </ul>	<ul style="list-style-type: none"> <li>• Training tailored to the hazards that may be encountered in specific positions.</li> <li>• Three "types" of safety training may be appropriate: General, Field, and HAZWOPER.</li> </ul>

## AMBIENT MONITORING, QA/QC, & DATA ANALYSIS

Level I: Beginner – New hire with technical school or college degree; new hire with limited work experience.

SKILLS	ES OR ET*	KNOWLEDGE AND UNDERSTANDING	TRAINING NEEDS ASSOCIATED WITH SKILLS
Ability to interpret general information about the reference methods, continuous air quality monitors, sampling design and statistical techniques applicable to ambient air monitoring	• ES & ET	• Understanding of the math and scientific concepts associated with ambient monitoring	<ul style="list-style-type: none"> <li>• Introduction to ambient monitoring</li> <li>• Introduction to statistical analysis of air quality data</li> <li>• Basic concepts in environmental sciences</li> </ul>
Ability to determine the appropriate analytical methods for analysis of each pollutant	• ES	• Knowledge of the appropriate methods available for collection and analysis of ambient air	<ul style="list-style-type: none"> <li>• Reference and equivalent methods for ambient monitoring of Criteria Pollutants,</li> <li>• Introduction to TO- and IO- methods</li> <li>• Federal and state requirements for ambient air monitoring</li> </ul>
Ability to apply appropriate QA/QC procedures for ambient air monitoring	• ES & ET	<ul style="list-style-type: none"> <li>• Knowledge of QA/QC procedures that apply to ambient air monitoring, sampling, and analysis</li> <li>• Understand the principles of monitoring and sampling methods and QC requirements</li> </ul>	<ul style="list-style-type: none"> <li>• QA/QC principles for ambient monitoring</li> <li>• Verification of ambient monitoring data</li> </ul>
Ability to provide general maintenance and upkeep of the ambient air monitors used in the agency's network	• ES & ET	• Knowledge to ensure monitors are operated properly and are kept in good operating order	• Monitor instrumentation repair, and operation training
Ability to install and maintain sites to meet project requirements	• ES	• Knowledge of relevant regulation and written protocols for monitor and probe siting	• Federal, state, and local requirements & QAPPs for probe and monitoring path siting criteria
Ability to handle and document ambient samples in accordance with project requirements and regulations and to conduct data analysis	• ET & ES	• Knowledge of proper handling of ambient samples and appropriate data analysis to evaluate sample results	<ul style="list-style-type: none"> <li>• Field operations for ambient sampling</li> <li>• Analyzing ambient air monitoring data</li> </ul>
Ability to review field and QC data to evaluate performance of instruments and diagnose and address potential deficiencies.	• ET	• Knowledge of appropriate data analysis to apply to evaluate monitoring results	• Analysis of ambient air monitoring data

\* ES = Engineer or Scientist; ET = Environmental Technician

## AMBIENT MONITORING, QA/QC, & DATA ANALYSIS

Level I: Beginner – New hire with technical school or college degree; new hire with limited work experience.

SKILLS	ES OR ET*	KNOWLEDGE AND UNDERSTANDING	TRAINING NEEDS ASSOCIATED WITH SKILLS
Ability to identify and document exceptional events that require flagging	<ul style="list-style-type: none"> <li>• ES</li> </ul>	<ul style="list-style-type: none"> <li>• Knowledge of how to identify and flag exceptional events and how to prepare official documentation to obtain EPA approval for flagging</li> </ul>	<ul style="list-style-type: none"> <li>• Training on how to identify and flag exceptional events</li> <li>• Training on EPA requirements for documenting exceptional events</li> </ul>

\* ES = Engineer or Scientist; ET = Environmental Technician

## AMBIENT MONITORING, QA/QC, & DATA ANALYSIS

**LEVEL 2** – Intermediate/Advanced – 3 or more years of ambient air monitoring experience for ET, data analysis, QA/QC analysis and regulatory interpretation and assessment

SKILLS	ES OR ET*	KNOWLEDGE AND UNDERSTANDING	TRAINING NEEDS ASSOCIATED WITH SKILLS
Ability to site monitors following federal/state/local protocols to meet project goals	ES	<ul style="list-style-type: none"> <li>• Knowledge of relevant regulations and protocols for monitoring siting</li> <li>• Knowledge of local conditions and constraints applicable to monitoring siting</li> </ul>	<ul style="list-style-type: none"> <li>• Federal/state local siting requirements</li> <li>• Application of data quality objectives (DQOs) and measurement quality objectives (MQOs) to project design</li> </ul>
Ability to troubleshoot operational and network design problems, provide input to senior management on long-term equipment and network upgrades/design changes	ES & ET	<ul style="list-style-type: none"> <li>• Knowledge of relevant regulatory changes and technical advances</li> <li>• Understand the goals of the agency</li> </ul>	<ul style="list-style-type: none"> <li>• Federal and state requirements for ambient air monitoring and network design</li> </ul>
Ability to develop Standard Operating Procedures for methods, instruments and sampling methods for air sampling	ES	<ul style="list-style-type: none"> <li>• Knowledge of current criteria pollutant monitoring methods and instruments</li> <li>• Knowledge of air toxics sampling and analytical methods</li> <li>• Knowledge of state of the art monitoring technology</li> <li>• Understanding of staff capabilities and constraints on operations</li> </ul>	<ul style="list-style-type: none"> <li>• Preparation and maintenance of SOPs</li> </ul>
Ability to interpret new federal and/or state regulation impact on monitoring network methods and design	ES & ET	<ul style="list-style-type: none"> <li>• Knowledge of relevant regulatory changes and technical advances</li> </ul>	<ul style="list-style-type: none"> <li>• Federal and state requirements for ambient air monitoring and network design</li> </ul>
<p>Ability to evaluate and assess ambient monitoring data for quality, trends, source impacts, attainment status</p> <p>Ability to apply appropriate methods to validate and verify ambient monitoring data</p>	ES	<ul style="list-style-type: none"> <li>• Advanced knowledge of ambient air pollution chemistry, transport, and statistical analysis methods</li> <li>• Understand agency goals and regulatory issues</li> <li>• Familiarity with analysis methods, QC requirements, modes of failure, statistical tools, and use of external data for validation</li> </ul>	<ul style="list-style-type: none"> <li>• Advanced classes on air pollution and atmospheric chemistry, statistical analyses</li> <li>• Participation in relevant regional/national conferences and meetings</li> <li>• Data validation for criteria pollutant measurements</li> <li>• Data quality assessment</li> </ul>

\* ES = Engineer or Scientist; ET = Environmental Technician

## AMBIENT MONITORING, QA/QC, & DATA ANALYSIS

**LEVEL 2** – Intermediate/Advanced – 3 or more years of ambient air monitoring experience for ET, data analysis, QA/QC analysis and regulatory interpretation and assessment

SKILLS	ES OR ET*	KNOWLEDGE AND UNDERSTANDING	TRAINING NEEDS ASSOCIATED WITH SKILLS
Ability to design and carry out programmatic and analytical QA/QC methods, protocols, and plans	ES	<ul style="list-style-type: none"> <li>• Advanced knowledge of QA/QC principles and procedures, federal and state regulations, and statistical analysis methods</li> </ul>	<ul style="list-style-type: none"> <li>• Advanced classes in QA principles and practices</li> <li>• Advanced statistical methods</li> </ul>
Ability to design, implement, and report on special monitoring studies	ES & ET	<ul style="list-style-type: none"> <li>• ET – Knowledge of special monitoring methods and procedures</li> <li>• ES – Advanced knowledge of study design and data analyses</li> <li>• ES – Advanced knowledge of current scientific ambient air pollution issues, including new criteria air pollutants and air toxics</li> </ul>	<ul style="list-style-type: none"> <li>• Advanced classes on ambient monitoring methods and study design</li> <li>• Participation in relevant regional/national conferences and meetings</li> </ul>
Ability to develop presentations and present data analyses, monitoring network updates and changes to internal agency management, state regulatory entities, scientific community, and the general public at any public hearings	ES	<ul style="list-style-type: none"> <li>• Advanced knowledge and understanding of ambient air pollution and related state and federal regulations</li> </ul>	<ul style="list-style-type: none"> <li>• Technical writing class</li> <li>• Communication class (dealing with public), internal/external communication (customer service)</li> </ul>

\* ES = Engineer or Scientist; ET = Environmental Technician

## EMISSION INVENTORIES

**LEVEL 1** – Beginner – New hire with scientific college degree, new hire with limited work experience.

SKILLS	KNOWLEDGE AND UNDERSTANDING	TRAINING NEEDS ASSOCIATED WITH SKILLS
Ability to determine types of emission sources that must submit emission inventories and the intervals for submittal	<ul style="list-style-type: none"> <li>• Understanding of which permits require the submittal of an emission inventory and the regulatory authority for the inventory submittal</li> </ul>	<ul style="list-style-type: none"> <li>• Emission inventory requirements under state specific and Title V regulations</li> </ul>
Ability to determine how pollutants are regulated and how fees should be assessed	<ul style="list-style-type: none"> <li>• Knowledge of federal and state Regulated Pollutants, precursors and pollutants that may be regulated dually (for example methanol is a HAP and VOC)</li> <li>• Knowledge to ensure that dually regulated pollutants are not double counted for fee purposes</li> </ul>	<ul style="list-style-type: none"> <li>• Basic air quality management</li> <li>• Pollutant fee-basis requirements in state-specific and Title V regulations</li> </ul>
Ability to interpret agency guidelines regarding the use of emission factors for different purposes (annual inventories, permitting, compliance assessment, etc.)	<ul style="list-style-type: none"> <li>• Basis knowledge of agency guidelines for the use of emission factors for different purposes (annual inventories, permitting, compliance assessment, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>• Agency guidelines for the use of emission factors</li> <li>• Emission factor assessment and validity training</li> <li>• Quality assurance principles – introductory</li> </ul>
Ability to (1) review and find credible emission factors for various emission sources; and (2) evaluate the use of emission factors by simple industrial sources (i.e., boilers, ICE, etc.)	<ul style="list-style-type: none"> <li>• Basic knowledge and understanding of the limitations of emission factors (such as those found in AP-42 or FIRE)</li> </ul>	<ul style="list-style-type: none"> <li>• Emission factor uncertainty</li> </ul>
Ability to review emissions calculations for accuracy and validity of technical basis for simple emission sources	<ul style="list-style-type: none"> <li>• Understanding of emissions calculations concepts and the ability to use data for development of actual and potential emission calculations.: For example:                             <ul style="list-style-type: none"> <li>○ AP-42</li> <li>○ EPA's Tanks Program</li> <li>○ EPA's WATER9 Program</li> <li>○ Material Balance</li> <li>○ CEMS</li> <li>○ Source Testing Emissions Factors</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Emissions estimation techniques</li> <li>• Combustion source emission calculation approaches</li> </ul>

## EMISSION INVENTORIES

**LEVEL 2** – Intermediate/Advanced – 3 or more years of emissions inventory experience; equivalent experience within regulatory agency; equivalent environmental consulting or industry experience.

<b>SKILLS</b>	<b>KNOWLEDGE AND UNDERSTANDING</b>	<b>TRAINING NEEDS ASSOCIATED WITH SKILLS</b>
Ability to be a resource for junior staff on emissions inventory issues	<ul style="list-style-type: none"> <li>• Understand the limitations for the use of emission factors</li> <li>• Mentor junior staff on the use of emission factors</li> <li>• Challenge junior staff to validate the use of emission factors when there is uncertainty</li> </ul>	<ul style="list-style-type: none"> <li>• Advanced inventory development</li> <li>• Quality assurance principles – advanced</li> </ul>
Ability to review and interpret more complex inventory submittals (complex Title V sources)	<ul style="list-style-type: none"> <li>• Understanding of emissions calculations concepts and the ability to use data for development of actual and potential emission calculations</li> <li>• Knowledge to perform more advanced and complex calculations associated with approaches that are used to calculate dually regulated pollutants but excludes double counting</li> </ul>	<ul style="list-style-type: none"> <li>• Advanced classes on source specific calculation approaches</li> <li>• Advanced pollution control classes</li> </ul>
Ability to review source test results and interpret or determine the methods for developing source specific emission factors from such data	<ul style="list-style-type: none"> <li>• Knowledge to understand and perform more advanced and complex calculations associated with source test results</li> </ul>	<ul style="list-style-type: none"> <li>• Advanced classes on developing emission factors from test data</li> </ul>
Ability to gather site-specific or area-specific (i.e., county level) activity data and accurately use the data to develop a credible approach to estimating emissions	<ul style="list-style-type: none"> <li>• Understand how to use activity data in conjunction with existing emission factors and other inputs to accurately estimate emissions.</li> </ul>	<ul style="list-style-type: none"> <li>• Advanced classes in researching and identifying available local activity data, and then assessing the appropriateness of these data for estimating emissions, and finally the ability to utilize that data in a sound and defensible emissions calculation method.</li> </ul>
Ability to prepare estimates of mobile source emissions using models such as MOVES and NONROAD	<ul style="list-style-type: none"> <li>• Understanding how to use approved models</li> <li>• Understanding where to obtain up to date input information to use with models</li> <li>• Understanding of the relative importance of various factors in terms of their influence on model performance</li> </ul>	<ul style="list-style-type: none"> <li>• Training on the use of approved models</li> <li>• Training on how to obtain needed input data</li> <li>• Study of previous applications and comparison of various model runs</li> </ul>

## EMISSION INVENTORIES

**LEVEL 2** – Intermediate/Advanced – 3 or more years of emissions inventory experience; equivalent experience within regulatory agency; equivalent environmental consulting or industry experience.

<b>SKILLS</b>	<b>KNOWLEDGE AND UNDERSTANDING</b>	<b>TRAINING NEEDS ASSOCIATED WITH SKILLS</b>
Ability to comply with federal, state, and/or local requirements for developing and maintaining data bases of emissions data	<ul style="list-style-type: none"><li>• Knowledge of federal/state/local requirements and guidance</li></ul>	<ul style="list-style-type: none"><li>• Training on federal/state/local requirements</li></ul>

## MODELING, FORECASTING, & DATA ANALYSIS

**LEVEL 1** – Beginner – New hire with scientific college degree, new hire with limited work experience.

SKILLS	KNOWLEDGE AND UNDERSTANDING	TRAINING NEEDS ASSOCIATED WITH SKILLS
Ability to interpret the introductory basic sciences found in the study of atmospheric science, meteorology, air quality science and modeling of emission sources	<ul style="list-style-type: none"> <li>• Basic understanding of the math and scientific concepts associated with dispersion modeling</li> </ul>	<ul style="list-style-type: none"> <li>• Basic applied math and atmospheric science</li> <li>• Basic meteorology</li> </ul>
Ability to determine how to use air pollution meteorology, chemistry to include tropospheric chemistry, and the use of computer modeling tools and their limitations	<ul style="list-style-type: none"> <li>• Basic knowledge of the tools that are needed to conduct dispersion modeling</li> </ul>	<ul style="list-style-type: none"> <li>• Basic meteorology</li> <li>• Introduction to dispersion modeling</li> <li>• Introduction to atmospheric chemistry and physics</li> </ul>
Ability to utilize the model for selected simple applications	<ul style="list-style-type: none"> <li>• Basic knowledge of how to setup and run the model for selected simple applications</li> </ul>	<ul style="list-style-type: none"> <li>• Introduction to dispersion modeling</li> <li>• Knowledge of some real-world applications</li> </ul>
Ability to analyze simple dispersion modeling analyses that are submitted with air permit applications	<ul style="list-style-type: none"> <li>• Basic knowledge to ensure modeling protocols are followed, proper meteorological data was used, setup of facility data was accurate, and that input and output files are correct</li> <li>• Basic understanding to run model to QA/QC application results</li> </ul>	<ul style="list-style-type: none"> <li>• Introduction to SCREEN3, AERSCREEN and AERMOD</li> <li>• Knowledge of permitting process including PSD permitting</li> </ul>
Ability to assist senior staff with modeling simple sources for SIP and state-only air planning purposes	<ul style="list-style-type: none"> <li>• Basic knowledge of how to setup and run the model to assist in air quality planning purposes</li> </ul>	<ul style="list-style-type: none"> <li>• Introduction to SCREEN3, AERSCREEN and AERMOD</li> <li>• Knowledge of UNIX/LINUX, and shell scripting</li> <li>• Knowledge of UNIX/LINUX administration</li> </ul>
Ability to assist senior modeling staff in forecasting air pollution events, such as daily ozone forecasting	<ul style="list-style-type: none"> <li>• Basic knowledge of how to setup and run the model to assist with air pollution forecasting as needed by the agency</li> </ul>	<ul style="list-style-type: none"> <li>• Introduction to SCREEN3, AERSCREEN and AERMOD</li> <li>• Introduction to photochemical models (CMAQ)</li> <li>• Introduction to photochemical models (CMAQ), and meteorological models (WRF/MM5)</li> </ul>

## MODELING, FORECASTING, & DATA ANALYSIS

**LEVEL 2** – Intermediate/Advanced – 3 or more years of permit writing experience; equivalent experience within regulatory agency; equivalent environmental consulting or industry experience.

<b>SKILLS</b>	<b>KNOWLEDGE AND UNDERSTANDING</b>	<b>TRAINING NEEDS ASSOCIATED WITH SKILLS</b>
Ability to utilize the model for selected complex applications as requested by agency management	<ul style="list-style-type: none"> <li>Advanced knowledge of how to setup and run the model for complex applications</li> </ul>	<ul style="list-style-type: none"> <li>Advanced dispersion modeling concepts</li> <li>Advanced concepts in atmospheric chemistry and physics</li> </ul>
Ability to analyze complex dispersion modeling analyses that are submitted with air permit applications (e.g., PSD modeling, which may include multisource modeling; complex air toxics modeling; residual risk modeling)	<ul style="list-style-type: none"> <li>Advanced knowledge to ensure modeling protocols are followed, proper meteorological data was used, setup of facility data was accurate, and that input and output files are correct</li> <li>Advanced understanding to run complex models to QA/QC application results</li> </ul>	<ul style="list-style-type: none"> <li>Advanced class on AERMOD and CALPUFF</li> </ul>
Ability to model complex sources and situations for SIP and state-only air planning purposes	<ul style="list-style-type: none"> <li>Advanced knowledge of how to setup and run the model to provide results for air quality planning purposes</li> </ul>	<ul style="list-style-type: none"> <li>Advanced classes on AERMOD, CALPUFF, CAMx, CMAQ, and SMOKE</li> <li>Advanced classes on CAMx, CMAQ, WRF/MM5</li> </ul>
Ability to analyze air pollution/ambient situations to forecast air pollution events, such as daily ozone forecasting	<ul style="list-style-type: none"> <li>Advanced knowledge of how to setup and run the model to provide air pollution forecasting as needed by the agency</li> </ul>	<ul style="list-style-type: none"> <li>Advanced class on CMAQ training</li> <li>Advanced classes on WRF/MM5</li> <li>Advanced statistical methods including regression models and neural networks</li> </ul>
Ability (1) to mentor junior staff and (2) provide oversight and be a resource for complex modeling issues	<ul style="list-style-type: none"> <li>Knowledge to perform more advanced and complex oversight of the dispersion modeling process</li> </ul>	<ul style="list-style-type: none"> <li>Advanced classes on AERMOD, CALPUFF, CAMx, CMAQ, and SMOKE</li> <li>Advanced classes on CAMx, CMAQ, WRF/MM5</li> </ul>
Ability to implement receptor modeling as a part of some air quality management	<ul style="list-style-type: none"> <li>Background and application of receptor models for the source identification and quantitative mass apportionment of airborne pollutants</li> </ul>	<ul style="list-style-type: none"> <li>Knowledge and application of CMB, PMF, UNMIX, and HYSPLIT</li> </ul>

## MODELING, FORECASTING, & DATA ANALYSIS

**LEVEL 2** – Intermediate/Advanced – 3 or more years of permit writing experience; equivalent experience within regulatory agency; equivalent environmental consulting or industry experience.

<b>SKILLS</b>	<b>KNOWLEDGE AND UNDERSTANDING</b>	<b>TRAINING NEEDS ASSOCIATED WITH SKILLS</b>
<p>Ability to apply models in complex situations where there is a need to make assumptions about how to set up the modeling platform in order to best represent specific complex situations</p> <p>Ability to explain the rationale for these decisions to decision makers</p>	<ul style="list-style-type: none"> <li>• Thorough understanding of model assumptions and options for input data</li> <li>• Knowledge of prior decisions by regulatory agencies to approve specific applications of models</li> <li>• Knowledge of applicable regulations and guidance.</li> <li>• Knowledge of scientific basis for model assumptions and data for particular situations that would determine the best application of the model</li> </ul>	<ul style="list-style-type: none"> <li>• Advanced training on modeling guidance and prior applications</li> <li>• Advanced training on atmospheric chemistry and emissions inventory and modeling concepts</li> <li>• Specific study of the situation at hand</li> <li>• Communications training, with particular emphasis on how to communicate technical information to decision makers</li> </ul>

## PLANNING AND REGULATION DEVELOPMENT

**LEVEL 1** – Beginner – New hire with scientific college degree, new hire with limited work experience.

SKILLS	KNOWLEDGE AND UNDERSTANDING	TRAINING NEEDS ASSOCIATED WITH SKILLS
Ability to identify types of emission sources that affect air quality and the underlying reasons they must be addressed in air quality planning and regulation development	<ul style="list-style-type: none"> <li>Understanding of which emission sources affect air quality in the region of interest and what regulatory requirements already exist to limit emissions from those sources</li> </ul>	<ul style="list-style-type: none"> <li>Basic air quality management</li> <li>State specific air quality regulations</li> <li>Basic training on development of State Implementation Plans</li> </ul>
Ability to determine and differentiate the compliance concepts of the federal, state and local general statutes, laws, rules and regulations	<ul style="list-style-type: none"> <li>Understand the goals of the agency and the underlying laws, rules and regulations from which regulations must be developed</li> </ul>	<ul style="list-style-type: none"> <li>Basic air quality management</li> <li>Clean Air Act Overview</li> <li>Applicable federal/state/local laws and regulations and guidance (for your specific area)</li> <li>Basic rule development class</li> </ul>
Ability to differentiate between the requirements for ambient standards and the requirements for emission standards	<ul style="list-style-type: none"> <li>Understand the reasons for the need to have both ambient standards as well as specific emission standards for various emission sources</li> </ul>	<ul style="list-style-type: none"> <li>Clean Air Act Overview</li> <li>Basics of emissions control</li> </ul>
Ability to identify goals for state regulations and federal SIP and other federal regulations	<ul style="list-style-type: none"> <li>Basic knowledge of underlying state laws or regulations that allow the development of state standards</li> <li>Basic knowledge of regulatory requirements that allow and require the adoption of federal standards</li> </ul>	<ul style="list-style-type: none"> <li>Regulatory planning class that differentiates the needs and differences for adhering to state requirements and for adhering to federal requirements</li> </ul>
Ability to identify which federal regulations must be adopted into the SIP	<ul style="list-style-type: none"> <li>Basic knowledge of the rule adoption procedures for incorporating federal regulations and requirements into state requirements</li> </ul>	<ul style="list-style-type: none"> <li>Basic federal rule development class for state and local programs</li> </ul>
Ability to review new simple federal regulations (e.g., new NSPS and NESHAP) and determine the need to incorporate the federal regulations into the state and local regulations	<ul style="list-style-type: none"> <li>Basic knowledge of which rules must be included in the state and local regulations and the state procedures for rule development</li> </ul>	<ul style="list-style-type: none"> <li>Basic state rule development process</li> </ul>
Ability to draft simple regulations and supporting documentation for incorporation of new state or federal rules into the state regulations	<ul style="list-style-type: none"> <li>Knowledge of regulation development and procedures for developing new regulations</li> </ul>	<ul style="list-style-type: none"> <li>Technical writing class</li> <li>Communication class (dealing with public), internal/external communication (customer service)</li> </ul>

## PLANNING AND REGULATION DEVELOPMENT

**LEVEL 2** – Intermediate/Advanced – 3 or more years of planning and regulation development experience; equivalent experience within regulatory agency; equivalent environmental consulting or industry experience.

SKILLS	KNOWLEDGE AND UNDERSTANDING	TRAINING NEEDS ASSOCIATED WITH SKILLS
Ability to recognize the need for a state or local regulation or ordinance based on air quality needs or Clean Air Act requirements	<ul style="list-style-type: none"> <li>• Up to date information about new developments in federal and state laws, regulations, and guidance pertaining to air quality management</li> <li>• Knowledge of emissions inventory information and control cost/benefit information pertinent to rule development</li> <li>• Knowledge of health effects and exposure to pollutants in the area of interest</li> </ul>	<ul style="list-style-type: none"> <li>• Timely training about new laws, rules, and guidance</li> <li>• Training about how to evaluate the costs and benefits of proposed regulations</li> <li>• Training about available information on emissions from various source categories and the impact on air quality and public health</li> </ul>
Ability to determine the permitting and compliance concepts of the federal, state and local general statutes, laws, rules and regulations	<ul style="list-style-type: none"> <li>• Understand and implement the planning goals of the agency</li> <li>• Understand the underlying laws, rules and regulations from which regulations must be developed</li> </ul>	<ul style="list-style-type: none"> <li>• Advanced rule development class</li> </ul>
Ability to determine whether new regulations must be developed as state-only regulations or federal SIP and other federal regulations	<ul style="list-style-type: none"> <li>• Knowledge of underlying state laws or regulations that allow the development of state standards</li> <li>• Knowledge of regulatory requirements that allow and required the adoption of federal standards</li> </ul>	<ul style="list-style-type: none"> <li>• Advanced regulatory planning class that differentiates the needs and differences for adhering to state requirements and for adhering to federal requirements</li> </ul>
Ability to determine which federal regulations must be adopted into the SIP	<ul style="list-style-type: none"> <li>• Knowledge of the rule adoption procedures for incorporating federal regulations</li> <li>• Knowledge of the guidance for demonstrating that state/local rules are equivalent to federal rules</li> </ul>	<ul style="list-style-type: none"> <li>• Advanced federal rule development process for state and local programs</li> </ul>
Ability to review new complex federal regulations (e.g., nonattainment regulation updates, CSAPR, etc.) and determine the need and approach to incorporate the federal regulations into the state and local regulations	<ul style="list-style-type: none"> <li>• Basic knowledge of which rules must be included in the state and local regulations and the state procedures for rule development</li> </ul>	<ul style="list-style-type: none"> <li>• Advanced federal rule development process for state and local programs</li> </ul>
Ability to draft complex regulations and supporting documentation for incorporation of new state or federal rules into the state regulations	<ul style="list-style-type: none"> <li>• Knowledge of regulation development and procedures for developing new regulations</li> </ul>	<ul style="list-style-type: none"> <li>• Technical writing class</li> <li>• Communication class (dealing with public), internal/external communication (customer service)</li> </ul>

## PLANNING AND REGULATION DEVELOPMENT

**LEVEL 2** – Intermediate/Advanced – 3 or more years of planning and regulation development experience; equivalent experience within regulatory agency; equivalent environmental consulting or industry experience.

SKILLS	KNOWLEDGE AND UNDERSTANDING	TRAINING NEEDS ASSOCIATED WITH SKILLS
Ability to develop presentations and present regulatory updates and changes to internal agency management, state regulatory approval commissions, and the general public at any public hearings	<ul style="list-style-type: none"> <li>• Advanced knowledge of the regulatory development process</li> </ul>	<ul style="list-style-type: none"> <li>• Advanced regulation development process</li> <li>• Communication class (dealing with public), internal/external communication (customer service)</li> </ul>
Ability (1) to instruct junior staff and (2) review regulatory development data for accuracy and validity for development of updated regulations	<ul style="list-style-type: none"> <li>• Knowledge to perform more advanced and complex oversight of the rule development process</li> </ul>	<ul style="list-style-type: none"> <li>• Advanced regulation development process</li> </ul>

## PERMIT WRITING

**LEVEL 1** – Beginner – New hire with scientific college degree, new hire with limited work experience.

SKILLS	KNOWLEDGE AND UNDERSTANDING	TRAINING NEEDS ASSOCIATED WITH SKILLS
Ability to determine types of emission sources that must be included in an air permit	<ul style="list-style-type: none"> <li>• Understanding of which emission sources require a permit and which are exempt from permitting or are considered insignificant sources</li> </ul>	<ul style="list-style-type: none"> <li>• Basic air quality management or air pollution control</li> <li>• State specific air quality regulations</li> <li>• Basic course for inspectors in order to understand how inspectors interpret permit requirements</li> </ul>
Ability to determine how pollutants are regulated	<ul style="list-style-type: none"> <li>• Knowledge of federal and state Regulated Pollutants, precursors and pollutants that may be regulated dually (for example methanol is a HAP and VOC)</li> </ul>	<ul style="list-style-type: none"> <li>• Title V Applicability</li> <li>• State air quality permitting</li> <li>• PSD/NSR Applicability</li> </ul>
Ability to determine the type of permit required by an applicant	<ul style="list-style-type: none"> <li>• Understand differences in permits                             <ul style="list-style-type: none"> <li>○ PSD</li> <li>○ NNSR</li> <li>○ Minor NSR</li> <li>○ State Construction (Minor NSR)</li> <li>○ Small or Area / Non-Title V</li> <li>○ Synthetic Minor / Non-Title V</li> <li>○ Title V</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• State air quality permitting (which includes a complete permit applicability session)</li> <li>• Introduction to PSD/NSR permitting</li> <li>• Introduction to Title V permitting</li> </ul>
Ability to utilize the CAA, state and local laws to review and interpret regulations for source applicability purposes	<ul style="list-style-type: none"> <li>• Knowledge of underlying laws that implement federal, state and local permitting.</li> <li>• Knowledge of regulatory requirements derived from various air quality rule:                             <ul style="list-style-type: none"> <li>○ SIP</li> <li>○ NSPS</li> <li>○ NESHAP</li> <li>○ PSD (basic applicability)</li> <li>○ NNSR (basic applicability)</li> <li>○ Title V/CAM</li> <li>○ State only (air toxics, odor)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• State specific air quality regulations</li> <li>• Introduction to Title V permitting</li> <li>• State air quality permitting</li> <li>• PSD permitting</li> </ul>

## PERMIT WRITING

**LEVEL 1** – Beginner – New hire with scientific college degree, new hire with limited work experience.

SKILLS	KNOWLEDGE AND UNDERSTANDING	TRAINING NEEDS ASSOCIATED WITH SKILLS
Ability to review emissions calculations for accuracy and validity of technical basis	<ul style="list-style-type: none"> <li>• Understanding of emissions calculations concepts and the ability to use data for development of potential emission calculations. For example:               <ul style="list-style-type: none"> <li>○ AP-42</li> <li>○ EPA’s Tanks Program</li> <li>○ EPA’s WATER9 Program</li> <li>○ Material Balance</li> <li>○ Source Testing Emissions Factors</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Emissions Estimation Techniques</li> <li>• Combustion Sources</li> <li>• VOC Sources</li> <li>• PM Sources</li> </ul>
Ability to draft minor source construction permits, non -Title V operating permits and simple Title V permits from applicable rules	<ul style="list-style-type: none"> <li>• Knowledge to draft enforceable permit conditions which incorporate               <ul style="list-style-type: none"> <li>○ Applicable federal and state regulations</li> <li>○ Applicable emission limits/standards</li> <li>○ Applicable operating limits/standards</li> <li>○ Applicable testing requirements</li> <li>○ Applicable monitoring</li> <li>○ Applicable recordkeeping</li> <li>○ Applicable state or local specific general conditions reporting</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Introduction to Permit Writing</li> </ul>
Ability to review control technology performance relative to regulatory specifications	<ul style="list-style-type: none"> <li>• Gaseous air control device operations and key elements affecting performance</li> <li>• Particulate control device operations and key elements affecting performance</li> <li>• Work practice standards for air emissions control and key elements affecting effectiveness</li> </ul>	<ul style="list-style-type: none"> <li>• Pollution Control Classes</li> </ul>
Ability to review AQ dispersion modeling input data for accuracy and interpret AQ modeling results	<ul style="list-style-type: none"> <li>• Understand the need for accurate input data and apply the results for permitting actions</li> </ul>	<ul style="list-style-type: none"> <li>• Introduction to Dispersion Modeling</li> </ul>

## PERMIT WRITING

**LEVEL 1** – Beginner – New hire with scientific college degree, new hire with limited work experience.

<b>SKILLS</b>	<b>KNOWLEDGE AND UNDERSTANDING</b>	<b>TRAINING NEEDS ASSOCIATED WITH SKILLS</b>
Ability to develop technical memoranda documenting permit application review and communicate with public, facilities, etc.	<ul style="list-style-type: none"><li>• How to identify key assumptions underlying permit conditions, write a concise memo</li></ul>	<ul style="list-style-type: none"><li>• State specific air quality permitting</li><li>• State specific air quality regulations</li><li>• Technical writing class</li><li>• Communication class (dealing with public), internal/external communication (customer service)</li></ul>

## PERMIT WRITING

**LEVEL 2** – Intermediate/Advanced – 3 or more years of permit writing or inspection experience; equivalent experience within regulatory agency; equivalent environmental consulting or industry experience.

SKILLS	KNOWLEDGE AND UNDERSTANDING	TRAINING NEEDS ASSOCIATED WITH SKILLS
Ability to determine the type of permit	<ul style="list-style-type: none"> <li>• Understand differences in permits               <ul style="list-style-type: none"> <li>○ PSD</li> <li>○ NNSR</li> <li>○ Minor NSR</li> <li>○ State Construction (Minor NSR)</li> <li>○ Small or Area / Non-Title V</li> <li>○ Synthetic Minor / Non-Title V</li> <li>○ Title V</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Advanced state air quality permitting</li> </ul>
Ability to review and interpret more complex regulations for source applicability purposes	<ul style="list-style-type: none"> <li>• Detailed understanding of the following regulations               <ul style="list-style-type: none"> <li>○ SIP</li> <li>○ NSPS</li> <li>○ NESHAP</li> <li>○ CAM</li> <li>○ PSD</li> <li>○ NNSR</li> <li>○ Tailoring Rule</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Advanced Classes on:               <ul style="list-style-type: none"> <li>○ PSD and Tailoring Rule</li> <li>○ NSR NAA</li> <li>○ CAM</li> </ul> </li> <li>• Industry specific NESHAPs</li> <li>• Industry specific NSPS</li> </ul>
Ability (1) to instruct junior staff and (2) review emissions calculations for accuracy and validity of technical basis for more complex emission calculations	<ul style="list-style-type: none"> <li>• Knowledge to perform more advanced and complex calculations associated with PSD, NSR NAA, NESHAP and NSPS</li> </ul>	<ul style="list-style-type: none"> <li>• Advanced Classes on:               <ul style="list-style-type: none"> <li>○ PSD and Tailoring Rule</li> <li>○ NSR NAA</li> </ul> </li> <li>• Industry specific NESHAPs</li> <li>• Industry specific NSPS</li> </ul>
Ability to conduct advanced technical analyses as required in the PSD regulations and NSR NAA regulations	<ul style="list-style-type: none"> <li>• Understand and conduct top-down BACT analysis</li> <li>• Understand and conduct a PSD netting analysis</li> <li>• Understand and conduct an emissions offset analysis</li> </ul>	<ul style="list-style-type: none"> <li>• Advanced Classes on:               <ul style="list-style-type: none"> <li>○ PSD and Tailoring Rule</li> <li>○ NSR NAA</li> </ul> </li> </ul>

## PERMIT WRITING

**LEVEL 2** – Intermediate/Advanced – 3 or more years of permit writing or inspection experience; equivalent experience within regulatory agency; equivalent environmental consulting or industry experience.

SKILLS	KNOWLEDGE AND UNDERSTANDING	TRAINING NEEDS ASSOCIATED WITH SKILLS
Ability to draft major source (PSD, NSR/NAA) construction permits and complex Title V permits from applicable rules	<ul style="list-style-type: none"> <li>• Knowledge to draft enforceable permit conditions which Incorporate               <ul style="list-style-type: none"> <li>○ Applicable federal and state regulations.</li> <li>○ Applicable emission limits/standards</li> <li>○ Applicable operating limits/standards</li> <li>○ Applicable testing requirements</li> <li>○ Applicable monitoring</li> <li>○ Applicable recordkeeping</li> <li>○ Applicable state or local specific general conditions reporting</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Advanced Permit Writing</li> </ul>
Ability to review control technology performance relative to regulatory specifications	<ul style="list-style-type: none"> <li>• Detailed understanding of specific gaseous air control device operations and key elements affecting performance</li> <li>• Detailed understanding of specific particulate control device operations and key elements affecting performance</li> </ul>	<ul style="list-style-type: none"> <li>• Advanced Classes on:               <ul style="list-style-type: none"> <li>○ Specific Industries</li> <li>○ Specific Control Devices</li> </ul> </li> </ul>
Ability to interpret AQ modeling results	<ul style="list-style-type: none"> <li>• Detailed understanding of the modeling results and use for permitting actions</li> </ul>	<ul style="list-style-type: none"> <li>• Advanced Permitting Class</li> </ul>
Ability to evaluate and interpret other air quality rules	<ul style="list-style-type: none"> <li>• Basic understanding of Risk Management Program requirements</li> <li>• Basic understanding of Ozone Depleting Substance requirements</li> <li>• Basic understanding of Regional Haze Program requirements</li> </ul>	<ul style="list-style-type: none"> <li>• Regulation specific courses</li> <li>• Part 68 RMP Rule</li> <li>• Part 82 ODS Rule</li> <li>• Regional Haze Rule</li> </ul>

## INSPECTION AND ENFORCEMENT

**LEVEL 1** – Beginner – New hire with scientific college degree, new hire with limited work experience.

SKILLS	KNOWLEDGE AND UNDERSTANDING	TRAINING NEEDS ASSOCIATED WITH SKILLS
Ability to determine types of emission sources that must be included in an air permit and those that can be excluded from permitting	<ul style="list-style-type: none"> <li>• Understanding of which emission sources require a permit and which are exempt from permitting or are considered insignificant source</li> </ul>	<ul style="list-style-type: none"> <li>• Basic air quality class</li> <li>• State specific air quality regulations</li> <li>• Technical writing</li> </ul>
Ability to determine the types of permits needed for emission sources at a manufacturing site	<ul style="list-style-type: none"> <li>• Understand differences in permits                             <ul style="list-style-type: none"> <li>○ PSD</li> <li>○ NSR NAA</li> <li>○ Minor NSR</li> <li>○ State Construction (Minor NSR)</li> <li>○ Small or Area / Non-Title V</li> <li>○ Synthetic Minor / Non-Title V</li> <li>○ Title V</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• State air quality permitting (which includes a complete permit applicability session)</li> <li>• Introduction to PSD/NSR permitting</li> <li>• Introduction to Title V Permitting</li> </ul>
Ability to implement safety procedures while conducting an inspection	Understand: <ul style="list-style-type: none"> <li>• the need for wearing safety equipment (hat, glasses, shoes, etc.)</li> <li>• the requirement to follow plant safety procedures</li> <li>• the hazards associated with industrial process operations</li> </ul>	<ul style="list-style-type: none"> <li>• Safety procedures for conducting an inspection (including use of PPE)</li> </ul>
Ability to inspect simple air emission sources and control devices at non-Title V facilities and simple Title V facilities for proper operation	<ul style="list-style-type: none"> <li>• Understand and be knowledgeable of the operation of emission sources and control devices</li> </ul>	<ul style="list-style-type: none"> <li>• Basic compliance inspection</li> <li>• Basic inspector training</li> <li>• Combustion evaluation</li> <li>• Classes on different industrial sources (such as CARB courses)</li> <li>• Control device classes</li> </ul>
Ability to interpret permit conditions while performing a plant inspection and be able to review plant operating data to determine compliance	<ul style="list-style-type: none"> <li>• Understanding the underlying permit conditions and the information required for compliance</li> </ul>	<ul style="list-style-type: none"> <li>• Method 9 and 22 training</li> <li>• Emissions estimation techniques</li> <li>• Basic regulatory assessment</li> <li>• VOC Sources</li> <li>• PM Sources</li> </ul>

## INSPECTION AND ENFORCEMENT

**LEVEL 1** – Beginner – New hire with scientific college degree, new hire with limited work experience.

SKILLS	KNOWLEDGE AND UNDERSTANDING	TRAINING NEEDS ASSOCIATED WITH SKILLS
Ability to review compliance reports, test reports, emission inventories, monitoring data, notifications, etc.	<ul style="list-style-type: none"> <li>• Understanding the required information that is expected in the submittal of any report, including have knowledge of the required information and be able to determine completeness and accuracy of each report</li> </ul>	<ul style="list-style-type: none"> <li>• Basic permitting</li> <li>• Basic compliance assessment</li> <li>• Basic regulatory assessment</li> </ul>
<p>Ability to review plant operating data and plant submitted data to determine permit compliance</p> <p>Ability to develop inspection and compliance assessment reports</p>	<ul style="list-style-type: none"> <li>• Knowledge to draft agency inspection reports which document                             <ul style="list-style-type: none"> <li>○ Nature of operations of inspected facility</li> <li>○ Emission sources observed</li> <li>○ Assessment of inspected emission sources (compliance/non-compliance)</li> </ul> </li> <li>• Knowledge to draft agency reports which document                             <ul style="list-style-type: none"> <li>○ Compliance assessment of each submitted report in regards to the permit and any other agency requirements</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Basic permitting</li> <li>• Basic compliance assessment</li> <li>• Basic regulatory assessment</li> </ul>
Ability to determine non-complying facilities and communicate such findings to their supervisors	<ul style="list-style-type: none"> <li>• Basic knowledge of permit and underlying regulations that must be evaluated to determine facility compliance</li> <li>• Basic knowledge of enforcement procedures for non-complying emission sources</li> <li>• Knowledge to document in agency format non-complying issues in accordance with agency procedures</li> </ul>	<ul style="list-style-type: none"> <li>• Basic permitting</li> <li>• Basic compliance assessment</li> <li>• Basic regulatory assessment</li> <li>• Basic enforcement assessment and procedures</li> </ul>
Ability to review test protocols and observe compliance test procedures for simple processes	<ul style="list-style-type: none"> <li>• Knowledge of agency procedures and source test methods for compliance testing</li> </ul>	<ul style="list-style-type: none"> <li>• Introductory source testing</li> </ul>
Ability to meet federal/state/local requirements for maintaining databases concerning inspections and compliance status	<ul style="list-style-type: none"> <li>• Knowledge of federal/state/local requirements for data reporting and maintenance</li> </ul>	<ul style="list-style-type: none"> <li>• Training on federal/state/local requirements for data reporting and maintenance</li> </ul>

## INSPECTION AND ENFORCEMENT

**LEVEL 2** – Intermediate/Advanced – 3 or more years of inspection or permit writing experience; equivalent experience within regulatory agency; equivalent environmental consulting or industry experience.

SKILLS	KNOWLEDGE AND UNDERSTANDING	TRAINING NEEDS ASSOCIATED WITH SKILLS
Ability to determine types of emission sources that must be included in an air permit and those that can be excluded from permitting at a complex manufacturing facility (Title V and Major PSD or NSR-NAA site)	<ul style="list-style-type: none"> <li>• Understanding of which emission sources require a permit and which are exempt from permitting or are considered insignificant sources</li> </ul>	<ul style="list-style-type: none"> <li>• State air quality permitting</li> <li>• Federal and state/local specific permitting regulations</li> </ul>
Ability to determine the types of permits needed for emission sources at a complex manufacturing complex (Title V and Major PSD or NSR-NAA site)	<ul style="list-style-type: none"> <li>• Understand differences in permits                             <ul style="list-style-type: none"> <li>○ PSD</li> <li>○ NNSR</li> <li>○ Minor NSR</li> <li>○ State Construction (Minor NSR)</li> <li>○ Small or Area / Non-Title V</li> <li>○ Synthetic Minor / Non-Title V</li> <li>○ Title V</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• State/local permitting (which includes a complete permit applicability session)</li> <li>• Advanced PSD/NSR permitting</li> <li>• Advanced Title V permitting</li> </ul>
Ability to implement safety procedures while conducting an inspection	Understand: <ul style="list-style-type: none"> <li>• the need for wearing safety equipment (hat, glasses, shoes, etc.)</li> <li>• the need for following plant safety procedures</li> <li>• the hazards associated with industrial process operations</li> </ul>	Safety procedures for conducting an inspection (including use of PPE)
Ability to inspect complex air emission sources and control devices at Title V facilities for proper operation	Understand and be knowledgeable of the operation of emission sources and control devices	<ul style="list-style-type: none"> <li>• Advanced compliance inspection</li> <li>• Advanced inspector training</li> <li>• Combustion evaluation</li> <li>• Classes on different industrial sources (such as CARB courses)</li> <li>• Control device classes</li> </ul>
Ability to interpret complex permit conditions while performing a plant inspection and be able to review plant operating data to determine compliance	<ul style="list-style-type: none"> <li>• Understanding the underlying permit conditions and the information required for compliance</li> <li>• Understanding of complex federal regulations – NESHAP, NSPS, CAM , PSD, NSR-NAA</li> </ul>	<ul style="list-style-type: none"> <li>• Method 9 and 22 training</li> <li>• Emissions estimation techniques</li> <li>• Advanced regulatory assessment</li> <li>• Advanced compliance inspection</li> <li>• Advanced inspector training</li> </ul>

## INSPECTION AND ENFORCEMENT

**LEVEL 2** – Intermediate/Advanced – 3 or more years of inspection or permit writing experience; equivalent experience within regulatory agency; equivalent environmental consulting or industry experience.

SKILLS	KNOWLEDGE AND UNDERSTANDING	TRAINING NEEDS ASSOCIATED WITH SKILLS
Ability to review compliance reports, test reports, emission inventories, monitoring data, notifications, etc.	<ul style="list-style-type: none"> <li>• Understanding the required information that is expected in the submittal of any report. Be knowledgeable of the required information and be able to determine completeness and accuracy of each report</li> </ul>	<ul style="list-style-type: none"> <li>• Advanced regulatory assessment</li> <li>• Advanced compliance inspection</li> </ul>
<p>Ability to review plant operating data and plant submitted data and determine permit compliance</p> <p>Ability to develop inspection and compliance assessment reports for complex facilities (Title V sources)</p>	<ul style="list-style-type: none"> <li>• Knowledge to draft agency inspection reports which document                             <ul style="list-style-type: none"> <li>○ Nature of operations of inspected facility</li> <li>○ Emission sources observed</li> <li>○ Assessment of an inspected emission sources (compliance/non-compliance)</li> </ul> </li> <li>• Knowledge to draft agency reports which document                             <ul style="list-style-type: none"> <li>○ Compliance assessment of each submitted report in regards to the permit and any other agency requirements</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Advanced regulatory assessment</li> <li>• Advanced compliance inspection</li> </ul>
Ability to determine non-complying facilities and develop enforcement reports following agency procedures for complex industrial operations (Title V sources)	<ul style="list-style-type: none"> <li>• Knowledge of permit and underlying regulations that must be evaluated to determine facility compliance</li> <li>• Knowledge of enforcement procedures for non-complying emission sources</li> <li>• Knowledge to document in agency format non-complying issues in accordance with agency procedures</li> </ul>	<ul style="list-style-type: none"> <li>• Advanced regulatory assessment</li> <li>• Advanced compliance inspection</li> <li>• Advanced enforcement assessment and procedures</li> <li>• Agency enforcement training</li> </ul>
Ability to evaluate complex sources for applicability to complex regulations in order to determine applicability to and compliance with such regulations	<ul style="list-style-type: none"> <li>• Knowledge to perform more advanced and complex compliance regulatory assessment and calculations associated with PSD, NSR NAA, NESHAP and NSPS</li> </ul>	<ul style="list-style-type: none"> <li>• Advanced classes on:                             <ul style="list-style-type: none"> <li>○ PSD and Tailoring Rule</li> <li>○ NSR-NAA</li> </ul> </li> <li>• Industry specific NESHAPs</li> <li>• Industry specific NSPS</li> </ul>

## INSPECTION AND ENFORCEMENT

**LEVEL 2** – Intermediate/Advanced – 3 or more years of inspection or permit writing experience; equivalent experience within regulatory agency; equivalent environmental consulting or industry experience.

SKILLS	KNOWLEDGE AND UNDERSTANDING	TRAINING NEEDS ASSOCIATED WITH SKILLS
Ability to review test protocols and observe compliance test procedures for complex processes	<ul style="list-style-type: none"> <li>• Knowledge of agency procedures and understanding of source test methods for compliance testing</li> </ul>	<ul style="list-style-type: none"> <li>• Advanced source testing</li> <li>• Test methods applicability and use</li> </ul>
Ability to review CEMS/COMS/CPMS data and determine compliance	<ul style="list-style-type: none"> <li>• Knowledge of regulations and understanding of the CEMS/COMS/CPMS units to assess compliance with regulations</li> </ul>	<ul style="list-style-type: none"> <li>• Advanced source testing</li> <li>• CEMS/COMS/CPMS units operation training</li> </ul>
Ability to evaluate and interpret other air quality rules for site inspection purposes	<ul style="list-style-type: none"> <li>• Basic understanding of Risk Management Program requirements</li> <li>• Basic understanding of Ozone Depleting Substance requirements</li> <li>• Basic understanding of Regional Haze Program requirements</li> </ul>	<ul style="list-style-type: none"> <li>• Regulation specific courses</li> </ul>
Ability to instruct junior staff on inspection and enforcement expectations and review junior staff compliance and enforcement reports	<ul style="list-style-type: none"> <li>• Knowledge to provide guidance for staff instruction and to perform overview of compliance and enforcement reports</li> </ul>	<ul style="list-style-type: none"> <li>• Advanced regulatory assessment</li> <li>• Advanced compliance inspection</li> </ul>

## AIR TOXICS AND HAZARDOUS AIR POLLUTANTS

**LEVEL 1** – Beginner – New hire with scientific college degree, new hire with limited work experience.

SKILLS	KNOWLEDGE AND UNDERSTANDING	TRAINING NEEDS ASSOCIATED WITH SKILLS
Ability to interpret state-only air toxic rules (if applicable in your state)	<ul style="list-style-type: none"> <li>• Understanding of:                             <ul style="list-style-type: none"> <li>○ rule applicability requirements</li> <li>○ which emission sources require a permit</li> <li>○ which emission sources are exempt from permitting or from the air toxics requirements</li> <li>○ process equipment</li> <li>○ control technologies</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• State air permitting (for your specific state)</li> <li>• State specific regulations (for your specific state)</li> <li>• Emission control equipment</li> </ul>
Ability to understand the basic concepts underlying risk assessment, risk management, and risk communication	<ul style="list-style-type: none"> <li>• General understanding of environmental health, information used in developing health benchmarks, and general assumptions and limitations with those</li> </ul>	<ul style="list-style-type: none"> <li>• Introduction to risk assessment, risk management, and risk communication</li> </ul>
Ability to determine how and which pollutants are regulated	<ul style="list-style-type: none"> <li>• Knowledge of the differences in the state-only air toxics pollutants versus the federal HAP pollutants</li> </ul>	<ul style="list-style-type: none"> <li>• State-only air toxics pollutant requirement</li> <li>• NESHAP requirements</li> </ul>
Ability to determine how state-only air toxics are regulated vs. the federal HAPs	<ul style="list-style-type: none"> <li>• Knowledge of the differences in the state-only air toxics requirements versus any federal HAP requirements, such as 112(d), (g) and (j) and 122 (f) and (k)</li> </ul>	<ul style="list-style-type: none"> <li>• State specific regulations (for your specific state)</li> <li>• NESHAP regulation overview</li> <li>• Industry specific NESHAPs</li> </ul>
Ability to determine the applicable rules for various sources of HAPs	<ul style="list-style-type: none"> <li>• Understand the federal NESHAP requirements to be knowledgeable of:                             <ul style="list-style-type: none"> <li>○ the categorical standards that have been developed for major and area sources</li> <li>○ the categorical standards that are under development for major and area sources</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• NESHAP regulation overview</li> <li>• 40CFR63 General Provisions for NESHAPS</li> <li>• Industry specific NESHAPs</li> </ul>
Ability to review HAP and TAP emissions calculations for accuracy and validity of technical basis	<ul style="list-style-type: none"> <li>• Understanding of emissions calculations concepts and the ability to use data for development of potential and actual emission calculations.: For example:                             <ul style="list-style-type: none"> <li>○ AP-42</li> <li>○ EPA’s Tanks Program</li> <li>○ Material Balance</li> <li>○ Source Testing Emissions Factors</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Emissions Estimation Techniques</li> <li>• Combustion Sources</li> <li>• HAP sources</li> <li>• VOC Sources</li> <li>• PM Sources</li> </ul>

## AIR TOXICS AND HAZARDOUS AIR POLLUTANTS

**LEVEL 1** – Beginner – New hire with scientific college degree, new hire with limited work experience.

SKILLS	KNOWLEDGE AND UNDERSTANDING	TRAINING NEEDS ASSOCIATED WITH SKILLS
Ability to review control technology performance relative to HAP regulatory specifications	<ul style="list-style-type: none"> <li>• Gaseous air control device operations and key elements affecting performance</li> <li>• Particulate control device operations and key elements affecting performance</li> <li>• Work practice standards for air emissions control and key elements affecting effectiveness</li> </ul>	<ul style="list-style-type: none"> <li>• Pollution control classes</li> </ul>
Ability to review simple state-only TAP AQ dispersion modeling input data for accuracy and interpret AQ modeling results	<ul style="list-style-type: none"> <li>• Understand the need for accurate input data and apply the results for permitting actions</li> <li>• Understanding of state-only risk determinations based on dispersion modeling when no state or national emission standards are applicable</li> </ul>	<ul style="list-style-type: none"> <li>• Introduction to Dispersion Modeling</li> <li>• State specific risk determinations</li> </ul>
Ability to interpret basic information for HAP risk data	<ul style="list-style-type: none"> <li>• Understand how risk data is utilized under the current regulatory framework</li> <li>• Understand how risk data is utilized for unregulated HAPs</li> </ul>	<ul style="list-style-type: none"> <li>• Residual risk concepts</li> <li>• State specific risk determinations</li> </ul>
<p>Ability to develop technical memoranda documenting HAP regulatory information and communicate with public, facilities, etc.</p> <p>Ability to communicate technical information to a wide variety of audiences in a wide variety of situations</p>	<ul style="list-style-type: none"> <li>• Knowledge to write a concise memo</li> <li>• Ability to prepare presentation materials</li> <li>• Ability to present information to internal and external audiences</li> </ul>	<ul style="list-style-type: none"> <li>• Technical writing class</li> <li>• Communication class (dealing with public), internal/external communication (customer service)</li> <li>• Public speaking training</li> </ul>
Ability to understand national reports on risks from toxic air pollutants, such as EPA's National Air Toxics Assessment (NATA)	<ul style="list-style-type: none"> <li>• Knowledge of EPA's past and current NATA reports and how they pertain to the area of interest (state/locality)</li> <li>• Knowledge of other information that the state or locality may have concerning toxics risks in the community</li> <li>• Knowledge of local interest groups and their concerns regarding the reports</li> <li>• Knowledge of the state or local agency's position on the reports</li> </ul>	<ul style="list-style-type: none"> <li>• Training on past and current NATA reports and other information concerning risks and exposure in the state or locality or region of concern</li> </ul>

## AIR TOXICS AND HAZARDOUS AIR POLLUTANTS

**LEVEL 2** – Intermediate/Advanced – 3 or more years of toxics experience; equivalent experience within regulatory agency; equivalent environmental consulting or industry experience

SKILLS	KNOWLEDGE AND UNDERSTANDING	TRAINING NEEDS ASSOCIATED WITH SKILLS
Ability to provide senior regulatory background guidance on state-only air toxic rules (if applicable in your state)	<ul style="list-style-type: none"> <li>• Thorough understanding of:                             <ul style="list-style-type: none"> <li>○ rule applicability requirements</li> <li>○ which emission sources require a permit</li> <li>○ which emission sources are exempt from permitting or from the air toxics requirements</li> <li>○ process equipment used in industrial process like condensers, reactors, fans, pumps, process heaters, boilers, evaporators, spray nozzles, etc</li> <li>○ Control technology</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• State air permitting (for your specific state)</li> <li>• State specific regulations (for your specific state)</li> <li>• Emission Control Equipment</li> </ul>
Ability to understand the concepts underlying risk assessment, risk management, and risk communication	<ul style="list-style-type: none"> <li>• Understanding the application of risk assessment principles to specific situations, assumptions, etc.</li> </ul>	<ul style="list-style-type: none"> <li>• Advanced training in risk assessment, management, and communication</li> </ul>
Ability to determine the applicable rules for complex sources of HAPs	<ul style="list-style-type: none"> <li>• Understand the federal NESHAP requirements to be knowledgeable of and be a regulatory resource for:                             <ul style="list-style-type: none"> <li>○ the categorical standards that have been developed for major and area sources</li> <li>○ the categorical standards that are under development for major and area sources</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• NESHAP regulation overview</li> <li>• Industry specific NESHAPs</li> </ul>
Ability (1) to instruct junior staff and (2) review regulatory determinations for accuracy and validity of technical basis for more complex emission sources	<ul style="list-style-type: none"> <li>• Knowledge to mentor junior staff</li> <li>• Knowledge to perform more advanced and regulatory determinations associated with complex NESHAP regulations</li> </ul>	<ul style="list-style-type: none"> <li>• Advanced Classes on NESHAPs</li> <li>• Industry specific NESHAPs</li> <li>• Industry specific NSPS [112(d)]</li> </ul>
Ability to review complex HAP and TAP emissions calculations for accuracy and validity of technical basis	<ul style="list-style-type: none"> <li>• Understanding of emissions calculations concepts and the ability to use data for development of potential and actual emission calculations.: For example:                             <ul style="list-style-type: none"> <li>○ AP-42</li> <li>○ EPA’s Tanks Program</li> <li>○ Material Balance</li> <li>○ Source Testing Emissions Factors</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Emissions Estimation Techniques</li> <li>• Combustion Sources</li> <li>• HAP sources</li> <li>• VOC Sources</li> <li>• PM Sources</li> </ul>

## AIR TOXICS AND HAZARDOUS AIR POLLUTANTS

**LEVEL 2** – Intermediate/Advanced – 3 or more years of toxics experience; equivalent experience within regulatory agency; equivalent environmental consulting or industry experience

SKILLS	KNOWLEDGE AND UNDERSTANDING	TRAINING NEEDS ASSOCIATED WITH SKILLS
Ability to review control technology performance relative to HAP regulatory specifications	<ul style="list-style-type: none"> <li>• Gaseous air control device operations and key elements affecting performance</li> <li>• Particulate control device operations and key elements affecting performance</li> <li>• Work practice standards for air emissions control and key elements affecting effectiveness</li> </ul>	<ul style="list-style-type: none"> <li>• Pollution Control Classes</li> </ul>
Ability to review complex state-only TAP AQ dispersion modeling input data for accuracy and interpret AQ modeling results	<ul style="list-style-type: none"> <li>• Understand the need for accurate input data and apply the results for permitting actions</li> </ul>	<ul style="list-style-type: none"> <li>• Intermediate Dispersion Modeling</li> </ul>
Ability to interpret HAP risk data and understand that basis and data used for conducting a residual risk analysis	<ul style="list-style-type: none"> <li>• Understand how risk data is utilized under the current regulatory framework</li> <li>• Understand the residual risk regulatory review procedures and interpret results</li> </ul>	<ul style="list-style-type: none"> <li>• Advanced Residual risk concepts</li> </ul>
Ability to develop technical memoranda documenting HAP regulatory information and communicate with public, facilities, etc.	<ul style="list-style-type: none"> <li>• Knowledge to identify key assumptions within a rule and write a concise memo</li> </ul>	<ul style="list-style-type: none"> <li>• Technical writing class</li> <li>• Communication class (dealing with public), internal/external communication (customer service)</li> </ul>
Ability to evaluate and interpret other air quality rules that may have an effect on TAPs and HAPs	<ul style="list-style-type: none"> <li>• Basic understanding of Risk Management Program requirements</li> <li>• Basic understanding of Ozone Depleting Substance requirements</li> <li>• Basic understanding of Regional Haze Program requirements</li> </ul>	<ul style="list-style-type: none"> <li>• Regulation specific courses</li> </ul>

## MOBILE SOURCES

<b>SKILLS</b>	<b>KNOWLEDGE AND UNDERSTANDING</b>	<b>TRAINING NEEDS ASSOCIATED WITH SKILLS</b>
Ability to write and review competitive grant applications for low emitting mobile source engines	<ul style="list-style-type: none"> <li>• Understand and have knowledge of the low emitting mobile source process</li> <li>• Understand and knowledge of mobile sources to recommend grant approval</li> </ul>	<ul style="list-style-type: none"> <li>• Understanding mobile source engines</li> <li>• Calculating mobile source emissions using MOVES Model and other approved models</li> </ul>
Ability to determine the compliance requirements for mobile sources with regard to federal and state requirements	<ul style="list-style-type: none"> <li>• Understand the regulations and work with the state planning and compliance sections on developing and implementing any required regulations</li> </ul>	<ul style="list-style-type: none"> <li>• Federal regulations for mobile sources</li> <li>• Mobile source affects on attainment of NAAQS</li> </ul>
Ability to review, determine and implement the state air quality requirements for the I/M and OBD programs	<ul style="list-style-type: none"> <li>• Understand the regulatory requirements and implement these required programs within the required areas of the state</li> </ul>	<ul style="list-style-type: none"> <li>• Training on I/M and OBD</li> </ul>
Ability to develop and implement calculation procedures for estimating mobile source emission within a given area	<ul style="list-style-type: none"> <li>• Knowledge of references and procedures for developing mobile source emissions</li> </ul>	<ul style="list-style-type: none"> <li>• Calculating mobile source emissions (MOVES and other EPA models)</li> </ul>
Ability to interpret the transportation conformity requirements from the CAA as required in each state	<ul style="list-style-type: none"> <li>• Knowledge of the requirements so as to implement address the conformity requirements</li> </ul>	<ul style="list-style-type: none"> <li>• Federal transportation conformity and state consultation process</li> </ul>

## CLIMATE CHANGE

**LEVEL 1** – Beginner – New hire with scientific college degree, new hire with limited work experience.

SKILLS	KNOWLEDGE AND UNDERSTANDING	TRAINING NEEDS ASSOCIATED WITH SKILLS
<p>Ability to concisely summarize key concepts of climate change science and their connection to voluntary and regulatory GHG mitigation programs</p>	<ul style="list-style-type: none"> <li>• Carbon cycle and potential relationship between increase atmospheric CO2 concentration and temperature, as well as the relationship between climate change and air quality and public health</li> <li>• Main greenhouse gases and primary emission sources</li> <li>• Global warming potential of main greenhouse gases</li> <li>• Key features of the Kyoto Protocol</li> <li>• Key features of carbon emissions trading</li> <li>• Key climate change impacts on the U.S. and the state/local/regional area of concern</li> </ul>	<ul style="list-style-type: none"> <li>• Basic climate change science</li> <li>• Basic climate change impacts</li> <li>• Basic climate change regulatory framework</li> <li>• Training regarding specific mitigation and/or adaptation measures appropriate to the state/locality/region of concern</li> </ul>
<p>Ability to review GHG emissions calculations for validity and accuracy of technical basis</p>	<ul style="list-style-type: none"> <li>• GHG Protocol established by WRI/WBCSD</li> <li>• Sector protocols and data monitoring requirements specified under Mandatory Reporting Rule</li> <li>• GHG inventory protocols and procedures specified under The Climate Registry</li> <li>• GHG Inventory verification (ISO 14064 Part 3)</li> <li>• WebFIRE and AP-42 and other emissions factors</li> </ul>	<ul style="list-style-type: none"> <li>• GHG inventorying and reporting</li> <li>• Mandatory Reporting Rule</li> <li>• GHG Emissions Inventory Tools and Methods</li> <li>• EPA/state/local GHG inventory tools and guidance</li> </ul>

## CLIMATE CHANGE

**LEVEL 2** – Intermediate/Advanced – 3 or more years of climate change experience; equivalent experience within regulatory agency; equivalent environmental consulting or industry experience.

SKILLS	KNOWLEDGE AND UNDERSTANDING	TRAINING NEEDS ASSOCIATED WITH SKILLS
Ability to review and interpret PSD regulations for applicability to GHG emissions	<ul style="list-style-type: none"> <li>• Regulatory requirements derived from the EPA Tailoring Rule- including GHG applicability analysis, NSR impact on non-GHG pollutants, GHG BACT requirements, and PSD requirements for Biomass</li> </ul>	<ul style="list-style-type: none"> <li>• Advanced Class on PSD and Tailoring Rule</li> </ul>
Ability to review and interpret Title V regulations for applicability to GHG emissions	<ul style="list-style-type: none"> <li>• Regulatory requirements derived from the EPA Tailoring Rule – including GHG applicability and requirements for inclusion in Title V permit</li> </ul>	<ul style="list-style-type: none"> <li>• Advanced Class on PSD and Tailoring Rule</li> </ul>
Ability to review a top-down BACT analysis for GHG	<ul style="list-style-type: none"> <li>• Energy efficiency measures for GHG reduction and factors affecting performance</li> <li>• Fuel switching options for GHG reduction and factors affecting performance</li> <li>• Carbon capture/storage technology and factors affecting performance</li> <li>• Potential use of Energy Management Systems (Energy Star EnMS, ISO 50001) as BACT work practice requirement</li> </ul>	<ul style="list-style-type: none"> <li>• Advanced Class on PSD and Tailoring Rule</li> <li>• Energy efficiency</li> <li>• Control techniques for CO<sub>2</sub>e</li> <li>• Life cycle analysis</li> </ul>
Ability to understand proposed and final EPA New Source Performance Standards (NSPS) intended to reduce GHG emissions	<ul style="list-style-type: none"> <li>• Knowledge of proposed and final NSPS regulations, including background information found in preambles to the proposed and final rules</li> </ul>	<ul style="list-style-type: none"> <li>• Training on final requirements and the basis for the rules</li> <li>• Self study concerning the applicability of the rules in the state or locality of concern</li> </ul>
Ability to identify GHG emissions potential associated with various types of fuel combustion	<ul style="list-style-type: none"> <li>• Knowledge of combustion course operations and factors impacting GHG emissions</li> <li>• Carbon potential of various petroleum fuels</li> <li>• Carbon potential of biomass emissions</li> </ul>	<ul style="list-style-type: none"> <li>• Combustion Sources</li> <li>• Life cycle analysis</li> </ul>