

**Air and Soil Gas Sample Collection and Analysis:  
How to Collect Relevant and Representative Data  
LSP Course #: 1476  
4.0 Technical (non-DEP) Credits**

**COURSE DESCRIPTION:**

Inhalation exposure from air and vapors is one of the primary exposure pathways at hazardous waste sites. Sample collection in passivated canisters and analysis by gas chromatography-mass spectrometry (GC-MS) is the most routinely-used and industry-accepted method for evaluating the risk posed by volatile organic compounds.

After completing the course, participants will:

- Have an understanding of the regulations and guidance that drive the collection and analysis of air and vapor samples, applicable to vapor intrusion, and general air quality assessments
- Have a working understanding of analytical methods and how to collect samples with the various media used
- Know the scope and limits of the analyses
- Be able to specify analyses and deliverables best suited to end-use requirements
- Be able to design and execute a sampling event for maximum sample integrity and appropriate data use
- Be able to perform a preliminary data usability review and be able to interpret QA audits

This course will be delivered in one four-hour session. Resumes for the two instructors are provided below.

**TRAINING MATERIALS AND APPROACH**

Each participant will receive a training manual that will include all materials for the course. The pace of the course will ensure that all topics in the manual are covered in the four hours and that there is ample time for questions and answers, and to encourage discussions by all participants.

## **COURSE SCHEDULE:**

### **1.0 Introduction (10 min)**

- 1.1 Synopsis of course objectives
- 1.2 Importance of inhalation as an exposure pathway of concern

### **2.0 Regulatory Drivers (20 min)**

General overview of the regulatory environment that drives collection of air & vapor samples for health and environmental reasons

- 2.1 Review of current developments in Vapor Intrusion
- 2.2 Local Boards of Health
- 2.3 National & Federal – EPA, ASTM, ITRC
- 2.4 OSHA vs. EPA

### **3.0 States and VI Guidance (30 min)**

- 3.1 Regional States with VI Guidance –evolution of Mass DEP Vapor Intrusion guidance
- 3.2 General principles of VI guidance documents
- 3.3 Requirements of MassDEP’s December 2011 Interim Final Vapor Intrusion Guidance and recent update

### **4.0 Conceptual Site Model (CSM) Development & Types of Sites (45 min)**

Discussion on the investigative process for inhalation exposure

- 4.1 Overview of developing conceptual site model for Vapor Intrusion pathway evaluation
- 4.2 Critical Exposure Pathways
- 4.3 Types of sites – MGP, Solvents, Gasoline, etc.

### **15 Minute Break**

### **5.0 Air Sampling Methods & Media (50 min)**

Discussion on the frequently used methods, demonstration and hands-on use of the various types of media typically employed to collect air and vapor samples

- 5.1 MassDEP APH, TO15, TO17, TO10, TO13 and ASTM & NIOSH methods targeting specific volatile compounds
- 5.2 Canisters & Flow controllers
- 5.3 Use of Sorbent Tubes & Passive devices
- 5.4 Best practices for media options, when to use which media

### **6.0 Data Quality Objectives and Data Quality Indicators (30 min)**

- 6.1 Importance of Pre-Project Planning
- 6.2 Sampling Protocols
- 6.3 Appropriate Screening Values
- 6.4 Selection of Analytical Methods

### **7.0 Data Review and Usability (30 min)**

MCP REPRESENTATIVENESS EVALUATIONS AND DATA USABILITY ASSESSMENTS  
as a basis to discuss the importance of evaluating the collected empirical data against the investigative process

- 7.1 Importance of data review for both field and laboratory, and discussion on the basics of representativeness and data usability
- 7.2 Evaluation Background VOCs and Potential Sources
- 7.3 Common interferences when reviewing and interpreting air data

### **8.0 Course review and questions (10 min)**

## **INSTRUCTOR BIOGRAPHIES:**

**Andy P. Rezendes, Lead instructor  
Air Product Line/Volatiles Manager  
Alpha Analytical Labs, Inc.**

### Qualifications Summary

Over 20 years of experience in the field of environmental chemistry  
Started and currently managing Alpha's Air Testing product line  
Participated in workgroup to finalize the MADEP APH (Air phase Petroleum Hydrocarbon) method  
Responsible for method development and implementation  
Extensive experience in GC and GC/MS analysis as well as sample extraction and preparation techniques

### Professional Affiliations

Air and Waste Management  
Massachusetts LSP Association

### Fields of Expertise

Experienced in all aspects of organic analysis on soil, wastewater, and drinking water with special emphasis on Air including all analytical procedures, method development, canister and sample preparation and report review.

### Higher Education

Master's level course work Environmental Engineering – Northeastern University  
B.S., Chemistry – University of Massachusetts

### Employment History

2002-Present Alpha Analytical  
1999-2002 ENSR – Laboratory Manager  
1997-1999 Scilab-Boston – Department Supervisor  
1990-1997 New England Testing Lab – Operations Manager.

**WILL ELCOATE, SUPPORT INSTRUCTOR**  
**Alpha Analytical Labs, Inc.**  
**National Air Sales Manager**

Mr. Elcoate is currently the National Air Sales Manager for Alpha Analytical Inc. Mr. Elcoate has over 25 years of experience in the Environmental Laboratory testing Industry; in the past 7 years he has been focused on the sampling and analysis of air, vapor and soil gas.

**Air Product Manager/Director**  
**TestAmerica June 2006-October 2011**

Responsibilities include but not limited to technical and regulatory support for TestAmerica's ambient Air Program. Activities included technical review, assistance in developing Quality Assurance program plans for key programs. Review of State & Federal rules and guidance for air programs and their incorporation into TestAmerica's Air program. Training and Education of Sales & customer service representatives on Air programs and requirements.

**Technical Representative / National Account Manager**  
**Severn Trent Laboratories/Test America October 2000 to June 2006**

Responsibilities included management and development of key client accounts; including development of quality assurance plans, technical and business review of response for proposals. Strategic development in key market segments including Ambient Air programs; Vapor Intrusion and perimeter air monitoring associated with remediation projects; sediment programs related to the Great Lakes Legacy Act.

**Program Director**  
**Pace Laboratories 1996 - 2000**

Air Laboratory Manager responsibilities included the development & growth of Pace's Ambient Air Program. Program director / Project Manager for Federal program projects which included EPA Superfund, Corps of Engineers and AFCEE projects including the base wide programs at Vandenberg & March AFBs.

**Laboratory Industry 1987 - 1996**

Mr. Elcoate has held a number of positions in the laboratory industry; responsibilities have included; bench Chemist, Laboratory Supervisor, Project Manager, Customer service supervisor: Experience has included EPA CLP contract management, projects in multiple states and with many different programmatic requirements. Experience includes; preparation of Quality Assurance Project Plans, Standard Operating Procedures, and the training and supervision of project managers, customer service representatives and field samplers.



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### **Education**

- BSc in Chemistry & Chemical Engineering – Bath University Bath Avon UK –1974

### **Professional Affiliations**

Air & Waste Management

ITRC IAP member of the Petroleum Vapor Intrusion (PVI) work group