

**AIR AND SOIL GAS SAMPLE COLLECTION AND ANALYSIS:
HOW TO COLLECT RELEVANT & REPRESENTATIVE DATA
COURSE OUTLINE**

- 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
 - 3.2 CT DEEP concurrence agreement with the ITRC 2007 VI Guidance
 - 3.3 General principles of VI guidance documents
 - 3.4 CT DEEP RSRs with using the 2003 Draft Volatilization and Soil Vapor Criteria

- 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

Methods & Media used

 - 5.1 EPA TO-15 MassAPH, 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)**

CT DEEP Laboratory Quality Assurance and Quality Control Guidance Reasonable Confidence Protocols (RCP)

 - 7.1 Overview of the RCP program
 - 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)

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.

Key Projects

- **Adelaide High School; East Providence, RI** – providing analytical services (TO-15 analysis) for soil vapor extraction system monitoring, soil vapor sampling, and indoor air monitoring.
- **Teterboro Airport; Teterboro, NJ** – provided TO-15 analysis for one year ambient monitoring program at the perimeter of the airport.
- **Vapor Intrusion Investigation; Brooklyn, NY** – provided TO-15 analytical support indirectly for the NYDEC at a large petroleum release site in the Greenpoint neighborhood of Brooklyn.
- **Support for MADEP Vapor Intrusion Investigations** – currently providing TO-15 analyses for the Massachusetts DEP, including samples collected for a vapor intrusion investigation at a high ranking public official's office and emergency response sampling.
- **MGP sites in New Jersey** – provided TO-15, metals and particulate via PM-10 filters, and TO-13 analyses for private client conducting fence line monitoring during remediation of MGP sites in northern New Jersey



- **Wells G&H Site, Woburn, MA** – provided TO15-SIM and APH analysis for EPA Superfund Investigation. Project required all media (cans, flow controllers) to be individually certified, which Alpha was able to provide on schedule.
- **Logan Airport Air Monitoring, Boston, MA** – conducted analyses related to taxi-way construction environmental impact study. Alpha was involved in both phases of study; baseline and post-construction. Project spanned a course of 2 years and involved TO15-SIM, TO-13A, TO-11A, and PM 2.5 analyses.
- **Large Vapor Intrusion Study, Long Island, NY** – analyzing indoor air, sub-slab, and soil vapor samples since 2007 at an MGP site for a private client. TO-15 analyses conducted included specialized list of analytes particularly related to MGP sites (thiophenes, alkyl-substituted benzenes, naphthalene and methyl-naphthalenes). Also provided PIANO analyses during initial phases of investigation.

Treatability Studies

- **Large paper manufacturer, feasibility study**, Virginia. Performed laboratory treat ability study for a large paper manufacturer in Virginia to determine if the pH of an alkaline soil/groundwater system could be adjusted to decrease the mobility of toxic heavy metals. Success may lead to in-site treatment of lagoons used in the past for lime sludge treatment.
- **Phone company, Feasibility Study**, Massachusetts. Performed a laboratory treat ability study for a phone company in Massachusetts to determine the potential degradation of fuel oil contaminating the soil. Conducted bioremediation and chemical oxidation experiments to determine the feasibility of in-site treatment.

Related Technical Publications/Presentations

A. Rezendes, J. Occhialini, Alpha Analytical, Inc.; M. Lannan, Tech Environmental. *“Got Sulfur? Analytical Methods in the Odor Threshold Range”* WEF/A&WMA Odors and Air Emissions Conference, April 2004

Richard J. Rago, Rosemary McCafferty, Haley & Aldrich, Inc.; Andy Rezendes, Alpha Analytical Labs. *“Background Indoor Air Levels of Volatile Organic Compounds (VOCs) and Air-Phase Petroleum Hydrocarbons (APH) in Massachusetts Residences”* Midwestern States Risk Assessment Symposium, August 2004.

A. Rezendes, Alpha Analytical, Inc. M. Marando, P. King, R. Siegener, P. Desrochers, GEI Consultants. *“Comparison of Naphthalene Measurements between Laboratory Methods and an Ultra-Fast Field Gas Chromatograph.”* A&WMA National Conference, June 2007

WILL ELCOATE, CO - INSTRUCTOR
Alpha Analytical Labs, Inc.
National Air Product Manager

Mr. Elcoate is currently the National Air Sales Manager for Alpha Analytical Inc. Mr. Elcoate has over 30 years of experience in the Environmental Laboratory testing Industry; in the past 14 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.

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

Presentations & Papers

2012 National Environmental Monitoring Conference (NEMC) on August 6th in Washington DC
Analysis of Low Level Volatile Organic Compounds in Air by EPA Method TO 17 and/or Passive Monitors
Prepared by Will Elcoate, Alpha Analytical Laboratories, Westborough, MA, 01581

2011 National Environmental Monitoring Conference (NEMC) on August 18th in Bellevue, WA.
Challenges of Sampling and Reporting Lower Level Volatiles in Ambient Air
Will Elcoate, Air Product Manager TestAmerica Inc

Indoor Air 2011, Austin, Texas, June 5-10, 2011

Major Sources of Petroleum Hydrocarbon Compounds in Indoor Air, Thomas McHugh, Danielle Bailey, Lila Beckley, Shawn Paquette (GSI Environmental) William Elcoate (TestAmerica) Stephanie Fiorenza (BP)

AIPG 48th Annual Meeting and Conference Bloomingdale, IL September 10-13, 2011

Vapor Intrusion: The Cloud Beneath the Surface. Will Elcoate, Air Product Manager, TestAmerica, Inc.

Annual Florida Section Air & Waste Management Association's (A&WMA) Conference & Exhibition FL on October 12-14, 2008. *Ensuring data quality in Vapor Intrusion (VI) investigations*.

Air Waste Management Association (AWMA) 102nd Annual Conference Detroit June 17th 2009

Soil Gas Vapor Investigations, Challenges In Reporting Representative And & Relevant Data

Will Elcoate, and Chris Anderson, TestAmerica 30 Community Drive, Suite 11 South Burlington, VT 05403

AWMA Alamo Chapter November 2009

Data Quality in Vapor Intrusion (VI) Investigations and Landfill Gas Evaluation

Will Elcoate, Air Product Manager, TestAmerica Inc.