

STACK TEST ESSENTIALS & BEST PRACTICES (STE-BP)

- **Objective:** Training for scientists that are new to the stack testing industry.
Operation & application, maintenance & service.
- **Training Company:** Apex Instruments, Inc. (“AI” or “Apex”)
Address: 212 Technology Park Ln., Fuquay-Varina, NC 27526 USA
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Website: www.apexinst.com
 - Training Coordinator: Terrance Odom
 - Email: todom@apexinst.com
 - Phone: +1-919-342-1410
- **Days:** Office (2 Days), Field (1 Days)
 - **Wear weather-appropriate clothing to be outdoors for one day**
 - Daily Start Time: 8:00am Eastern Time
 - First day registration start time is 7:45am Eastern Time
 - Daily Lunch Time: 12:00-13:00pm Eastern Time
 - Daily End Time: 16:00pm Eastern Time
- **Expenses:**
 - The following are **NOT** covered by Apex Instruments (these costs are not included in the course price):
 - Travel:
 - *Raleigh-Durham International Airport* – Morrisville (27 Miles)
 - 2400 John Brantley Blvd, Morrisville, NC 27560, USA
 - Hotel/Lodging Recommendations:
 - *Holiday Inn Express* – Holly Springs (2.5 Miles)
 - 150 Collins Crossing, Holly Springs, NC 27540, USA
 - *Hampton Inn* – Holly Springs (2.9 Miles)
 - 1050 S Main St, Holly Springs, NC 27540, USA
 - Transport: Airport transfers or hotel transfers
 - Meals: Only breakfast refreshments and lunch will be provided daily
 - **If you have any meal restrictions, please inform us upon registration**

DAY 1: BASIC KNOWLEDGE AND MANUAL PARTICULATE SAMPLING

The training technician recommends a site visit to the testing site to evaluate sample locations and ports are suitable and that power is available. This allows time for changes to be made prior to field training sessions. Additionally, the training technician will cover the following topics, including in-depth presentations of:

*****General*****

- Description of target analytes
- Required sampling equipment and glassware (if applicable)
- Preparation of glassware, including impinger liquid contents (if applicable)
- Sample recovery procedures, including reagents, analyte containers, description of analysis methods
- Required data recording and calculations for determinations

*****Introduction*****

US EPA Method 1

M1 (1A) | Traverse Points (Small Ducts)

US EPA Method 2

M2 | Velocity and S-Type Pitot Tube

US EPA Method 3

M3 | Molecular Weight of Stack Gases

M3B | CO₂, O₂, Orsat or Suitable Electronic Alternative(s)

US EPA Method 4

M4 and Alternatives | Stack Gas Moisture Determination

US EPA Methods 5 and 17

M5 | Particulate Matter (PM)

M17 | Particulate Matter, In-Stack Filtration Method

*****Lunch*****

Plastics

M23 | Dioxins, Furans, Polychlorinated Biphenyls, Polyaromatic Hydrocarbons

Acids

M26A | Hydrogen Halides, Halogens

Metals

M29 (w/ and w/o Hg) | Multi-Metals

Other Particulate Matter

M201A | PM_{2.5} and PM₁₀

M202 | Condensable PM

*****Wrap-up*****

DAY 2: MOCK ISOKINETIC ANALYTE SAMPLING, ANALYSIS, AND DATA MANAGEMENT

*****Recap or Further Discussion of Day 1's Agenda*****

Discussion of Hazards and Safety

Apex Instruments Equipment Overview

- Explanation of Components and Parts
- Assembly Procedures
- General Operation Procedures

*****Lunch*****

Discussion of Indoor Sampling Site Location

Mock Sample Run

Performing a mock sample run using a Method 5-based sample train

Preparation

- Recording pre-test data in spreadsheet or datasheet (site conditions)
- Determining and calculating sample parameters (run conditions)

Sample Run

- Recording test data in spreadsheet or datasheet (mock run data)

Sample Recovery

- Performing rinses and sample collection of applicable sample components
- Recording sample weights, volumes, and emissions rates

Data Generation and Reporting

- Recording post-test data in spreadsheet or datasheet
- Calculations of results of sample run data

Discussion of Best Practices

*****Wrap-up*****

DAY 3: PRACTICAL ISOKINETIC ANALYTE SAMPLING, ANALYSIS, AND DATA MANAGEMENT

*****Recap or Further Discussion of Day 2's Agenda*****

Discussion of Hazards and Safety

Discussion of Outdoor Sampling Site Location

Practical Sample Run

Performing a mock sample run using a Method 5-based sample train

Preparation

- Recording pre-test data in spreadsheet or datasheet (site conditions)
- Determining and calculating sample run parameters (run conditions)

Sample Run

- Recording test data in spreadsheet or datasheet (mock run data)

Sample Recovery

- Performing rinses and sample collection of applicable sample components
- Recording sample weights, volumes, and emissions rates

Data Generation and Reporting

- Recording post-test data in spreadsheet or datasheet
- Calculations of results of sample run data

*****Lunch*****

Apex Instruments Equipment Maintenance and Calibrations

- Maintenance (Console, internal sample pump, ancillary equipment, etc.)
- Service and General Repairs (Console, internal sample pump, ancillary equipment, etc.)
- Calibration and Audits (Console – thermocouples, pressure/vacuum sensors, dry gas meter)
- Calculation of uncertainty
- Process for performing validation for the equipment

Discussion of Best Practices

*****Wrap-up*****