

# EAGLESON INSTITUTE

Promoting Laboratory Safety Globally Since 1989

PO Box 954, Sanford, ME 04073 | 207-490-1076 | [www.eagleson.org](http://www.eagleson.org)

## Testing HEPA Filtered Systems and Cleanrooms

*Gain the knowledge in this hands-on class to test HEPA filters in accordance to the relevant standards*

### When & Where

June 3-6, 2013 | Sanford ME

October 7-10, 2013 | Sanford ME

### Course Description

This four-day class provides the knowledge and hands-on experience needed to be able to test HEPA filters in clean benches, clean rooms, and HVAC systems according to the relevant ISO and IEST standards.

### Participants Will Learn

- Airflow definitions and equations used in testing HEPA filters
- How to handle and store HEPA filters
- How to identify different types and classes of filters
- How to measure airflow in clean benches, cleanrooms, and HVAC systems
- How to perform airflow visualization
- The theory and operation of photometers and particle counters
- How to verify a room's cleanliness class
- How to repair HEPA filter media and gasket leaks
- How to perform HEPA testing in accordance with ISO 14644-1, ISO 14644-2, IEST RP34, IEST RP006, IEST RP001, IEST RP002 and the FDA CGMP Guide

### This Course is For

Validation, quality assurance and contamination control personnel, facility engineers, maintenance personnel, cleanroom certifiers, and architects and engineers involved in cleanroom design.

### Instructors

The lead instructor is **Dan Milholland**, Milholland and Associates. Other instructors include: **Lewis Exner**, Certification Division Manager, Micro-Clean, Inc.; **Ron Gingras**, Engineering Technician, The Baker Company; **Tony Hawkins**, Senior Service Technician, Air Techniques, Inc.; **Aaron Johnson**, Engineering Test Tech Supervisor, The Baker Company; **Gene Klingbeil**, Biosafety Filters Market Manager, Filtration Group, Inc.; **David Phillips**, Technical Applications Specialist, Thermo Fisher Scientific; **David Stuart, PhD**, Consultant, The Baker Company.



### Highlights

*"People with varying amounts of experience, both managers and technicians, gather together with a common interest in learning the science of testing HEPA filters." - Dan Milholland (Lead Instructor)*

### Registration

Tuition of \$1595 must be paid in full to guarantee a space in the class. **Tuition includes:** course manual, lunch each day, an Eagleson Institute certificate and a special class reception and dinner with plenty of time to network with peers and instructors.

Register online at [www.eagleson.org/HEPA](http://www.eagleson.org/HEPA), or call (207) 490-1076 to register or request a registration form.



for more information  
or to register, please visit  
[eagleson.org/HEPA](http://eagleson.org/HEPA)



# Testing HEPA Filtered Systems and Cleanrooms

## Agenda

### DAY ONE

- Cleanroom Overview
- Introduction to HEPA Filters
- Documentation
- Workshops: Bag In/Bag Out, Fun with Photometers, Using Photometers for Leak Testing, Repairing Media Leaks

### DAY TWO

- Leak Testing HEPA Filters
- Photometers and Aerosol Generators –Theory and Operation
- Fairly Classifying Particle Counts
- Workshops: Using a Particle Counter to Verify Room Cleanliness Class, Scanning HEPA Filters, Leak Testing in Ducts, Bleedthrough and Aerosol Generators

### DAY THREE

- Airflow Principles
- Airflow Visualization
- Workshops: Measuring Airflow in Cleanrooms, Clean Bench Airflow/Filter Installation and Gasket Repair, Measuring Pressure Drop Across Filters, Airflow Visualization

### DAY FOUR

- Airflow in Cleanrooms
- Air Measurement
- Tour of Clean Bench Manufacturing Facility (Optional)
- Standards Review



## Local Information

### AIRPORTS



**PWM | Portland International Jetport**

31 Miles North East • [www.portlandjetport.org](http://www.portlandjetport.org)



**MHT | Manchester Boston Regional Airport**

76 Miles South West • [www.flymanchester.com](http://www.flymanchester.com)



**BOS | Logan International Airport**

83 Miles South • [www.massport.com](http://www.massport.com)

### DIRECTIONS



We recommend renting a vehicle, as the class location is approximately 15 miles from the hotel. Our physical address is 161-175 Gatehouse Road, Sanford, ME 04073. Directions via Google: <http://g.co/maps/p4ud3>

### LODGING



**June 3-6, 2013 | Kennebunkport Inn | \$77\***

(207) 967-2621 | [www.kennebunkportinn.com](http://www.kennebunkportinn.com)

**October 7-10, 2013 | Kingsport Inn | \$99\***

(207) 967-4340 | [www.kingsportinn.com](http://www.kingsportinn.com)

\* Reservations must be made by the attendee. Be sure to mention the Eagleson Institute to secure the special group rate.

## Cancellation Policy

Individuals who cancel more than 15 business days prior to the class date will receive a full refund. For cancellations made 6 to 15 business days before the start of the program, a 50% refund will be given. For cancellations made 5 business days or less prior to the class date, no refunds will be given. Notification of cancellation must be received in writing. Substitutes for a registered attendee may be made at anytime.



for more information or to register, please visit

[www.eagleson.org/HEPA](http://www.eagleson.org/HEPA)

