Industrial Hygiene Measurements Institute
Customer training seminars from Liberty Mutual Insurance

Course overview
Acquire the skills necessary to recognize, evaluate, and control occupational disease exposures in your facilities. Improve your recognition and evaluation skills, and expand your knowledge of health hazards, sampling methods and control techniques for exposures such as fumes, dust, gasses and vapors, mixtures of air contaminants, noise, heat stress and radiation.

Learn how to approach industrial hygiene issues from a larger perspective before focusing on the mechanics of conducting an evaluation. Practice establishing industrial hygiene survey strategies that make appropriate use of sampling and evaluation techniques. Learn how to conduct noise and ventilation systems measurement and air sampling. Gain a comfort level through practicing evaluation methods in hands-on workshops.

Facilitators are all experienced Liberty Mutual Industrial Hygiene professionals who are also accomplished instructors and Certified Industrial Hygienists.

Objectives
At the conclusion of this seminar, you will be able to:

• Identify the evaluation and sampling methods for common occupational disease (OD) exposures in workplaces
• Recognize advantages and disadvantages of various sampling and evaluation methods
• Understand record keeping requirements for health hazard evaluations and sampling surveys
• Understand the synergy between field evaluations and laboratory analysis

Who should attend
This program is intended for EH&S managers/directors, EH&S staff, risk managers, human resource managers, quality and process management engineers, and industrial hygienists and IH technicians

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<tr>
<th>Course length</th>
<th>2.5 days</th>
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<tr>
<td>Contact hours</td>
<td>20</td>
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<td>Level</td>
<td>Intermediate</td>
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Agenda

Unit 1: Application of occupational exposure limits
Review of both regulatory and non-regulatory standards, backgrounds of, application of, limitations of, misuses of, and various types of occupational exposure limit standards.

Unit 2: Survey strategy
How to determine the mission, objectives and strategy of an evaluation, what is the “focus” of the evaluation; how to determine what type samples to collect, how many to collect, and where to collect them.

Unit 3: Instrument calibration
Air sampling devices, sampling and analytical error, flow rate measurement devices, primary & secondary standards, NIST traceability, record keeping.

Unit 4: Measurement of gases and vapors
Types of air contaminants, examples of types of operations with air contaminants, grab vs. TWA sampling, advantages and disadvantages of each, types of samplers, laboratory analytical considerations, flow rate and volume calculations.

Unit 5: Measurement of aerosols
Types and definitions of aerosols, physical characteristics of aerosols, sampling methods, calculations, sampling filter media, size-selective devices, direct reading aerosol instruments.

Unit 6: Survey strategy workshop
A hands-on sampling exercise to practice the skills learned in the survey strategy session: determining the mission, objectives and strategy for the evaluation, determining the “focus” of the evaluation; and determining the type samples to collect, how many to collect, and where to collect them.

Unit 7: Instrument calibration workshop
A hands-on sampling exercise to practice the skills learned in the calibration session: calibration of air sampling devices, determining sampling and analytical error, flow rate measurement, primary & secondary standards, NIST traceability, and record keeping.

Unit 8: Wipe sampling workshop
A hands-on sampling exercise to discuss and perform the practices and procedures for collecting wipe samples for metals and a discussion of controls and applicable OELs.

Unit 9: Direct reading instruments
Applications, advantages, disadvantages, sampler types, accuracy, sensitivity, interferences, temperature, humidity and altitude variations, aerosols vs. gases & vapors, and calibration.

Unit 10: Noise-principles, instruments, and surveys
Physical characteristics of sound, wavelengths and frequencies, sound level meters, weighting scales, decibels, noise addition, sound energy, field measurements, standards, dose, hearing conservation programs, hearing protectors, transmission, absorption, audiograms and hearing loss.

Unit 11: Ventilation measurements
General vs. Local exhaust, ventilation system components, air flow, calculations, air velocities, capture hood design, system trouble shooting.
Unit 12: HPD fit testing – discussion and demonstration
Discussion of the commercially available systems to test the efficacy of fit for hearing protection devices (HPD) and a live demonstration of a system used to test the fit of HPD.

Unit 13: Ventilation workshop
Hands-on ventilation measurements, different types of ventilation measurements instruments, advantages and disadvantages of each, calibration and care of instruments, record keeping, ventilation performance standards.

Unit 14: Sampling methods workshop
Direct reading instruments, sampling requiring laboratory analysis, gas & vapor vs. aerosol measurement methods, size-selective sampling, sampling pumps.

Unit 15: Noise workshop
Field measurements, calibrations, instrument applications, source identification, record keeping, control methods, hearing conservation, hearing protection devices.

Unit 16: Survey records & reporting
Measurements, control measures, analytical results, calibration data, ventilation measurements, record keeping forms, types of errors and how to avoid them.

Unit 17: Respiratory protection and fit test demonstration
Discuss the major classes of respirators used in industry and review the application and limitations of each respirator class. Review the process for fit testing and demonstrate a quantitative fit test (QTFT).

Unit 18: Indoor air quality (IAQ) - exposure evaluation & control
History of IAQ, typical problems, employee complaints, building HVAC systems, common contaminants, bioaerosols, renovations construction, plans of action and follow-up.

Unit 19: Combustible dust - exposure recognition and demonstration of an incident
Discuss the history of incidents associated with combustible dust and review the basics of hazard recognition for combustible dust exposures. A demonstration of a combustible dust explosion in the fire lab.

Unit 20: Liberty Mutual Risk Assessment tools – QRA and RATL
Review of the tools that Liberty Mutual Industrial Hygienists can utilize to quantify risk in your operations which will enable management to address the highest levels of occupational disease related risk in your facilities.