Advanced Laboratory Safety and Chemical Hygiene Training Course



21 - 25 Dec 2026

Boston

7500 € (Per Person)

Ref: #HSE2052_108474

Course Introduction / Overview:

This course provides a comprehensive framework for establishing and maintaining the highest standards of laboratory safety and chemical hygiene. In an environment where risks are inherent, a proactive and systematic approach to safety is not just a regulatory requirement but a fundamental ethical responsibility. This program delves deep into the principles outlined in key industry standards, such as the OSHA Laboratory Standard (29 CFR 1910.1450), and explores practical applications for hazard identification, risk assessment, and control. Drawing upon foundational concepts discussed in authoritative texts like "Prudent Practices in the Laboratory" by the National Research Council, participants will learn to develop and implement an effective Chemical Hygiene Plan (CHP). BIG BEN Training Center has designed this course to move beyond mere compliance, focusing on cultivating a robust safety culture where every individual is an active participant in risk management. We will cover everything from the Globally Harmonized System (GHS) for chemical classification to advanced strategies for emergency preparedness and incident response, ensuring your laboratory operations are both safe and efficient. This training is an essential investment for any organization committed to protecting its personnel, assets, and reputation through excellence in laboratory safety management.

Target Audience / This training course is suitable for:

- Laboratory Managers and Supervisors.
- Environmental, Health, and Safety (EHS) Professionals.
- Chemical Hygiene Officers.
- Research Scientists and Principal Investigators.
- Laboratory Technicians and Technologists.
- Quality Assurance and Quality Control Staff.
- Facilities and Operations Managers overseeing laboratories.
- Academic Staff and Post-Graduate Researchers.

Target Sectors and Industries:

- Pharmaceutical and Biotechnology Industries.
- Chemical Manufacturing and Processing.
- Healthcare and Clinical Diagnostic Laboratories.
- Academic and Research Institutions.
- Oil and Gas Sector Laboratories.
- Food and Beverage Quality Control Labs.
- Environmental Testing and Analysis Agencies.
- Governmental agencies and public health organizations.

Target Organizations Departments:

- Research and Development (R&D).
- Quality Control (QC) and Quality Assurance (QA).
- Environmental, Health, and Safety (EHS).
- Clinical and Medical Laboratories.
- Manufacturing and Production Support.
- Regulatory Affairs and Compliance.
- Facilities Management.

Course Offerings:

By the end of this course, the participants will have able to:

- Develop and implement a compliant and effective Chemical Hygiene Plan (CHP).
- Conduct comprehensive laboratory hazard identification and risk assessments.
- Interpret and apply the Globally Harmonized System (GHS) for chemical labeling and Safety Data Sheets (SDS).
- Select and manage appropriate Personal Protective Equipment (PPE) for various laboratory tasks.
- Establish robust protocols for safe chemical handling, storage, and waste disposal.
- Design and execute effective laboratory emergency response and spill containment procedures.
- Lead laboratory safety audits and inspections to ensure continuous compliance.
- Foster a proactive and positive safety culture within their teams and organization.
- Investigate laboratory incidents and implement corrective actions to prevent recurrence.
- Ensure laboratory operations meet or exceed national and international safety standards.

Course Methodology:

The training methodology at BIG BEN Training Center is designed to be immersive, interactive, and highly practical, ensuring that participants can directly apply their learning to their work environments. We move beyond traditional lectures by incorporating a dynamic blend of expert-led presentations, real-world case study analyses of laboratory incidents, and collaborative group workshops. Participants will engage in hands-on exercises, such as developing components of a Chemical Hygiene Plan and conducting simulated risk assessments for various laboratory scenarios. Interactive sessions encourage open dialogue, allowing attendees to share challenges and best practices from their own experiences. The course emphasizes problem-based learning, where small teams work together to solve complex safety challenges, fostering critical thinking and teamwork. Our experienced instructors provide continuous feedback and facilitate discussions to deepen understanding. This blended approach ensures that theoretical knowledge is firmly cemented with practical skills, empowering participants to implement effective safety management systems and drive a culture of safety excellence within their organizations upon their return.

Course Agenda (Course Units):

Unit One: Foundations of Laboratory Safety and Regulatory Frameworks

- Introduction to Laboratory Safety Culture.
- Understanding the OSHA Laboratory Standard (29 CFR 1910.1450).
- Roles and Responsibilities of Laboratory Personnel.
- Key Components of a Chemical Hygiene Plan (CHP).
- Introduction to the Globally Harmonized System (GHS).
- Understanding Safety Data Sheets (SDS) and Chemical Labels.
- Documentation, Record-Keeping, and Training Requirements.

Unit Two: Hazard Identification, Evaluation, and Risk Assessment

- Recognizing Chemical Hazards, Flammables, Corrosives, and Reactives.
- Identifying Physical Hazards, Electrical, Cryogenic, and Compressed Gases.
- Understanding Biological and Radiological Hazards in the Lab.
- Principles of Toxicology and Routes of Exposure.
- Conducting a Formal Laboratory Risk Assessment.
- Job Hazard Analysis (JHA) for Laboratory Procedures.
- Implementing a Hierarchy of Controls.

Unit Three: Engineering Controls, Work Practices, and PPE

- Proper Use and Maintenance of Fume Hoods and Ventilation Systems.
- Understanding Other Engineering Controls like Safety Showers and Eyewash Stations.
- Developing Standard Operating Procedures (SOPs) for Safe Work.
- Principles of Laboratory Ergonomics.
- Selection and Use of Personal Protective Equipment (PPE).
- Fit, Care, and Maintenance of Respirators and other PPE.
- Best Practices for Housekeeping and Personal Hygiene.

Unit Four: Chemical Management and Emergency Preparedness

- Safe Procedures for Chemical Procurement and Inventory Management.
- Guidelines for Safe Chemical Storage and Segregation.
- Managing and Disposing of Hazardous Laboratory Waste.
- Developing an Emergency Action Plan.
- Chemical Spill Response Procedures and Drills.
- Fire Safety and Prevention in the Laboratory.
- First Aid and Medical Emergency Response Protocols.

Unit Five: Cultivating a Proactive Laboratory Safety Culture

- Conducting Effective Laboratory Safety Inspections and Audits.
- Techniques for Incident Investigation and Root Cause Analysis.
- Developing and Tracking Safety Performance Metrics.
- The Role of Leadership in Promoting Safety.
- Strategies for Effective Safety Communication and Training.
- Behavior-Based Safety Programs in a Laboratory Setting.
- Continuous Improvement in Laboratory Safety Management.

FAQ:

Qualifications required for registering to this course?

There are no requirements.

How long is each daily session, and what is the total number of training hours for the course?

This training course spans five days, with daily sessions ranging between 4 to 5 hours, including breaks and interactive activities, bringing the total duration to 20 - 25 training hours.

Something to think about:

Beyond regulatory compliance, how can a laboratory's safety culture be transformed from a set of rules into an intrinsic value shared by every team member?

What unique qualities does this course offer compared to other courses?

This course distinguishes itself by adopting a holistic and leadership-centric approach to laboratory safety, moving beyond the baseline requirements of regulatory compliance. While many programs focus solely on the technical aspects of hazard control, this training dedicates significant attention to the human element, exploring the psychological and organizational dynamics that underpin a truly effective safety culture. We delve into advanced concepts such as behavior-based safety, the role of management in championing safety initiatives, and methods for transforming a passive, rule-following mindset into one of proactive, shared ownership. The curriculum is enriched with in-depth case studies of real-world laboratory incidents, allowing participants to perform root cause analysis and understand the cascading effects of seemingly minor oversights. Rather than just presenting information, the course methodology emphasizes practical application through simulated risk assessments and workshops on developing robust Standard Operating Procedures (SOPs). This focus on integrating safety management systems with leadership and behavioral science provides participants with a more profound and sustainable framework for creating a genuinely safe and high-performing laboratory environment.