Advanced Hazard Identification and Risk Assessment Training Course



21 - 25 Dec 2026

Boston

7500 € (Per Person)

Ref: #HSE7321_108636

Course Introduction / Overview:

This intensive training course provides a comprehensive framework for mastering the principles and practices of Hazard Identification and Risk Assessment (HIRA). Moving beyond basic compliance, this program delves into advanced methodologies essential for creating a truly proactive safety culture within any organization. Participants will explore the complete risk management lifecycle, from initial hazard identification using systematic techniques to sophisticated quantitative risk analysis and the implementation of effective control measures. The curriculum is designed to be both theoretically robust and intensely practical, drawing on real-world case studies and industry best practices. As the renowned process safety expert Trevor Kletz emphasized in his seminal work, "What Went Wrong? Case Histories of Process Plant Disasters," learning from past failures is critical to preventing future incidents. This course, offered by BIG BEN Training Center, equips professionals with the foresight and analytical skills to identify potential failures before they occur, thereby protecting personnel, assets, and the environment. It is an essential program for anyone committed to achieving excellence in occupational health and safety management and driving continuous improvement in their organization's safety performance.

Target Audience / This training course is suitable for:

- Health, Safety, and Environment (HSE) Managers and Advisors.
- Operations and Plant Managers.
- Project Managers and Engineers.
- Process Safety Engineers.
- Maintenance and Reliability Supervisors.
- Compliance and Quality Assurance Officers.
- Incident Investigators and Emergency Response Team Leaders.
- Senior Management and Department Heads with safety responsibilities.

Target Sectors and Industries:

- Oil and Gas Exploration and Production.
- Petrochemical and Chemical Manufacturing.
- Construction and Civil Engineering.
- Heavy Manufacturing and Industrial Production.
- Power Generation and Utilities.
- Aviation and Transportation.
- Pharmaceuticals and Healthcare.
- Governmental bodies and regulatory agencies.

Target Organizations Departments:

- Health, Safety, and Environment (HSE).
- Operations and Production.
- Engineering and Technical Services.
- Project Management.
- Maintenance and Asset Integrity.
- Quality Assurance and Control.
- Human Resources and Training.
- Corporate Risk Management.

Course Offerings:

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

- Develop and implement a comprehensive HIRA framework tailored to their organization's specific needs.
- Master a variety of hazard identification techniques, including HAZOP, JSA, and What-If analysis.
- Conduct both qualitative and quantitative risk assessments to prioritize operational risks effectively.
- Apply the Hierarchy of Controls to design and implement robust and sustainable risk mitigation strategies.
- Lead effective incident investigations using root cause analysis methodologies.
- Integrate HIRA processes into the broader Safety Management System (SMS).
- Champion a proactive safety culture by demonstrating the value of predictive risk management.
- Ensure organizational activities comply with relevant national and international safety standards.

Course Methodology:

The training methodology at BIG BEN Training Center is designed to foster a dynamic and engaging learning environment that bridges theory with practical application. This course moves beyond traditional lectures to immerse participants in an interactive experience. We utilize a blend of expert-led presentations, detailed case study analyses of real-world industrial incidents, and collaborative group workshops where participants can apply HIRA techniques to simulated scenarios. Interactive sessions, facilitated discussions, and problem-solving exercises encourage active participation and knowledge sharing among attendees from diverse industries. A significant portion of the course is dedicated to hands-on activities, allowing participants to practice using risk assessment tools and templates. This practical approach ensures that the skills learned are not just understood but can be confidently applied in the workplace. Continuous feedback from the instructor and peer-to-peer review are integral components, ensuring a deep and lasting understanding of advanced risk assessment principles and their real-world implementation.

Course Agenda (Course Units):

Unit One: Foundations of Risk Management and Safety Culture

- Introduction to Hazard Identification and Risk Assessment (HIRA).
- The legal and regulatory framework for occupational health and safety.
- Understanding the relationship between hazards, risks, and controls.
- The role of human factors in incident causation.
- Key elements of a successful Safety Management System (SMS).
- Exploring the concept of safety culture and its impact on performance.
- Defining risk appetite and the ALARP (As Low As Reasonably Practicable) principle.

Unit Two: Systematic Hazard Identification Techniques

- Job Safety Analysis (JSA) and Task Risk Assessment (TRA).
- The 'What-If' analysis and checklist methodologies.
- Introduction to Hazard and Operability (HAZOP) studies.
- Conducting effective workplace safety inspections and audits.
- Techniques for identifying health and ergonomic hazards.
- Brainstorming and expert elicitation for hazard discovery.
- Documenting and categorizing identified hazards for analysis.

Unit Three: Qualitative and Semi-Quantitative Risk Assessment

- Principles of risk analysis and evaluation.
- Developing and using a risk matrix for prioritization.
- Bow-Tie analysis for visualizing risk pathways and barriers.
- Introduction to Layers of Protection Analysis (LOPA).
- Failure Mode and Effects Analysis (FMEA) for processes and equipment.
- Assessing risks associated with non-routine operations.
- Practical workshops on applying qualitative assessment tools.

Unit Four: Advanced Risk Analysis and Control Measures

- Introduction to Quantitative Risk Analysis (QRA).
- Fault Tree Analysis (FTA) and Event Tree Analysis (ETA).
- The Hierarchy of Controls: from elimination to personal protective equipment.
- Designing effective engineering and administrative controls.
- Developing safe work procedures and permit-to-work systems.
- Management of Change (MOC) and its role in risk control.
- Performance standards for safety-critical equipment and systems.

Unit Five: HIRA Implementation, Monitoring, and Continuous Improvement

- Integrating HIRA into daily operations and project lifecycles.
- Leading effective incident investigations and root cause analysis.
- Developing meaningful safety performance indicators (SPIs).
- The role of safety leadership in driving the HIRA process.
- Conducting HIRA reviews and ensuring continuous improvement.
- Communicating risk information effectively to all organizational levels.
- Final project: Developing a complete HIRA for a complex scenario.

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 deeply embedded HIRA process transform an organization's safety culture from a reactive necessity into a proactive, value-generating asset?

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

This course distinguishes itself by moving beyond the procedural "how-to" of risk assessment to explore the strategic "why". While many programs focus solely on the tools, we emphasize the critical thinking and leadership skills required to foster a genuine safety culture. The curriculum is uniquely structured to bridge the gap between foundational techniques like JSA and advanced analytical methods such as HAZOP and QTA, providing a complete and scalable skill set. We place a significant focus on the human element, analyzing how cognitive biases and organizational factors influence risk perception and decision-making. Rather than just presenting theoretical models, the course is built around in-depth case studies that challenge participants to analyze complex failures and design robust, multi-layered control strategies. The program's core philosophy is that effective HIRA is not a standalone administrative task but a dynamic, integrated process that, when mastered, becomes a cornerstone of operational excellence, risk resilience, and sustainable business performance.