Process Safety Management for Oil and Petrochemicals Training Course



26 - 30 Oct 2026

Boston

7500 € (Per Person)

Ref: #HSE4281_108742

Course Introduction / Overview:

The oil, gas, and petrochemical industries are cornerstones of the global economy, yet they operate with inherent high-level risks involving hazardous materials and complex processes. Effective Process Safety Management (PSM) is not merely a regulatory requirement but a fundamental ethical and operational imperative to prevent catastrophic incidents, protect human lives, and ensure environmental stewardship. This comprehensive course provides an in-depth exploration of the 14 elements of the OSHA PSM standard and other global best practices. Drawing on the foundational work of process safety pioneers like Trevor Kletz, whose book "What Went Wrong? Case Histories of Process Plant Disasters" remains a critical text, this program moves beyond theory. Participants will dissect real-world case studies to understand the complex interplay of technical failures and human factors. BIG BEN Training Center has designed this course to equip professionals with the practical skills needed to develop, implement, and sustain a robust PSM system. It focuses on building a proactive safety culture, mastering risk assessment techniques like Process Hazard Analysis (PHA), and ensuring operational discipline across all levels of an organization, thereby transforming safety from a department function into a core organizational value.

Target Audience / This training course is suitable for:

- Process Safety Engineers and Specialists.
- Operations and Production Managers and Supervisors.
- HSE Managers, Advisors, and Officers.
- Maintenance and Mechanical Integrity Engineers.
- Project and Engineering Managers.
- Chemical and Process Engineers.
- Plant and Facility Managers.
- Instrumentation and Control Engineers.
- Senior Technicians and Team Leaders.
- Regulatory Compliance Officers.

Target Sectors and Industries:

- Oil and Gas Exploration and Production.
- Petroleum Refining and Processing.
- Petrochemical and Chemical Manufacturing.
- Liquefied Natural Gas (LNG) Plants.
- Industrial Gas Production Facilities.
- Fertilizer Manufacturing Plants.
- Plastics and Polymer Production.
- Governmental regulatory bodies and safety agencies.
- Engineering, Procurement, and Construction (EPC) companies.
- Specialty Chemicals Manufacturing.

Target Organizations Departments:

- Health, Safety, and Environment (HSE).
- Operations and Production.
- Engineering and Design.
- Maintenance and Reliability.
- Project Management.
- Technical Safety Department.
- Asset Integrity Management.
- Quality Assurance and Control.
- Research and Development.
- Procurement and Supply Chain.

Course Offerings:

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

- Interpret and apply the 14 key elements of the OSHA Process Safety Management standard.
- Lead and participate effectively in Process Hazard Analysis (PHA) studies using HAZOP and What-If methodologies.
- Develop and implement a robust Management of Change (MOC) system to manage risks associated with process modifications.
- Establish a comprehensive Mechanical Integrity (MI) program for critical process equipment.
- Design and execute effective Pre-Startup Safety Reviews (PSSR) for new and modified facilities.
- Master incident investigation techniques, including Root Cause Analysis (RCA), to prevent recurrence.
- Develop and track meaningful Process Safety Performance Indicators (PSPIs) for continuous improvement.
- Enhance the organization's safety culture through effective leadership and employee participation.
- Create and implement effective emergency planning and response procedures.
- Conduct comprehensive PSM compliance audits to identify gaps and ensure regulatory adherence.

Course Methodology:

The training methodology employed by BIG BEN Training Center is designed to be highly interactive, engaging, and practical, ensuring that participants can directly apply the learned concepts to their work environments. We move beyond traditional lectures to a blended learning approach that emphasizes active participation. The course is built around real-world case studies of major industrial incidents, allowing participants to analyze root causes and discuss preventative strategies in a controlled setting. A significant portion of the training is dedicated to hands-on workshops and group exercises, such as conducting a mock HAZOP study, completing Management of Change documentation, and developing an incident investigation plan. These activities foster collaborative problem-solving and critical thinking. Facilitated discussions, expert-led Q&A sessions, and peer-to-peer knowledge sharing are integral components of each module. Participants will receive continuous feedback from the instructor to reinforce learning and address specific challenges they face in their roles. This immersive approach ensures a deep and lasting understanding of Process Safety Management principles and their practical implementation.

Course Agenda (Course Units):

Unit One: Foundations of Process Safety Management

- Introduction to Process Safety and its Importance.
- Distinguishing Between Process Safety and Personal Safety.
- History and Evolution of PSM Regulations.
- Detailed Overview of the 14 Elements of OSHA's PSM Standard (29 CFR 1910.119).
- The Role of Leadership and Management Commitment.
- Developing and Fostering a Proactive Safety Culture.
- Understanding Employee Participation and its Critical Role.

Unit Two: Process Hazard Analysis and Risk Assessment

- Understanding Process Safety Information (PSI) Requirements.
- Fundamentals of Hazard Identification Techniques.
- Deep Dive into Process Hazard Analysis (PHA) Methodologies.
- Practical Application of Hazard and Operability (HAZOP) Studies.
- Conducting What-If/Checklist Analysis.
- Introduction to Layer of Protection Analysis (LOPA).
- Risk Assessment Matrices and Consequence Modeling.

Unit Three: Managing Process Risks and Asset Integrity

- Developing and Implementing Effective Operating Procedures.
- The Critical Role of Management of Change (MOC).
- Establishing a Robust Mechanical Integrity (MI) Program.
- Inspection, Testing, and Preventive Maintenance (ITPM) Strategies.
- Managing Contractor Safety and Performance.
- Principles of Inherent Safer Design.
- Training and Performance Assurance for Operations and Maintenance Staff.

Unit Four: Operational Discipline and Emergency Preparedness

- Conducting Pre-Startup Safety Reviews (PSSR).
- Implementing Safe Work Practices and Permit-to-Work Systems.
- Managing Hot Work and Other High-Risk Activities.
- Understanding and Maintaining Asset Integrity.
- Developing a Comprehensive Emergency Planning and Response Plan.
- Conducting Effective Emergency Drills and Exercises.
- The Concept of Operational Discipline and Human Factors.

Unit Five: Auditing, Investigation, and Continuous Improvement

- Conducting Effective PSM Compliance Audits.
- Techniques for Incident Investigation and Reporting.
- Mastering Root Cause Analysis (RCA) Methodologies.
- Learning from Incidents and Near Misses.
- Developing and Tracking Key Process Safety Performance Indicators (PSPIs).
- The Importance of Trade Secrets and Information Sharing.
- Strategies for Continuous Improvement in your PSM Program.

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 an organization embed a proactive process safety culture so deeply that it becomes an intrinsic value for every employee, from the boardroom to the front line?

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

This course distinguishes itself by focusing intensely on the practical application of process safety principles within the specific context of the oil, gas, and petrochemical industries. Unlike purely theoretical programs, our curriculum is built upon a foundation of detailed case studies of real-world incidents, enabling participants to understand not just what failed, but why. The emphasis is on developing analytical and leadership skills rather than simple memorization of regulations. We dedicate significant time to hands-on workshops where participants engage in simulated Process Hazard Analysis (PHA) and Management of Change (MOC) exercises, mirroring the challenges they face in their professional roles. Furthermore, the course content is dynamically updated to reflect the latest industry best practices and learnings from recent events. The curriculum is designed to foster a deep understanding of how human factors and organizational culture are often the most critical components of a successful PSM system. This approach ensures that graduates leave not just with knowledge, but with the competence and confidence to drive meaningful safety improvements and champion a culture of vigilance within their organizations.