



Process Safety Management in High-Risk Industries Training Course

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Course Overview:

This course is designed to equip professionals with the essential skills and knowledge needed to manage safety risks effectively in high-hazard environments. Rooted in global best practices and tailored for industries such as oil and gas, chemical production, and manufacturing, this program integrates process safety systems, hazard control strategies, and emergency planning frameworks.

Participants will explore key topics such as process safety management systems, contractor safety oversight, emergency response planning, static electricity hazard control, and the FARSI model for safety-critical equipment. With modules aligned to international safety standards, learners will develop expertise in process hazard identification HAZID, Bowtie analysis, permit-to-work systems, thermal runaway prevention, and ALARP-based decision-making.

Target Audience:

HSE Managers and Supervisors

Process Safety Engineers

Health and Safety Consultants

Maintenance Managers

Site Operation Managers

Safety Trainers and Advisors

Industrial Risk Specialists

Targeted Organizational Departments:

Health, Safety & Environment HSE

Production and Operations

Risk Management & Compliance

Engineering & Maintenance

Chemical Safety Units

Process Safety Leadership Teams

Targeted Industries:

Oil and Gas

Chemical Manufacturing

Petrochemicals

Pharmaceutical Production

Industrial Processing Plants

Food and Beverage Manufacturing

Utilities and Power Generation

Course Outcomes:

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

Identify and manage key process safety hazards

Implement and maintain an effective Process Safety Management System PSMS

Apply ALARP principles to risk assessments and operational decisions

Conduct Bowtie, HAZID, and HAZOP analyses to identify and mitigate risks

Design emergency response plans aligned with regulatory frameworks

Evaluate contractor safety performance and implement control measures

Develop leading and lagging process safety performance indicators



Training Methodology:

This course uses a blended approach combining theory, practice, and interactive learning. Participants engage in case studies from real industrial incidents to simulate hazard identification HAZID, Bowtie analysis, and FMEA workshops. Techniques such as group work, simulations, and structured discussions reinforce the connection between classroom theory and field practice.

Course Toolbox:

Digital Study Guide for Process Safety Management

Process Safety System Templates and Checklists

HAZID and HAZOP Worksheets

FARSI Model Performance Checklist

Curated List of International Safety References and Resources

Access to Online Case Studies and Practice Exercises

Course Agenda:

Day 1: Process Safety Foundations & Leadership

Topic 1: Overview of Process Safety and Course Objectives

Topic 2: Process vs. Personal Safety – Key Distinctions

Topic 3: Leadership and Safety Culture Development

Topic 4: Organizational Learning and Benchmarking

Topic 5: Change Management and Safety Communication

Topic 6: Contractor Engagement and Worker Involvement

Reflection & Review: Leadership Influence on Safety Outcomes



Day 2: Managing Process Safety Risk

Topic 1: Building and Implementing a PSMS

Topic 2: Risk Assessment Techniques and ALARP Application

Topic 3: Hazard Analysis Tools: HAZID, HAZOP, Bowtie, FMEA

Topic 4: Asset Integrity and Preventive Maintenance

Topic 5: Permit-to-Work and Safe Work Systems

Topic 6: Best Practices in Shift Handover and Communication

Reflection & Review: Case Review of Process Safety Events

Day 3: Hazard Control and Operational Safety

Topic 1: Developing and Using Operating Procedures

Topic 2: Safe Startup, Shutdown, and Alarm Management

Topic 3: FARSI Model for Safety-Critical Equipment

Topic 4: Utilities Management in High-Risk Facilities

Topic 5: Electricity and Static Discharge Control

Topic 6: Contractor Safety Management and Evaluation

Reflection & Review: Workshop on Operational Safety Gaps

Day 4: Chemical Hazards, Storage, and Compliance

Topic 1: Hazardous Material Properties and Behaviors

Topic 2: Thermal Runaway: Causes and Controls

Topic 3: Bulk Storage Tank Safety and Bunding Standards

Topic 4: Fire Protection for Chemical Storage Sites

Topic 5: Regulatory Frameworks e.g., COMAH Equivalent Standards

Topic 6: Safe Warehousing Practices and Segregation

Reflection & Review: Scenario-Based Chemical Hazard Assessment



Day 5: Fire, Explosion Risk & Emergency Preparedness

Topic 1: Fire Dynamics and Explosion Types

Topic 2: Fire Detection and Protection Systems

Topic 3: Dust Explosion Prevention and Area Zoning

Topic 4: Emergency Planning and Response Scenarios

Topic 5: Public Safety Communication and Evacuation Drills

Topic 6: Final Case Study + Exam Simulation if applicable

Reflection & Review: Participant Feedback and Closing Summary

FAQ

Do participants need any prior qualifications before attending?

No formal prerequisites are required. However, a basic understanding of occupational health and safety principles is recommended.

How long is the course, and what is the daily schedule?

The course spans 5 days with daily sessions lasting 4–5 hours, including breaks and interactive segments. Total contact hours: 20–25.

What is the FARSI model and how is it applied?

The FARSI model Functionality, Availability, Reliability, Survivability, Interdependency is used to assess safety-critical systems and ensure equipment integrity in high-risk scenarios.

What Makes This Course Unique?

This training program goes beyond standard theory by offering practical, results-driven learning tailored to high-hazard industries. Participants engage in hands-on workshops and scenario-based exercises HAZOP, Bowtie, FMEA, simulating the decision-making pressures of real-world process incidents. The program is aligned with international safety frameworks and customized for applicability across various sectors — ensuring each learner leaves with actionable tools and a deeper operational safety mindset.



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