

INNOVATIVE HAZARD AND HAZOP ANALYSIS TECHNIQUES

“Enhancing Process Safety through Advanced Hazard Identification and Risk Assessment”

Schedule

| Date | Venue | Fees (Face-to-Face) |
|------------------|------------|-----------------------|
| 25 – 29 May 2026 | London, UK | USD 3495 per delegate |

► **Available delivery methods:** Face-to-Face & Online Training

Introduction

In high-risk industries, identifying hazards and managing operational risk is not optional—it’s mission critical. Hazard and Operability (HAZOP) studies are the cornerstone of process safety management, helping organizations identify failure scenarios and implement preventive measures. As systems and technologies evolve, so must the methods we use to analyze and control risks.

This course provides participants with advanced knowledge of HAZOP and complementary hazard analysis techniques. It emphasizes innovative approaches to facilitate effective workshops, integrate digital tools, and align HAZOP studies with operational excellence and safety regulations. Participants will gain practical skills to lead or contribute to high-impact risk assessments in complex operational environments.

Objectives

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

- Understand and apply the principles of HAZOP, What-If, and other hazard studies
- Use structured techniques to identify process deviations and their consequences
- Facilitate or contribute effectively to HAZOP workshops
- Apply software tools and digital aids to streamline hazard analysis
- Document, track, and verify mitigation actions using best practices
- Integrate hazard studies with safety management systems and compliance goals

Why Attend

- Develop competence in conducting or participating in HAZOP and other risk assessments
- Discover modern tools and strategies for more efficient hazard analysis
- Learn how to align HAZOP outcomes with operational control and regulatory audits
- Improve communication and decision-making during hazard review sessions
- Understand how to close the gap between identified hazards and implemented controls

Target Audience

This program is designed for:

- Process and Safety Engineers
- Operations and Maintenance Managers
- HSE and Risk Management Professionals
- HAZOP Team Leaders and Facilitators
- Anyone responsible for technical safety and operational integrity

Individual Benefits

Key competencies that will be developed include:

- HAZOP leadership and facilitation techniques
- Understanding of multiple hazard analysis methodologies
- Process risk identification and scenario analysis
- Corrective action tracking and closure management
- Integration of hazard studies into operational reviews and audits

Organizational Benefits

Upon completing the training course, participants will demonstrate:

- Improved risk visibility and proactive hazard control
- Stronger safety culture through better team participation in HAZOPs
- Enhanced compliance with local and international process safety regulations
- Reduced incidents through effective implementation of recommendations
- Better documentation, traceability, and risk mitigation tracking

Instructional Methodology

The course follows a blended learning approach combining theory with practice:

- Strategy Briefings - HAZOP frameworks, safety lifecycle integration
- Case Studies - Incident reviews and HAZOP effectiveness analysis
- Workshops - Facilitate mock HAZOPs, deviation assessments
- Peer Exchange - Sharing HAZOP facilitation experiences and challenges
- Tools - HAZOP templates, bowtie analysis, risk matrices, software walkthroughs

Course Outline

Training Hours: 7:30 AM - 3:30 PM Daily Format: 3-4 Learning Modules | Coffee breaks: 09:30 & 11:15 | Lunch Buffet: 01:00 - 02:00

Day 1: Process Safety and Hazard Identification Fundamentals

- Module 1: Process Hazard Analysis (PHA) Overview (07:30 - 09:30) • Purpose, regulatory context, and safety lifecycle
- Module 2: Introduction to HAZOP and its Role in Safety (09:45 - 11:15) • Concepts, history, and key components of HAZOP
- Module 3: Other Hazard Analysis Techniques (11:30 - 01:00) • What-If, Checklist, FMEA, Bowtie Analysis
- Module 4: Workshop - Select the Right Technique for Your Process (02:00 - 03:30) • Participants choose suitable tools for case study scenarios

Day 2: HAZOP Preparation and Team Leadership

- Module 5: HAZOP Team Structure and Roles (07:30 - 09:30) • Facilitator, scribe, SMEs, and operations representatives
- Module 6: Defining Nodes and Process Deviations (09:45 - 11:15) • Guide words, parameter selection, scoping
- Module 7: Information and Data Gathering for HAZOP (11:30 - 01:00) • P&IDs, cause-consequence diagrams, design data
- Module 8: Workshop - Prepare a Node Analysis Plan (02:00 - 03:30) • Define HAZOP nodes and guide word sets

Day 3: HAZOP Execution and Risk Assessment

- Module 9: Conducting Effective HAZOP Sessions (07:30 - 09:30) • Workshop dynamics, facilitation techniques
- Module 10: Assessing Severity, Likelihood, and Risk Ranking (09:45 - 11:15) • Use of risk matrices and company-specific scoring
- Module 11: Recording and Classifying Recommendations (11:30 - 01:00) • Clarity, action owners, deadlines
- Module 12: Workshop - Simulate a HAZOP Review (02:00 - 03:30) • Participants conduct a live walkthrough using a process scenario

Day 4: Integration and Continuous Improvement

- Module 13: Linking HAZOP to SIL, LOPA, and Bowtie (07:30 - 09:30) • Advanced risk tools and when to apply them
- Module 14: HAZOP Action Tracking and Closure (09:45 - 11:15) • Systematic follow-up, documentation practices
- Module 15: Auditing and Revalidating HAZOPs (11:30 - 01:00) • Periodic review, MOC, lessons learned
- Module 16: Workshop - HAZOP Revalidation Audit Plan (02:00 - 03:30) • Build a schedule and audit checklist

Day 5: Digitalization and Emerging Approaches

- Module 17: Digital Tools for HAZOP Analysis (07:30 - 09:30) • HAZOP software platforms, cloud-based collaboration
- Module 18: Integrating HAZOP with Asset Integrity Systems (09:45 - 11:15) • Links to maintenance, inspection, and performance monitoring
- Module 19: Case Study - HAZOP Failure and Consequences (11:30 - 01:00) • Lesson learned analysis and risk communication
- Module 20: Final Workshop - Facilitate a HAZOP for a Sample Unit (02:00 - 03:30) • End-to-end application of course methods

Certification

Participants will receive a Certificate of Completion in Innovative Hazard and HAZOP Analysis Techniques, validating their ability to lead and contribute to comprehensive hazard identification and risk analysis in alignment with international safety standards and best practices.

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