MAWA EVENTS

Address: No. 857, Block A2. Leisure Commerce Square - No 9., 46150 Petaling Jaya, Selangor, Malaysia

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ADVANCED RISK AND HAZARD ANALYSIS FOR OPERATIONAL SAFETY

"Systematic Techniques to Identify, Assess, and Control Operational Hazards and Improve Safety Integrity"

Schedule

Date	Venue	Fees (Face-to-Face)
15 – 29 Jun 2026	London - UK	USD 3495 per delegate

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

Introduction

Operational safety depends on the organization's ability to systematically identify risks, evaluate hazards, and implement effective mitigation strategies. As industries grow more complex, structured and proactive risk analysis becomes critical for reducing incidents, protecting personnel, and ensuring compliance with global safety standards.

This intensive course equips safety professionals with advanced tools and methodologies for identifying and managing operational risks and hazards. Using techniques such as HAZOP, FMEA, bowtie analysis, LOPA, and risk matrices, participants will build competence in improving the integrity and resilience of safety systems.

Objectives

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

- Apply structured hazard identification and risk analysis tools (HAZID, HAZOP, FMEA)
- Evaluate and quantify operational risks using severity and likelihood metrics
- Develop and use risk matrices, bowtie diagrams, and barrier models
- Apply Layer of Protection Analysis (LOPA) to assess safety systems
- Recommend and document effective mitigation and control strategies

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Why Attend

- Strengthen safety decision-making with analytical risk tools
- Improve regulatory compliance and reduce liability exposure
- Learn how to facilitate and document structured risk assessments
- Gain insight into leading global safety standards and best practices
- Reduce downtime, injuries, and incident recurrence through prevention

Target Audience

This program is designed for:

- HSE engineers, advisors, and operational safety officers
- Risk and compliance managers
- Plant operations and production supervisors
- Safety auditors and incident investigators
- Engineers responsible for critical systems and safety integrity

Individual Benefits

Key competencies that will be developed include:

- Expertise in hazard identification and scenario analysis
- Use of structured methodologies to evaluate and prioritize risks
- Design and interpretation of risk matrices and bowtie diagrams
- Ability to lead and document risk workshops effectively
- Integration of safety risk analysis into operational procedures

Organizational Benefits

Upon completing the training course, participants will demonstrate:

- Improved operational risk visibility and control
- Standardized and auditable hazard assessment documentation
- Enhanced compliance with ISO 45001, OSHA, and local safety regulations
- Greater cross-functional collaboration during risk reviews
- Safer work environments and reduced accident rates

Instructional Methodology

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

- Strategy Briefings – Risk frameworks, standards, and methodologies
- Case Studies – Incident analyses and lessons learned from real operations
- Workshops – HAZOP, FMEA, LOPA facilitation and documentation
- Peer Exchange – Safety challenges across different industries
- Tools – Risk templates, matrices, and analysis software walkthroughs

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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: Foundations of Operational Risk and Hazard Identification

- Module 1: Introduction to Operational Safety and Risk (07:30 – 09:30)
- • Risk concepts, types of hazards, and regulatory context Module 2: Hazard Identification Techniques – HAZID (09:45 – 11:15) • Techniques, team roles, and documentation
- Module 3: Failure Mode and Effects Analysis (FMEA) (11:30 – 01:00) • Process FMEA vs. design FMEA, RPN scoring
- Module 4: Workshop – FMEA for a Process Scenario (02:00 – 03:30) • Conduct FMEA on a plant component or system

Day 2: Structured Hazard Analysis Tools

- Module 5: Hazard and Operability Study (HAZOP) (07:30 – 09:30) • Methodology, guide words, roles, and outcomes
- Module 6: Facilitating Effective HAZOP Reviews (09:45 – 11:15) • Leadership techniques, recording deviations, and actions
- Module 7: Risk Matrix Development and Use (11:30 – 01:00) • Probability-impact grids, calibration, escalation thresholds
- Module 8: Workshop – Lead a HAZOP Session (02:00 – 03:30) • Team-based exercise with practical worksheet

Day 3: Visualizing and Communicating Risk

- Module 9: Bowtie Risk Analysis (07:30 – 09:30) • Threats, consequences, preventive and recovery barriers
- Module 10: Developing and Interpreting Bowtie Diagrams (09:45 – 11:15) • Tool selection, communication of controls, barrier effectiveness
- Module 11: Case Study – Applying Bowtie in Oil & Gas (11:30 – 01:00) • Analyze real incident and map controls
- Module 12: Workshop – Build a Bowtie Diagram (02:00 – 03:30) • Choose a scenario and develop a full diagram

Day 4: Quantitative and Layered Risk Assessment

- Module 13: Layer of Protection Analysis (LOPA) (07:30 – 09:30) • Initiating events, IPLs, risk reduction targets
- Module 14: Conducting a LOPA Study (09:45 – 11:15) • Calculations, assumptions, and integrity levels
- Module 15: SIL and SIF Considerations in Process Safety (11:30 – 01:00) • Integration of risk into safety instrumented functions
- Module 16: Workshop – LOPA Application for High-Risk Scenarios (02:00 – 03:30) • Model and validate safeguards

Day 5: Safety Culture, Documentation, and Integration

- Module 17: Embedding Risk Analysis into Safety Culture (07:30 – 09:30) • Leadership, training, and continuous improvement
- Module 18: Risk Register Development and Tracking (09:45 – 11:15) • Templates, version control, integration with incident logs
- Module 19: Linking Hazard Analysis to Operational Controls (11:30 – 01:00) • Work instructions, JSAs, permits, and dynamic risk tools
- Module 20: Final Workshop – Build a Risk Management Strategy (02:00 – 03:30) • Participant-led strategy and documentation activity

Certification

Participants will receive a Certificate of Completion in Advanced Risk and Hazard Analysis for Operational Safety, validating their expertise in applying structured risk assessment tools and integrating hazard analysis into daily operations to enhance safety integrity.

Why Choose MAWA Events

- **Global Expertise:** More than 17 years of experience in professional training and consulting.
- **Industry-Leading Faculty:** Courses delivered by seasoned professionals with hands-on experience.
- **Practical Insights:** Learn to turn theory into actionable strategies for real-world business impact.
- **Client-Focused Solutions:** Customized programs designed to achieve your organisation’s unique goals.

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In-House / Customized Training Interested in running this course for your team? Please contact us:	TEL: **+601116373203**	EMAIL: **info@mawaevents.net**