BTS
Training & Consultancy

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Advanced Process Risk Assessment

Duration: 5 Days

Introduction:

The global trend in integrating Health, Safety and Environmental Management Systems underpins commitment to implementing a pro-active approach to risk management based on structured and systematic risk assessment. This course is aimed at providing hands-on experience on the application of advanced risk assessment techniques relevant to the oil, gas and process industries. This course will enable delegates to identify hazards, particularly those resulting from human error, evaluating risks and targeting resources to prevent accidents through effective risk management. It will also provide familiarity with Quantified Risk Assessment (QRA) and review latest software on fire, explosion and dispersion modeling following hydrocarbon and toxic releases.

Who Should Attend?

EH&S personnel, personnel involved in carrying out risk assessment and accident prevention and personnel from senior management, supervisors and senior operators

Course Objectives:

By the end of this course delegates will be able to:

- Risk assessment and risk management
- Hazard and risk - Concept, definitions and terminology
- Risk comparison: voluntary v. involuntary risks and tolerability of risks
- Types of risk: Individual, societal, economic and environmental risks
- Framework for risk assessment
- Estimation and evaluation of risks: qualitative, semi-quantitative and quantified risks
- The link between risk assessment and risk management: Framework for risk management
- Elements of risk management: prioritizing actions, planning and implementing
- Human error and accident causation (latent and active errors): Bhopal and Piper Alpha
- Techniques for hazard identification and analysis
- Cause-consequences analysis: the role of fault trees and event trees in accident prevention
- Techniques for human reliability analysis
- Preparation of action plans
- Prioritizing and targeting corrective and preventive measures

Course Outline:

Introduction to Risk Assessment

- Introduction to HSE Management Systems
- Integrating risk assessment within Risk Management
- Semi-quantitative risk assessment techniques - machinery based
- The task-based approach to risk assessment

Hazard and Operability Studies (HAZOP)

- Introduction to hazards identification and analysis techniques
- Techniques for hazard identification and analysis - HAZOP
- Syndicate exercise - application of HAZOP to relevant processes
- Planning and implementing within risk management system

Analysis of the Consequences

- Introduction into reliability technology
- Failure Modes and Effects Analysis (FMEA)
- Failures of Permit-to-work systems: video presentation on Piper Alpha
- Analysis of the consequences- mechanics of fire, explosion and toxic releases
- Role of Fault Tree Analysis to identify how accidents can happen

Human Factors and Reliability

- Introduction to human factors and human error
- Hierarchical task analysis (HTA)
- Task-based HAZOP: Application to critical activities onshore and offshore
- Integrating human factor within HSE management system - The Bhopal disaster

Quantified Risk Assessment

- Introduction to Quantified Risk Assessment (QRA)
- The role of Event Tree Analysis in scenario development
- The role of Fault Tree Analysis for multi-causation analysis
- Case Study: Working in small groups on accident analysis
- Preparation of action plans, planning and implementing
- Report back and discussion
- Personal action plans