

€ TRAINING

Safety Technology & Risk Management



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Introduction:

As technological systems become more complex, it becomes increasingly difficult to identify safety hazards and to control their impact. Plant Managers and Engineers are becoming more aware that safety and risk touch on every aspect of the day to day running of their Plants and engineering and process systems if they are to comply with ever changing and demanding International, and National environmental and economic values and standards.

Unsafe systems can result in monies being lost due to accidents, disruption to production, criminal and civil prosecutions, loss of market share, and the degradation of company assets and the environment.

Course Objectives:

At the end of this course the participants will be able to:

- Apply the principles of hazard identification and assessment of risk to processes and machinery
- Understand reliability concept and use of failure tracing methods
- Demonstrate a practical understanding of a quantitative risk assessment technique and the data required for records
- Advise management on the most effective control methods based on the evaluation of risk
- Identify the general requirement for the development of a safe system of work
- Recognize relevant International Standards for Reliability and Machinery Safety

Targeted Audience:

- Plant Professionals
- Engineers
- Designers
- All Professionals who have a contribution to make in ensuring the safe operation of a potential high hazard workplace

Course Outlines:

Unit 1: Hazard Identification:

- Introduction and Course Overview
- Why do we need safety engineering?
- Examples of Major Disasters
- The Safety System Process
- Hazard Identification
- Hazard Control
- Criteria for Risk Tolerability
- Hazard Identification Techniques
- Design Out Hazards
- Safety Standards Codes, National and International
- Safety Analysis in Engineering
- Safety Analysis in Manufacturing

Unit 2: Risk Assessment Techniques:

- Safety Management
- Safety in System Life Cycle
- Hazard Identification Checklist
- Process, Workplace, Work Equipment Risk Assessment
- Task-based Risk Assessment
- Introduction to HAZOP

Unit 3: Machinery and Work Equipment Safety:

- Machinery Hazard Identification
- Causes and Methods for Machinery Accident Prevention
- HAZOP Examples
- Failure Modes, Human Factors and Software Safety
- Conducting Failure Mode and Effective Analysis
- Performance and Human Error
- Human Factors and Safety Analysis

Unit 4: Reliability Technology:

- Types and Causes of Failures
- Methods of Preventing Failure
- Types of Maintenance and Inspection Regimes
- Reliability of Components and Systems
- Design and Reliability of Control Systems
- Design and Reliability of Protective Systems
- The Concept of "HIPS"
- Safety Integrity Levels "SIL" Selection

Unit 5: Consequences Analysis:

- Mechanics of Fire, Explosion, and Toxic Releases
- Dispersion Modelling Software
- Types of Fire: Flash, Jet, Cascading Fires, and BLEVE
- Types of Explosion
- Quantification of Risk
- Event Tree Analysis "ETA"
- Course Summary
- Course Review