

# Advanced Risk and Incident Analysis

## INTRODUCTION

- An essential part of risk and incident analysis is to provide management with decision making criteria for determining and subsequently establishing an organisation's range of acceptable, tolerable and unacceptable risk category levels for the effective management of all their significant health, safety and process risks. Such tools are essential for avoiding major industrial incidents that can result in death, destruction, and commercial losses.

In this training course, delegates will advance their knowledge and skills by:

- Understanding the importance and role of risk and incident analysis
- Learning the principles of risk management and assessment process
- Being able to analyse risks and incidents and consider the underlying causes
- Learning how to select / implement pro-active incident prevention measures
- Appreciating the roles and importance of managing Leading and Lagging Indicators
- Understanding pre and post risk and incident management

## PROGRAMME OBJECTIVES

This Advanced Risk & Incident Analysis training course aims to enable participants to achieve the following objectives:

- Gaining an appreciation of risk and incident analysis techniques
- Understanding the role and the importance of "Barriers" in avoiding incidents and mitigating their consequence
- Identification of potential plant, process and work task related risks
- Developing and implementing Risk Management programmes
- Understanding how to carry out comprehensive incident analysis using evaluation tools, including root cause analysis (RCA)
- Appreciating the roles of Leading and Lagging Indicators in incident avoidance
- Develop skills for analysing new and existing risk control measures and improving incident analysis techniques of pre and post risk and incident management arrangements

## WHO SHOULD ATTEND?

- Management and those with responsibilities for analysing risks and incidents
- Production, process, maintenance, and HSE personnel
- Line-management involved in planning and / or implementing the organisation's risk and incident analysis programmes

## TRAINING METHODOLOGY

- Delegates will learn by active participation through inspiring presentation tools and interactive training course and role-playing activities, presented in a lively, enthusiastic and interesting style. Delegates will take part in topic exercises, case studies and the practical programme.

## PROGRAMME SUMMARY

- The purpose of this Advanced Risk & Incident Analysis training course is to provide delegates with the advanced skills and knowledge to successfully analyse new and existing risk control measures and conduct effective incident analysis. This training course will show delegates how they can evaluate, determine and implement effective risk control measures to prevent serious incident occurring and / or re-occurring.

## PROGRAM OUTLINE

### Advanced Risk Analysis

- Principles of Risk Analysis
- Control Measures and Mitigation
- Consideration of the Risk Analysis Framework
- Risk Evaluation Process and Risk Assessment Techniques
- Roles of Health & Safety and Process Management Systems
- An introduction to the concepts Barriers and of Layers of Protection (LOPs)

### Advanced Incident Analysis (Part 1)

- Learning from Incidents – Review of Case Studies
- Gas Leak & Explosion; Liquid Leak & Explosion; Pipe Failures
- A study of some large health and safety incidents
- Accident and Incident Analysis
- Incident Occurrences; Eye Witness Testimonies; Analysis Team
- Gathering Evidence; Expert Support; Incident Sequence
- Preliminary Causes; Root Cause Analysis; Human Factors
- Risk Control Recommendations; Analysis Report

## Advanced Incident Analysis (Part 2)

- Human Factors Environment
- Sensory and Perceptual Processes
- Individuals – Psychology and Differences
- Perception and Decision Making
- Human Error
- Incident Analysis using a series of case studies:
- PVC monomer plant fire and explosion
- Improving Human Reliability

## Advanced Risk and Incident Analysis Programme

- Development of the Bow Tie Method
- Incident Analysis using a series of case studies:
- Process design issues - Propylene Fire and Explosion
- Failure to understand the Process - Reactive Hazards Explosions
- Deviations in Process Control - A serious Ethylene Oxide Explosion
- Incident Re-occurrence – Organisations Have No Memory

## Advanced Risk and Incident Prevention Programme

- Incident Analysis using a series of case studies:
- So much went wrong - A major oil refinery fire and explosion
- Emergency Response Analysis
- Pro-Active Incident Prevention Measures
- Pre & Post Risk and Incident Management
- Key Points Summary