



HSE174

Safety and Loss Prevention in Petrochemical Plants Techniques for Risk Assessment and Decision Making

Course Introduction:

One should always remember danger when you are secure, and remember chaos in time of order. Watch out for danger and chaos while they are still formless, and prevent them before they happen.

This is best of all. So the rule of military operations is not to count on opponents not coming, but to rely on having ways of dealing with them; not count on opponents not attacking, but to rely on having what cannot be attacked" The Art of War, 6 Century B.C.

Risk is the probability of an undesirable event occurring and the significance of the consequence of what occurred. People tend to perform intuitive (not rigorous) risk Management in their lives, using their own beliefs (politics, religion, etc.) or experience.

A future event will occur this way, because a similar event happened that way in the past. Once established, risk perceptions are hard to change.

Perception of risk needs to be fact-based utilizing logic, not emotion. Perform a systematic analysis of the risks. All projects and tasks have risks and most risks are small and manageable, but the analysis needs to be completed.

Course Objectives:

Upon successful completion of this course, the delegates will be able to:

- Understand the basic fundamental principles of risk assessment and decision making
- Determine the advance operating procedure and troubleshooting process unit operation or problem solving to be effective
- Develop key concepts and techniques to logically analyze risk assessment and decision-making
- Utilize the key concepts to make operating procedures to improve unit's performance and safety
- Improve operations including product recoveries, purities and energy, utilization and safety

Who Should Attend?

This course is intended for all staff from supervisors to senior management with roles and responsibilities for safety in the workplace. In addition, all safety professionals or risk managers need to have a full understanding of the modern tools available to be competent in accident investigations. The course will also benefit regulators and enforcement officers who may have to oversee certain classifications of investigations.

Course Outline:

Day 1:

Pre-Test

Introduction to Problem Solving and Decision-Making

- Introducing the course
- Introduction of creative problem solving
- Vertical and creative thinking contrasted
- The rational problem solving process
- The creative funnel approach

Safety, Environment and Plant Operation (1)

- Petrochemical equipment - overview
- Introduction to process safety and loss prevention
- Hazard identification methods

Day 2:

Safety, Environment and Plant Operation (2)

- Plant operation – refinery processes
- Inherent safety – refinery processes
- Environmental aspect of refinery processes

Process Safety and Control (1)

- Understanding process and instrumentation diagrams
- Hierarchy of safety approach in plant operation
- Basic process control systems
- Case study – refinery processes

Day 3:

Process Safety and Control (2)

- Safety automation
- Alarm and interlocks system
- Relief system
- Case study – refinery processes

Risk Assessment and Management (1)

- Occupational Safety and Health management systems
- HAZOP Fundamental
- Managing HAZOP
- HAZOP case study – furnaces and boilers

Day 4:

Risk Assessment and Management (2)

- Hazard Incident Scenario – case study
- Fault Tree Analysis
- Quantitative Risk Assessment
- Risk Acceptability and Tolerability
- Case study – refinery processes

Problem solving and decision making process

- Situational analysis
- Problem analysis
- Finding root causes
- Case study – refinery processes

Day 5:

Generating alternatives

- Mind mapping
- Fishbone diagrams
- Brainstorming
- Case study – refinery processes

Evaluating and choosing solutions

- Personal judgment
- Systematic decision making
- Potential problem analysis
- Case study – refinery processes

Post Test

Course Certificate:

International Center for Training & Development (ICTD) will award an internationally recognized certificate(s) for each delegate on completion of training.

Course Methodology:

A variety of methodologies will be used during the course that includes:

- (30%) Based on Case Studies

- (30%) Techniques
- (30%) Role Play
- (10%) Concepts
- Pre-test and Post-test
- Variety of Learning Methods
- Lectures
- Case Studies and Self Questionnaires
- Group Work
- Discussion
- Presentation

Course Fees:

To be advised as per the course location. This rate includes participant's manual, Hand-outs, buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Course Timings:

Daily Course Timings:

08:00 - 08:20	Morning Coffee/Tea
08:20 - 10:00	First Session
10:00 - 10:20	Recess (Coffee/Tea/Snacks)
10:20 - 12:20	Second Session
12:20 - 13:30	Recess (Coffee/Tea/Snacks)
13:30 - 15:00	Last Session