



**PROJACS ACADEMY**  
by  **egis**



# Hazard and Operability (HAZOP)

19 – 23 November 2023

Al Khobar / KSA

## Introduction

It is universally recognized that for any Company to succeed it must take a proactive approach to risk management. Over the last few years Companies and a number of Countries legislators have been focusing on Process Safety as a method to reduce the risks posed by hazardous industries.

Process Hazard Analysis (PHA) is recognized as being a critical tool in the implementation of a

Successful risk management system. As Hazard and Operability (HAZOP) studies are now recognized world-wide as being the qualitative risk assessment methodology of choice in the Process Industries, there will be additional focus on This specific aspect of Process Hazard Analysis.

## Objectives

**In this training course, the delegates will learn:**

- How to apply advanced risk assessment techniques
- Mechanics of dispersion, fire, explosion and toxic releases
- The concept of Quantified Risk Assessment “QRA”
- Hazard and Operability (HAZOP) study methodology
- HAZOP team leadership
- Understand the concepts of Risk Assessment and Risk Management
- Understand the estimation and evaluation of risks – Qualitative, Semi-Quantitative and Quantified Risks
- Techniques for Hazard Identification and Analysis – Check-Lists, Risk Profiling, HAZOP, FMEA and Task-Based Risk Assessment
- Cause-Consequences Analysis – The Role of Fault Trees and Event Trees in Accident Prevention
- Understand HAZOP studies their benefits and their short comings
- Understand the requirements of a Team Leader or Facilitator, scribe and team members during HAZOP studies
- Be able to facilitate a HAZOP study.

## Course Outline

### Day One

#### **Introduction to Risk Assessment:**

- The concepts of hazards, risk and risk assessment
- Methods for risk evaluation
- Integrating risk assessment within Risk Management
- Qualitative, Semi-Quantitative and Quantitative Risk Assessment methodologies

### Day Two

#### **Risk Assessment Techniques: HAZOP:**

- Introduction to hazards identification and analysis techniques
- Techniques for hazard identification and analysis – HAZOP
- Where and when to use HAZOP and the requirements for a successful HAZOP study
- Team composition for HAZOP studies
- Guide words and process variables used for HAZOP studies
- Syndicate exercise – application of HAZOP to relevant processes

### Day Three

#### **HAZOP Leadership Techniques:**

- HAZOP team leader/facilitator requirements
- HAZOP scribe requirements
- Facilitating HAZOP studies, do's and don'ts
- Information required to allow successful HAZOP studies
- Case study where each delegate has the opportunity to facilitate a HAZOP meeting
- Review of commercial software used for HAZOP and Management of Change 'MOC'

### Day Four

#### **Consequence Analysis:**

- Theory behind fire, explosion and toxic dispersion modelling utilized in Quantitative Risk Assessments
- Types of fires and their effects on people and equipment
- Types of explosions and their effects on people and equipment
- Review of software available for consequence calculations

## **Day Five**

### **The Role of QRA:**

- 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
- Applications for ETA and FTA
- Failure data for use in QRA’s
- Societal Risk and Individual Risk
- Review of software available for Quantitative Risk Assessments
- Program review and the way ahead

### **Training Method**

- Pre-assessment
- Live group instruction
- Use of real-world examples, case studies and exercises
- Interactive participation and discussion
- Power point presentation, LCD and flip chart
- Group activities and tests
- Each participant receives a 7” Tablet containing a copy of the presentation, slides and handouts
- Post-assessment

### **Program Support**

This program is supported by interactive discussions, role-play, case studies and highlight the techniques available to the participants.

### **Schedule**

#### **The course agenda will be as follows:**

- |                     |                  |
|---------------------|------------------|
| • Technical Session | 08.30-10.00 am   |
| • Coffee Break      | 10.00-10.15 am   |
| • Technical Session | 10.15-12.15 noon |
| • Coffee Break      | 12.15-12.45 pm   |
| • Technical Session | 12.45-02.30 pm   |
| • Course Ends       | 02.30 pm         |

### Course Fees\*

- **8,000 SAR**  
*\*15% VAT is including*