

# **Guidelines and Techniques for Safe De-Commissioning, Isolation and Opening of Process Plants and Equipment**

## **Goal**

The Goal of this course is to develop each person as an independent safety monitor, instead of a few dedicated safety personnel each employee is a safety monitor and by extension a safe employee.

## **Introduction**

The success of every company depends of each employee's understanding of the key business components; 1) safety, 2) sustainability, and 3) profitability. Employee training and development will unlock the companies' key business components. When people, processes and technology work together as a team developing practical solutions, companies can maximize profitability and assets in a safe and sustainable manner. Training and development is an investment in future success - give yourself and your employees the keys to success

## **Objective**

The objective of this course is for each independent safety monitor to be able to identify potential safety hazards that exist in the commissioning, operation and de-commissioning of process plant equipment. Each safety monitor needs to be able to identify the potential hazards of process equipment, therefore a review of the fundamentals of process equipment is required. Associated with this review are techniques to analyze and reduce the potential safety hazards of each type of equipment.

To those with experience in the processing industry, this seminar can reinforce their practical experience and broaden their data base. To those new in the processing industry this seminar can serve as a platform to build their data base of experience.

This particular course is focused for engineers and senior supervisors to help develop their safety critical thinking techniques.

## Course Outline

### Day One

#### Introduction

- Overview of the Chemical Processing Industry
- Chemistry of the Processing Industry

#### Review of Process Incidents

- Safety for the Operation and Maintenance Groups

#### Basics Process Equipment Review

- Furnaces
- Boilers and Steam Systems
- Steam Turbines, Pumps and Compressors
- Towers and Vessels
- Piping – Pressure and Temperature Limits
- Heat Exchangers
- Electrical Systems
- Reactor Systems
- Process Utilities Systems
- Relief Valve and Flare Systems

### Day 2

#### Review of Hazard Analysis Techniques

- Hazard Identification
  - energy sources
  - electrical sources
  - chemical sources
- Case Study on Hazard Identification
- HAZOP System Methods
- Root Cause Analysis Methods
- Case Study on Root Cause Analysis
- Incident Investigation

#### Review of a proper Process Safety Management Systems

- Key aspects of a PSM System
- Implementation of a PSM System

## Day 3

### Safe Equipment Isolation Guidelines

- General Hazardous Work Guidelines
- Line Breaking Guidelines
- Vessel Opening Guidelines
- Confined Spaces Guidelines
- Excavation Guidelines
- Electrical Guidelines
- TLV – Threshold Limit Values
- Case Study on Isolation Systems

### Safe Equipment Isolation Labels Guidelines

- Labeling of Isolation Systems
- Lockout, Tag and Try

### Safe Equipment Isolation Industry Standards

- Examples of Industry Standards Guidelines
- Examples of Industry Standard Labels

### Conclusions

- Who is the Captain of Your Ship?
- Building Safety Awareness

**Who Should Attend:**

- People who are making day to day decisions regarding operation, design, and economics of processing plants;
  1. Operation Supervisors,
  2. Maintenance Supervisors,
  3. Senior Plant Supervisors,
  4. Operations Engineers
  5. Process Support Engineers,
  
- Ideal for veterans and those with only a few years of experience who want to review or broaden their understanding in Processing Plant Operations.
  
- Other professionals who desire a better understanding of subject matter

**What you can expect to gain:**

- The Process Unit Equipment Fundamentals – how each system functions from a hands on viewpoint
  
- Safe commissioning and utilization of process equipment
  
- Safe de-commissioning of process equipment
  
- Hazard Analysis Techniques
  
- Safe Isolation Guidelines