

# Introduction to Process Safety

(4.8 CEUs)

## Background:

The Mary Kay O'Connor Process Safety Center (MKOPSC) at Texas A&M University and the LyondellBasell Center for Petrochemical, Energy, & Technology (CPET) at San Jacinto College are taking initiatives to develop a process safety training program for workers in the chemical and energy industries. The program will target operators, supervisors, and engineers with four courses designed to provide a thorough knowledge base but balanced with hands-on, real world applications and practice. Upon completion of the four courses, a trainee will receive a Process Safety Continuing Education Certificate from San Jacinto College.

Each course will provide 48 hours of instruction over 3 months delivered in a hybrid format consisting of:

- 24 hours of online lecture and study materials prepared by Texas A&M MKOPSC.
- 24 hours (one 8-hour day/month) completing hands-on, work-based learning in the CPET state-of-the-art facilities.

## Description:

This course, which is a prerequisite to the other courses in the program, is concerned with all aspects of process safety and loss prevention. Process safety, which differs from personnel safety, is concerned primarily with the identification of potential hazards and hazardous conditions associated with the processes and equipment involved in the oil, gas, and chemical process industries. The course also reviews methods of predicting the possible severity of these hazards and preventing, controlling, or mitigating them.

## Objectives:

- Recognize the professional and ethical elements of an outstanding safety program
- Identify government agencies, regulatory bodies, codes, and standards that govern the global, societal, and environmental impact of plant operation
- Identify examples of how unsound science or unethical behavior had a negative impact on society
- Understand and apply OSHA PSM and EPA RMP in the chemical process industries
- Perform PHA analysis of targeted chemical process industries and evaluate the safety performance
- Identify the potential hazards and hazardous conditions associated with the processes and equipment involved in the chemical process industries
- Understand the operation of chemical process and equipment and apply technical fundamentals to the analysis and prediction of performance under adverse circumstances
- Understand and apply the basic principles and approach on inherently safer design to reduce and eliminate hazards, thereby lowering the risk of new or currently operating chemical systems
- Understand the application of engineering analysis of hazardous scenarios

## Topics:

- Introduction to Process Safety Management (PSM)
- Introduction to hazardous and toxic materials
- Regulations and standards
- Process hazard identification (PHA, HAZOP *etc.*)
- Toxic release and dispersion
- Fire and explosion protection and prevention
- Reliefs
- Accident Investigations
- Case studies