Introduction to Risk Management

(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.

Pre-requisites:

- Completion of the *Introduction to Process Safety* course

Description:

This course introduces the concepts of risk and risk management and their applications in facilities and plant settings and with industrial activities in general. The course addresses the use of risk-informed decision-making and risk management. Because risk management is a decision-making enterprise, a decision-making thought process is used throughout the course.

Objectives:

- Gain basic understanding of hazard and risk
- Learn how to perform risk assessment
- Reduce risk within acceptable levels
- Manage risk
- Improve system risk and reliability
- Make risk/gain informed decisions to benefit the organization and the community
- Communicate decisions that affect the public, which benefits from and supports the products of your company

Topics:

- Introduction—hazards, risk, risk analysis, probability, reliability
- Risk assessment methods
    - Risk assessment structure
    - Decision analysis, value of information, value of control
    - Near misses, unusual occurrences, precursor events
    - Logic modeling, fault trees, event trees
- Performance assessment: Equipment data analysis, availability, human reliability
- Uncertainty analysis
- Consequence analysis
- Risk contributors including risk metrics and risk ranking
- Risk acceptance criteria including risk values as well as individual and society criteria
- Risk management including risk-informed multi-criteria decisions and management
- Risk communication and safety culture including risk perception and conversion factors