

Process Safety Management—Fundamentals 2-Day Course

Program Content:

This short course is designed to teach and apply the fundamentals of chemical process safety.

Objectives:

- To provide a basic understanding of Process Safety and the requirements of OSHA PSM Regulation 29 CFR 1910.119 and EPA Risk Management Plan 40 CFR Part 68.
- To understand through case studies how the failure of Process Safety management elements were found to be the root cause of major incidents in the petroleum industry.
- To provide information on how to implement, monitor, and audit a Process Safety Management program.
- To illustrate through exercises the identification of hazards and the ranking of risks.

Day 1:

- Module 1: Introduction
 - Course administration
 - Course participants
 - Objectives of the course
 - History of Process Safety legislation in the USA illustrated through past events
 - What is Process Safety?
 - Process Safety concepts and overview of the PSM elements
- Module 2: Process Safety Management Elements (Description of Each Element)
 - Documentation
 - Employee Participation
 - Accountability and Leadership
 - Process Safety Information
 - Process Hazard Analysis
 - Mechanical Integrity; Case Study: “Humber Refinery—Catastrophic Failure of De-Ethimizer Overhead Pipe”
 - Safe Work Practices (Hot Work); Case Study: “Piper Alpha Disaster”
 - Contractor Management
 - Operating Procedures; Case Study: “Feyzin LPG Disaster”
 - Training and Competence
 - Management of Change; Case Study: “Flixborough Disaster”
 - Pre-Startup Safety Review
 - Emergency Planning and Response; Case Study: “Major Tank Fire”
 - Incident Investigation
 - Process Safety Audit
 - Trade Secrets

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Day 2:

- Module 3: Life Cycle Model
 - Holistic Approach
 - Inherent Safety
 - Project Management and Process Safety
 - Getting it “Right”
- Module 4: Hazards and Consequences
 - Types of Failures releasing hazardous materials
 - Video Session documenting vapor cloud, flash fire, explosion (deflagration and detonation), pool fire, BLEVE, Boil-over
 - Toxic Releases
 - Facility Siting
- Module 5: Risk and Risk Analysis Methodologies
 - Hazard and Risk
 - Types of Risk
 - Swiss Cheese Model
 - LOPA (Layer of Protection Analysis)
 - Risk Matrix
 - Risk Criteria/Acceptability
 - Risk Controls (Prevention, Control, Mitigation)
 - HAZOPS Study
 - Task Risk Assessment—Exercise
- Module 6: Human Factors
 - A Just Safety Culture
 - Ergonomics, fundamental behavior, human error
- Module 7: Texas City Disaster
 - Presentation/Video
 - Exercise: Draw out the holes in the protective barriers using the Swiss Cheese Model
- Module 8: PSM and Other Management Systems
 - Using Synergy from Other Management Systems (ISO 9001, 14001 & OSHA 18001)
 - TQM (Total Quality Management)
 - Gap Analysis
 - Key Process Safety Indicators
 - Audits
- Module 9: Course Summary Followed by an Open Quiz

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Process Safety Management—Fundamentals (Cont.) 2-Day Course

Who Should Attend?

The course content is diverse enough for use by anyone involved in improving process safety; including chemical engineers, mechanical engineers, safety and health personnel, industrial hygiene personnel, operators, and maintenance supervisors.

1.4 CEUs	14 PDHs
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