



# CHEMICAL PROCESS SAFETY

THE CHEMICAL INDUSTRY HAS EXPERIENCED MANY DEVASTATING INCIDENTS, LEAVING FATALITIES, DAMAGE, AND LOSS. **PROCESS SAFETY** IS THE ENGINEERING DISCIPLINE THAT STUDIES ACCIDENTS IN THE CHEMICAL PROCESS INDUSTRIES RELATED TO THE PRODUCTION PROCESS, IDENTIFY WHAT CAUSES THESE EVENTS, AND DESIGN SOLUTIONS TO PREVENT AND MITIGATE THESE EVENTS.

THE PRIMARY PURPOSE OF CHEMICAL PROCESS SAFETY IS TO **MANAGE THE RISKS OF THESE PROCESSES** BY DESIGN SOLUTIONS THAT CAN PREVENT THESE EVENTS AND MITIGATE THEIR EFFECTS.



## **PROCESS SAFETY COMMITMENT**

This element is one of the most important as it generally governs the performance of the others.

This pillar establishes a dedication and obligation to safety, creating a leadership commitment toward safety excellence. Without a proper and robust compromise, the organization generally does not improve. An organization that fully supports safety as a core value do the right thing, in the right way, and nurturing their employees to do the same. Surety Consultants can support the process safety commitment efforts, including:

- ◆ Process Safety Culture
- ◆ Stakeholder outreach
- ◆ Process Safety Competency
- ◆ Standards
  - ◆ Recognized and Generally Accepted Good Engineering Practices (RAGAGEP)
  - ◆ Internal Corporate Standards
- ◆ Process Safety Management Implementation
  - ◆ Operations
  - ◆ Capital Projects
- ◆ Continuous Improvement



## RISK MANAGEMENT

Businesses that understand their risks can make wiser and more sound decisions allowing continuous operation. This element establishes the need to identify the hazards and evaluate their associated risks to plan, develop, and deploy stable and control operations. Risk Management includes risk evaluation and the implementation of different features to maintain the risk at acceptable levels. Surety Consultants can support risk management efforts, including:

- ◆ Process Hazard Identification and Risk Assessment
  - ◆ Hazard Identifications (HAZID)
  - ◆ Process Hazard Analysis (PHA)
  - ◆ Dust Hazard Analysis (DHA)
  - ◆ Layer of Protection Analysis (LOPA)
  - ◆ Bowtie Analysis
  - ◆ Consequence Analysis
  - ◆ Quantitative Risk Analysis (QRA)
  - ◆ Facility Siting
- ◆ Process Knowledge Management (e.g., Process Safety Information)
- ◆ Process Standard Operative Procedures
- ◆ Safe work Practices (e.g., Permit to Work System)
- ◆ Management of Change (MOC)
- ◆ Asset Integrity and Reliability
  - ◆ Management System
  - ◆ Safety Critical Elements (SCE) & Performance Standards
- ◆ Operation Readiness (e.g., Pre-Start Safety Review)
- ◆ Training programs & Process Safety Competency
- ◆ Contractor Management System



## LEARN FROM EXPERIENCE

This element involves constant monitoring and acting on internal and external sources of information to improve the process safety efforts. Surety Consultants can support the learn from experience efforts in this element, including:

- ◆ Process Safety Audits
  - ◆ OSHA PSM
  - ◆ CCPS RBPS
  - ◆ Corporate Process Safety Framework
- ◆ Measurement and Metrics
- ◆ Emergency Management
  - ◆ Emergency Response Plans
  - ◆ Drills & Exercises
  - ◆ Fire Hazard Analysis
- ◆ Incident Investigation and Root Cause Analysis (RCA)



## GET IN TOUCH

We are here to help you achieve operational excellence.



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