

H S E

HEALTH

SAFETY

ENVIRONMENT



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PROCESS HAZARD ANALYSIS (PHA)

Duration: 5 Days



Introduction:

The foundation of any successful process safety program is a current set of process hazard analyses (PHAs) for each of its processes. Revalidating PHAs to keep them up to date and applicable is a must.

This course is designed to provide the participants with the knowledge and skills necessary to conduct an effective process hazard analysis and management.

Course Objectives:

By the end of this course delegates will be able to:

- Describe the revalidation process.
- Analyze control systems and operating procedures for critical accident scenarios.
- Identify process hazards and potential operational difficulties.
- Prioritize risks.
- Describe risk review techniques for refineries and gas plants processes (i.e. HAZOP analysis and What-if? checklist).
- Describe HAZOP methodology consistent with SAER-5437 Guidelines.

- Conduct HAZOP studies, Apply failure mode and effects analysis (FMEA).
- Utilize a checklist of hazards to supplement brainstorming analyses.
- Analyze practical situations to determine appropriate PHA technique.
- Participate in case study analysis, Describe job safety anal

Course Outline:

Module 1: PHA Selection, Preparation and Techniques

- Definitions
- Overview of PSM 14 elements
- Introduction to process hazards analysis
- Understanding the Origins Of Process Hazard Analyses (PHAs)
- What is PHA intended to accomplish?
- PHA team make-up
- Case study : BP Texas, 2005

Module 2: Hazard identification techniques

- What if/Checklist
- Fault Tree Analysis FTA
- Failure Mood and Effect Analysis FMEA
- Task-Based Risk Assessment TBRA
- Job Safety Analysis JSA
- Event Tree Analysis ETA
- Hazard and operability HAZOP
- Case study: FTA

Module 3: HAZOP methodology

- Ideal HAZOP Review Reference Data
- Introduction to HAZOP method
- Characteristics of HAZOP
- HAZOP team formation
- Rules and responsibilities of HAZOP team members
- HAZOP terminologies
- HAZOP Algorithms
- Filling HAZOP form
- HAZOP workshop

- Case study : Piper Alpha

Module 4: Critical Accident Scenarios

- The Case for Worst-case Scenarios
- Is the Worst-case Release Only 10 Minutes Long?
- The Best Case for Worst-case Scenarios
- Unconfined Vapor Cloud Explosions

Module 5: quantities and qualitative Risk Assessment

- Risk criteria
- Risk prioritization
- Estimating likelihood
- Risk reduction and reliability
- Layer of Protection Analysis (LOPA)
- HAZOP workshop

Module 6: Revalidation Process, Risk Prioritization

- What is revalidation?
- Why is revalidation important?
- Establishing the revalidation schedule
- Overview Of Major Requirements for PHA Revalidations
- Preparing for the revalidation study

Module 7: Recommendations for Risk Management

- Engineering controls
- Administrative controls
- Credible and non-credible scenarios or causes
- HAZOP Technical Suggestions
- HAZOP Recommendations
- Consequences of Failures of Administrative and Engineering Controls
- Approaches of Assigning Protection layers
- HAZOP workshop