LOPA: Fundamentals and Application

Audience: Process safety specialists, risk analysts, process engineers, control system specialists, and production engineers. Participation in previous PHA's is a plus.

Duration:
1st Day: 08:30 am to 04:30 pm
2nd Day: 08:30 am to 04:30 pm

CEUs: 1.50

Prerequisites: PHA course with subsequent experience or workplace experience with PHA/LOPA

Overview

The course covers the fundamental concepts of Layer of Protection Analysis (LOPA) process, including initiating events, consequence severity, different risk definitions, independent protection layers (IPLs), enabling conditions, conditional modifiers, how math works, and the management processes needed to validate assumptions. Includes multiple workshops to reinforce key concepts. Attendees will gain skills to determine whether safeguards meet IPL criteria, apply appropriate risk reduction factors, and establish risk tolerance criteria aligned with industry standards.

1st Day

- Performing Hazard & Risk Assessment
  - Standards and practices governing Instrumented Protective Systems
  - Process risk
  - PHA workshop
  - LOPA
- Independent Protection Layer (IPL)
  - Core attributes
  - Types
  - Workshop
- Establishing Risk Evaluation Criteria
  - Hazardous and harmful events
  - Enabling conditions and conditional modifiers
  - LOPA risk criteria
  - Workshop

2nd Day

- Consequence Severity and Initiating Events
  - Understanding consequences
  - Identifying initiating events
  - Workshop
- Control & Safety Systems in LOPA
  - Instrumented safeguards
  - Operator error and interaction with control systems
  - Different LOPA Approaches
  - LOPA Workshop
- LOPA Wrap-up
  - Review from Annex G of ANSI/ISA-61511-3-2018
  - Final Workshop

Instructor: Kedar Kottawar, Senior Consultant at SIS-TECH Solutions, LP is a P.E. (Texas), TÜV Rheinland Functional Safety Engineer and a CCPS Certified Process Safety Professional with over 9 yrs experience in the chemical process industry focused on safe automation and operations. He has facilitated numerous LOPA studies, support ranging from small-scale to billion-dollar capital projects, as well as revalidations for existing operating facilities.

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