



Health, Safety and Environment

12. LOPA (Layers Of Protection Analysis)

**13. SIL (Safety Integrity Levels) SIL
Determination**

Course Introduction

Safety demands a deep knowledge and application of effective hazard analysis methods. In this highly interactive course, you'll have the opportunity to expand your basic understanding of process hazard analysis and learn how to extend order-of-magnitude scenario risk calculations to other uses. You will learn and practice the PHA techniques successfully being applied in the process safety industry today and will provide you the required competence to execute process hazard analysis within your organization. You will practice the role and responsibilities of the HAZOP chairman and how to run a successful HAZOP session. You'll also examine the concept of importance measures applied to PHAs and how to use a PHA to identify safety instrumented systems (SIS) and safety integrity levels (SIL)

Target Audience

- HSE managers
- HAZOP leaders
- Instrumentation engineers
- Process operations/Engineers
- Maintenance and testing engineers

Learning Objectives

- Learn the detailed HAZOP skills
- Be able to develop good risk acceptability criteria
- Be able to lead a good HAZOP session
- Become aware of industrial hazards that can lead to loss of containment
- Learn the PSM standard (14 Elements)
- Be familiar on how to carry out successful PHA HAZOP sessions

- Identify Safety Instrumented Systems (SIS)
- Identify what is meant by SIL
- Be able to perform LOPA and SIL calculations 10. Determine SIL Level

Course Outline

- **DAY 01**

The topics covered were as follows:

- Process Historical Disasters
- Hazardous Classified Locations
- Physical and Chemical Properties of Hazardous Substances
- OSHA Process Safety Management Standard (PSM)

- **Day 02**

OSHA Process Safety Management Standard (PSM)

- Process Hazard Analysis (PHA) – Case Studies
- HAZOP Techniques and Case Studies

- **Day 03**

HAZOP Team Leader and HAZOP Members Responsibilities

- HAZOP Real Sessions
- HAZOP Final Reports and Follow – Up Meetings

- **Day 04**

BPCS (Basic Process Control Systems)

- SIS (Safety Instrumented Systems)

- **Day 05**

LOPA (Layers Of Protection Analysis)

- SIL (Safety Integrity Levels) SIL Determination

Confirmed Sessions

FROM	TO	DURATION	FEES	LOCATION
May 5, 2025	May 9, 2025	5 days	2150.00 \$	Virtual - Online
Aug. 4, 2025	Aug. 8, 2025	5 days	4950.00 \$	Singapore - Singapore
Nov. 3, 2025	Nov. 7, 2025	5 days	4250.00 \$	UAE - Abu Dhabi