

## Process Hazards Analysis 3-Day Bundle Sample Agenda

### Day 1 - Process Hazards Analysis with Focus on HAZOP Methodology

Time	Topic
08:00 – 08:30	Registration
08:30 – 09:00	Introductions, course roadmap, and participation ground rules
09:00 – 09:30	Background to and purpose of Process Hazard Analysis (PHA)
09:30 – 10:00	Team-Builder
10:00 – 10:15	Break
10:15 – 11:00	Overview of various PHA methodologies and focused introduction to Hazard and Operability (HAZOP) study PHA methodology
11:00 – 11:30	Case study #1
11:30 – 12:15	Lunch
12:15 – 12:45	HAZOP preparation exercise
12:45 – 01:30	Detailed instruction on node definition, deviation, cause, and consequence elements of the HAZOP study methodology
01:30 – 02:00	HAZOP node definition exercise
02:00 – 02:15	Break
02:15 – 02:45	Case study #2
02:45 – 03:30	Detailed instruction on safeguard and Independent Protection Layer (IPL) elements of the HAZOP study methodology
03:30 – 04:00	Cause-Consequence pairing development and safeguard/IPL identification exercise
04:00 – 04:15	Day 1 wrap-up and feedback

### Day 2 - Process Hazards Analysis with Focus on HAZOP Methodology

Time	Topic
08:30 – 09:00	Review of Day 1 material
09:00 – 09:30	Detailed instruction on risk-ranking element of the HAZOP study methodology
09:30 – 10:00	Risking-Ranking exercise
10:00 – 10:15	Break
10:15 – 10:45	Case study #3
10:45 – 11:15	Detailed instruction on facilitation leadership, meeting session management, and team dynamics - Part 1
11:15 – 12:00	Lunch
12:00 – 12:30	Detailed instruction on facilitation leadership, meeting session management, and team dynamics - Part 2
12:30 – 01:00	Facilitation, session management, team dynamics exercise
01:00 – 01:15	Detailed instruction on writing effective recommendations and documentation of parking lot items
01:15 – 01:30	Break
01:30 – 02:00	Preparation for final HAZOP exercise
02:00 – 03:45	Final HAZOP exercise - each registrant will have a turn at facilitation and team participation
03:45 – 04:00	Day 2 wrap-up and course evaluation

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### Day 3 - Process Hazards Analysis with Focus on LOPA Methodology

Time	Topic
08:30 – 09:00	Introductions, course roadmap, and participation ground rules
09:00 – 09:45	Overview of various PHA methodologies and focused introduction to LOPA PHA methodology and preparation for a LOPA project
09:45 – 10:00	LOPA preparation exercise - properly defining the initiating event and consequence
10:00 – 10:15	Break
10:15 – 11:00	Detailed instruction on LOPA components - initiating event definition and likelihood, consequence definition, available conditional modifiers and modifier integrity verification, available IPLs and IPL integrity verification, SIL and RRF definitions
11:00 – 11:30	LOPA enabling condition and conditional modifier exercise - why, what, when, how
11:30 – 12:15	Lunch
12:15 – 01:15	Detailed instruction on LOPA calculations and likelihood/PFD values for initiating events, conditional modifiers, and IPLs
01:15 – 01:45	LOPA calculation exercise
01:45 – 02:15	LOPA IPL identification and verification exercise - making sure the IPL will do the job you need it to do
02:15 – 02:30	Break
02:30 – 03:00	LOPA special cases
03:00 - 03:30	Team LOPA exercise - from beginning to end
03:30 – 04:00	Individual LOPA exam
04:00 – 04:15	Wrap-up and feedback

\*Participants should be able to solve basic mathematical problems.

\*\*Each participant will receive a CCPS book related to the course objectives.