

# SAFETY MEMO

Did you know?

November 20, 2023 – HAZOP Method (Part 2 of 2)

## HAZOP Team

To carry out a HAZOP method of the PHA (Process Hazard Analysis), a multi-disciplinary working team is created. This team brings together complementary skills:

- HAZOP Facilitator
- Process
- Operation and production
- Instrumentation and automation
- Maintenance
- Health, Safety and Environment

The working team can be as small as two or three people and as many as seven or eight people depending on the methodology chosen for the PHA. These members will determine the causes and potential consequences of each deviation, and identify the existing means to detect, prevent or mitigate deviations. The team will then suggest corrective measures to be implemented to improve safety.

## HAZOP Analysis

The team must break down the installations under review into functional nodes, usually encompassing the equipment and its connections (a function in the process).

Each node is then studied in detail by using the relevant guide words to be able to identify potential causes and consequences of hazards and operability problems, equipment failure, human factors engineering and administrative controls, and external events are considered as any potential cause of hazards. These are measured by using a Risk Matrix. The hazards are given a numerical risk rating based upon the severity and likelihood of each identified hazard.

Then the team will identify the operating parameters applicable to the equipment concerned and combine that with the relevant guide words.

For each deviation, the working group then examines successively:

- Possible and independent causes of the scenario
- Human, environment, and process consequences

## Risk Matrix

A Risk Matrix is a chart that gives a standard for ranking or prioritizing the risk by two factors: probability and severity. Each of these factors is given a rating such as High, Medium, and Low. The terms also are colour-coded green (low), yellow or orange (medium) and red (high). They can also have a number attached to them to show how high or low the risk is. For example, Low-2. Medium-4, High-6.

The below is a basic 3x3 Risk Matrix that all the hazards found in the during the HAZOP are ranked.

		PROBABILITY		
		Low	Medium	High
SEVERITY	High	2	3	3
	Medium	1	2	3
	Low	1	1	2

All operating nodes must be studied (start / stop, normal operation, cleaning, etc.) to ensure completeness of the process. Maintaining a summary table is essential to guide the discussion and collect the results found by the working team.

This method of analysis and knowledge of the business sector, processes and products used, allow the HAZOP Team to identify major accident scenarios and choose appropriate safety barriers.

