# "SaferIndiaBetterworld"



# HAZOP STUDY

# PRESENTED BY: TSM THESAFETYMASTER PRIVATE LIMITED

# Introduction

The Hazard and Operability (HAZOP) Study or Hazard Review technique is a systematic method for identifying ways in which process equipment can malfunction or be improperly operated, leading to undesirable conditions. To apply the HAZOP technique, the HAZOP team divides the process into nodes consistent with the standard product P&IDs to identify consequences of deviations from the design intention. The team reviews the overall process design and control philosophy for each node.

# When to do HAZOP Study?

- initial Concept stage- At the drawing board
- When the final P& ID is available
- During Construction- Installation/Revamp
- During Commissioning
- During Operations- Process Modification- Change in P & ID's, Equipment Design, Operating Windows, Layout, Capacity; Upadation of Emergency Plans & Operating Procedures
- Whenever Accident Occurs
- Decided By Safety Audit / PHA Study
- There is Change Of Management- Plant Hand-over/ Take-over

# During the HAZOP study, the team:

- Decided whether any safety-related consequences would result from credible causes of
- Deviations Identified the engineered and administrative safeguards protecting against particular
- Deviations Suggested actions, when necessary, that might reduce the likelihood of the deviations or the severity of the consequences.

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# **HAZOP Methodolgy**



### Cause

Performing a HAZOP is generally an assurance that if procedural and/or engineering modification is implemented to mitigate risk, the plant will then be operating at some lower level of risks.



# The HAZOP Study Process



# **Modes of Operation**

The following modes of plant operation should be considered for each node:

- Normal operation
- Reduced throughput operation
- Routine start-up
- Routine shutdown
- Emergency shutdown
- Commissioning
- Special operating modes

The primary objective of the analysis is to address hazards associated with the operation of the system. The team evaluates the hazards on the basis of the nature of the materials involved, the process conditions (flow, temperature, pressure, and composition), the team's experience, and information about previous incidents at this and other sites. This review has highlighted hazards of concern for this system design, the details of which are reflected in the HAZOP worksheets



# **Importance of HAZOP Study:**

The task of analyzing hazards in a workplace or system can be daunting. However, without an effective analysis, potential hazards may not be discovered before they result in injuries and loss. The cost of an accident is often many times greater than the cost of the analysis that could have stopped it.

HAZOP is a common hazard analysis method for complex systems. It can be used to identify problems even during the early stages of project development, as well as identifying potential hazards in existing systems

## **Advantages of HAZOP Study**

- Systematic and rigorous
- Involves interaction of view from multidisciplinary experts
- Can be applied to a wide range of types of system

• Creates a detailed and auditable record of the hazards identification process

# What TSM Provide in HAZOP Study?

TSM will provide the following services in HAZOP Study:

- Practical HAZOP Chairman Course 5 days
- What-If Analysis
- Basic Awareness on HAZOP Training
- HAZOP Study for all critical process



# For More Details

Visit Us:-

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