

Course No. 1522

Hazard and Operability Study (HAZOP) Training Course

PROCESS SAFETY & LOSS PREVENTION
INDUSTRIAL ENGINEERING, MAINTENANCE & OPERATIONS

DURATION

5 Days

DELIVERY

Classroom



Course Overview

The Hazard and Operability Study (HAZOP) Training Course provides a structured and practical approach to identifying process hazards, operational deviations, and potential causes and consequences within industrial facilities. HAZOP is a widely used process safety methodology for systematically examining process designs and operations to identify conditions that could lead to incidents, equipment damage, environmental impact, production losses, or unsafe operating conditions.

This professional HAZOP training course develops participants' ability to conduct structured hazard and operability studies using process information, design documentation, operating procedures, and multidisciplinary team knowledge. The course focuses on the systematic application of guide words, process parameters, deviations, causes, consequences, safeguards, and recommendations to produce meaningful and actionable study results.

The program is particularly relevant to oil and gas, petrochemical, chemical processing, refining, power generation, utilities, manufacturing, and other high-hazard industries. Participants will examine how HAZOP studies can support process design, commissioning, plant modifications, operational reviews, and process safety management while helping organizations identify potential weaknesses before they develop into serious operational or safety events.

The Hazard and Operability Study Training Course also emphasizes the quality of HAZOP team discussions and documentation. Participants will learn how to distinguish credible causes from unlikely scenarios, evaluate existing safeguards, identify risk-significant findings, and develop recommendations that are technically appropriate, clearly documented, and suitable for follow-up by responsible departments.

Objectives

- Analyze the fundamental principles, objectives, scope, and applications of HAZOP studies within process safety management during the course.
- Develop a structured approach for preparing HAZOP studies using process flow diagrams, piping and instrumentation diagrams, operating procedures, and relevant design information.
- Apply HAZOP guide words and process parameters to systematically identify meaningful process deviations.

- Evaluate potential causes and consequences associated with identified deviations across realistic industrial scenarios.
- Assess existing safeguards and determine whether they adequately address identified hazards and operational risks.
- Distinguish credible and significant HAZOP scenarios from conditions that do not require further investigation.
- Develop clear and technically relevant HAZOP recommendations based on identified risks, safeguards, and process conditions.
- Improve the quality of HAZOP team discussions by applying effective questioning, facilitation, and multidisciplinary analysis techniques.
- Evaluate HAZOP findings in relation to process safety, operational reliability, environmental protection, and business continuity.
- Strengthen HAZOP documentation by recording deviations, causes, consequences, safeguards, actions, and responsibilities in a consistent format.
- Assess HAZOP findings and prioritize recommendations according to their technical significance and potential impact.
- Complete a practical HAZOP study during the course and demonstrate the ability to contribute effectively as a multidisciplinary HAZOP team member.

Who Should Attend

The Hazard and Operability Study (HAZOP) Training Course is designed for process safety engineers, process engineers, chemical engineers, mechanical engineers, instrumentation and control engineers, electrical engineers, operations engineers, maintenance professionals, and industrial safety specialists. It is particularly valuable for professionals who participate in hazard identification, process safety reviews, risk assessment, engineering design, commissioning, or operational improvement activities.

The course is also suitable for operations managers, maintenance managers, engineering managers, project managers, process safety managers, health and safety professionals, technical authorities, reliability specialists, and professionals responsible for reviewing process modifications and safety-critical design decisions. Members of multidisciplinary project teams can benefit from developing a common methodology for identifying hazards and assessing operational deviations.

The program is highly relevant to organizations operating in oil and gas, refining, petrochemical,

chemical processing, energy, utilities, manufacturing, pharmaceuticals, water treatment, and other industries where process hazards and operational integrity require systematic assessment. It is also appropriate for consultants, technical auditors, risk specialists, and decision makers who need to understand HAZOP findings and their implications for organizational risk management.

Learning Outcomes

- Explain the purpose, principles, scope, and methodology of a professional HAZOP study.
- Prepare the technical information and documentation required to support an effective HAZOP workshop.
- Apply HAZOP guide words systematically to process parameters and identify relevant deviations.
- Analyze the causes and consequences of process deviations using structured questioning techniques.
- Evaluate existing safeguards and determine their relevance to specific hazardous scenarios.
- Identify gaps in process design, operating procedures, instrumentation, alarms, interlocks, and protective systems.
- Develop clear and actionable recommendations that address identified hazards and operational weaknesses.
- Participate effectively in multidisciplinary HAZOP meetings and contribute technically relevant observations.
- Prioritize HAZOP findings according to risk significance, operational impact, and required corrective action.
- Document HAZOP findings in a clear and traceable format suitable for technical review and follow-up.
- Relate HAZOP findings to broader process safety activities, including risk assessment, protection-layer analysis, functional safety, and management of change.
- Conduct a practical HAZOP study for a selected process section and present the findings and recommendations to a review team.

Course Outline

DAY 01

HAZOP Principles and Process Safety Foundations

- Fundamentals of process safety and industrial hazard management.
- Purpose, objectives, scope, and applications of HAZOP studies.
- HAZOP methodology and the role of systematic deviation analysis.
- HAZOP team structure, responsibilities, leadership, and multidisciplinary participation.

PRACTICAL APPLICATION

Review a simplified process and identify potential areas requiring HAZOP analysis.

DAY 02

HAZOP Preparation and Deviation Identification

- Preparation of process flow diagrams, piping and instrumentation diagrams, and supporting documentation.
- Definition of study nodes, boundaries, process parameters, and operating conditions.
- HAZOP guide words and their practical application.
- Identification of deviations involving flow, pressure, temperature, level, composition, utilities, and process conditions.

PRACTICAL APPLICATION

Develop HAZOP nodes and apply guide words to identify credible deviations.

DAY 03

Causes, Consequences, and Safeguard Analysis

- Identification and evaluation of credible causes of process deviations.
- Analysis of potential consequences for personnel, equipment, environment, production, and business continuity.
- Identification of existing preventive and mitigative safeguards.

DAY 03 — CONTINUED

- Evaluation of alarms, interlocks, shutdown systems, procedures, relief devices, and other protection measures.

PRACTICAL APPLICATION

Conduct a detailed cause-and-consequence analysis for selected HAZOP deviations.

DAY 04

HAZOP Risk Evaluation and Recommendation Development

- Assessing the significance of identified hazards and operational problems.
- Understanding the relationship between HAZOP, risk assessment, and process safety management.
- Identifying gaps in safeguards and process controls.
- Developing technically appropriate and actionable HAZOP recommendations.

PRACTICAL APPLICATION

Review HAZOP findings, evaluate safeguards, and develop prioritized corrective actions.

DAY 05

HAZOP Workshop, Documentation, and Implementation

- Conducting an effective multidisciplinary HAZOP workshop.
- HAZOP documentation, action tracking, responsibilities, and close-out processes.
- Reviewing HAZOP quality, consistency, assumptions, and study completeness.
- Integrating HAZOP findings with management of change, project development, commissioning, and operational safety.

FINAL WORKSHOP

Conduct a complete HAZOP study for a selected process section, document findings, prioritize recommendations, and develop an implementation action plan.



Register or Request More Information

Course page: <https://quest-training.com/courses/hazard-and-operability-study-hazop-training-course>

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