

ABIOSH INT'L CERTIFICATE IN HAZARD AND OPERABILITY -HAZOP- AND HAZARD IDENTIFICATION (HAZID) STUDIES - HAZOP/HAZIDCert

COURSE OVERVIEW

This course is a dual certification course focusing on Hazard and Operability (HAZOP) study and Hazard Identification (HAZID) as well known and well documented methods.

In the first part of the course, participants will be acquainted with HAZOP study used to verify the integrity of design or procedures with respect to safety and operability. HAZOP, or Hazard and Operability Studies is one of a number of risk assessment techniques used to demonstrate compliance with health, safety and environmental standards and legislation. Although HAZOP techniques have traditionally been applied to the process and oil/gas industries, they can be equally applied to other industries, activities and tasks. Ideally HAZOP techniques should be utilized at the development stage as part of the HSE plan as well as for existing systems/processes and process modifications.

HAZOP provides measures of assurance through structured and systematic examination of the design and operability. HAZOP is a highly structured technique, which can consume considerable resources to achieve an effective study. Therefore, the role of the Team Leader is crucial in directing resources where they are most needed so that the study duration is targeted for efficiency.

Participants would be able to develop their HAZOP skills to investigate how a system or plant deviate from the design intent and create risk for personnel and equipment and operability problems.

The second part of the course deals with HAZARD Identification HAZID and equips participants with the know how to conduct a systematic assessment to identify hazards and problem areas associated with plant, system, operation, design and maintenance, using HAZID is used both as part of a Quantitative Risk Assessment (QRA) and as a standalone analysis for i.e. installation, modification, replacement, upgrading, reduction, isolation, lifting. It is a high level review of potential hazards, based on checklists.

This course provides significant aspects and considerations of HAZOP/HAZID, the tips, tricks, and secrets that analysts use to conduct efficient HAZOP/HAZID; an introduction to the Safety integrity level SIL determination will be introduced and recognition of the layer of protections and protective safety systems. The participants will benefit from the practical approach presented in the course.

TARGET AUDIENCE

- Safety/environment Professionals
- Regulatory /Enforcement and compliance officers
- Production and facilities managers,
- Engineers (design, process, facilities, instrumentation and control),
- Operations and safety of process operators,
- Plant operators, maintenance personnel
- Directors and senior managers with responsibility for implementing systems of effective corporate governance and management of risk

- Internal auditors involved in assessing systems of internal control across all the functions of their organisations
- Those with operational responsibilities who need to appreciate risk management in more detail

DURATION

5 Days + 1 Day exams

DATES: 1. 17th – 21st Nov

2. 8th – 12th Dec

COURSE FEES: N250, 000/Person

LEARNING OUTCOME

Participants will learn:

- Familiarisation with background documentation
- Understand the concept of risk and the risk management process
- How to be able to provide a framework for HAZOP within risk assessment and an HSE Management System
- How to be able to review the role of HAZOP within HSE project plans
- How to be able to increase familiarity with HAZOP protocol, logic, structure and methodology
- How to be able to describe the role and structure of the HAZOP Team and procedures
- How to be able to introduce the role, responsibilities and conduct of a HAZOP Team Leader
- How be able to provide sufficient hands-on experience in the application of HAZOP to different processes and systems
- How to identify HAZOP strategy, division of the subsystems/nodes (e.g. line, pump, vessel, compressor), choose relevant Piping and Instrument Diagrams (P&ID), and identifying guide words
- Accomplishment of the HAZOP review
- Documentation of observations into information and actions point, document findings on the P&IDs.
- How to identify HAZID strategy, division of the system (nodes) and identifying guide words.
- Accomplishment of the HAZID review.
- The hazards of the process
- The identification of any previous incident which had a likely potential for catastrophic consequences in the workplace
- Engineering and administrative controls
- Consequences of failure of engineering and administrative controls
- Human factors and a qualitative evaluation of a range of the possible safety and health effects of failure of controls on employees in the workplace.

COURSE MODULES

UNIT 1: HAZARD AND OPERABILITY (HAZOP) STUDIES

Element1.1. HAZOP Methods (8 HOURS)

- 1.1.1. HAZOP study Assumptions
- 1.1.2. HAZOP Review Applications
- 1.1.3. Ideal HAZOP Review Reference Data
- 1.1.4. Credible Scenarios or Causes
- 1.1.5. Non-Credible Scenarios or Causes
- 1.1.6. HAZOP Technical Suggestions
- 1.1.7. HAZOP Review Suggestions
- 1.1.8. HAZOP Recommendations and reporting
- 1.1.9. Administrative Controls
- 1.1.10. Engineering Controls

Element1.2. HAZOP Approaches (5 HOURS)

- 1.2.1. Approaches of Assigning Protection layers
- 1.2.2. Performance Based Approach
- 1.2.3. Prescriptive Approach API-RP-14C
- 1.2.4. Limitation of HAZOP, optimization of HAZAN
- 1.2.5. HAZOP case study

UNIT 2: HAZARD IDENTIFICATION (HAZID)

Element2.1. HAZID Principles (5 HOURS)

- 2.1.1. Hazard Management Process
- 2.1.2. Factors Increases the Hazards Potential for Process Industries
- 2.1.3. Risk
- 2.1.4. Consequences
- 2.1.5. Voluntary & Involuntary Risk
- 2.1.6. Tolerable Risk in the industries
- 2.1.7. Evaluating the Risk
- 2.1.8. ALARP

Element2.2. Hazard Evaluations (8 HOURS)

- 2.2.1. Risk Matrices
- 2.2.2. Evaluating the Frequency

- 2.2.3. Evaluating the Severity
- 2.2.4. Evaluating the Overall Risk
- 2.2.5. Principals of Protective Measures
- 2.2.6. Risk reduction
- 2.2.7. Protection Layers
- 2.2.8. Prevention Layers
- 2.2.9. Mitigation Layers
- 2.2.10. Initiating event
- 2.2.11. Process Deviation
- 2.2.12. Loss of Containment or Release of Energy
- 2.2.13. Undesirable Events
- 2.2.14. Process Controls Vs Safety Controls
- 2.2.15. Separation of Process Control system and Safety control System

Element 3: Hazard Analysis (HAZAN)

(8 HOURS)

- 2.3.1. Risk Criteria
- 2.3.2. Estimating Likelihood
- 2.3.3. Failure Modes
- 2.3.4. Safe Failures
- 2.3.5. Dangerous Failures
- 2.3.6. Detected/Undetected Failures
- 2.3.7. Random failures
- 2.3.8. Common Cause Systematic failures
- 2.3.9. Hazard Rate
- 2.3.10. Probability of Failure on Demand (PFD)
- 2.3.11. Safety Instrumented System(SIS)
- 2.3.12. Role of (SIS)

Element 4: Safety Integrity Level (SIL) and Layer of Protection Analysis (LOPA)

(8 HOURS)

- 2.4.1. Safety Integrity Requirement
- 2.4.2. Safety Integrity Level (SIL)
- 2.4.3. Determining Safety Integrity Level (SIL)
- 2.4.4. Risk Reduction and Reliability Assessment
- 2.4.5. Reliability Analysis
- 2.4.6. Voting And Redundancy
- 2.4.7. Diversifications and Risk Graph
- 2.4.8. Layer of Protection Analysis (LOPA)
- 2.4.9. (LOPA) Procedure
- 2.4.10. Independent Protection Layers (IPLs)
- 2.4.11. Fault Tree Analysis (FTA)
- 2.4.12. Failure Mode and Effects Analysis (FMEA)

2.4.13. Events and Gates

EXAM STRUCTURE

Writing Exam UNIT 1 HAZOP (1 Hour): forms 30% of total marks. Consist of 1 Long question and 5 short questions. Candidates to score 40% to pass

Writing Exam UNIT 2 HAZID (1 Hour): forms 30% of total marks. Consist of 1 Long question and 5 short questions. Candidates to score 40% to pass

Project Writing UNIT 3- 40%: Candidates are expected to carry out a HAZOP/HAZID study of system and its processes to identify:

- ☐ The hazards of the process and operability issues
- ☐ The identification of any previous incident which had a likely potential for catastrophic consequences in the workplace
- ☐ Engineering and administrative controls
- ☐ Consequences of failure of engineering and administrative controls
- ☐ Human factors and
- ☐ A qualitative evaluation of a range of the possible safety and health effects of failure of controls on employees in the workplace.

At the end, candidates are expected to write a report to management, correctly identifying the hazards and suggest how to implement cost effective solutions

Candidates are expected to score a minimum of 50% on the project work to pass. To be submitted 2 weeks after training

FOR MORE DETAILS/TRAINING ENQUIRIES & BOOKINGS



LAGOS OFFICE

9, Olaiya Street, Alausa-Ikeja, Lagos
Tel: 08095643275, 08137901991, 07059747999
Email: info@globalhseconsult.com
Website: www.globalhseconsult.com

P/HARCOURT OFFICE

2nd Floor, Rumuokoro St, (Off Aba Rd,) Rumuomasi
Tel: 08165490371, 08095604688
Email: ph@globalhseconsult.com
Website: www.globalhseconsult.com