

QUANTITATIVE RISK ASSESSMENT

HSE018

COURSE DESCRIPTION

While many risk management decisions can reasonably be based on HAZOP's, What-If studies and other qualitative risk assessments, some decisions may be so expensive as to warrant a closer review. Quantitative Risk Assessment (QRA) provides that additional level of scrutiny. Compared to qualitative studies, QRA's result in improved consistency and reduced subjectivity in providing a rational decision making process for managing process safety.

This course examines the relationship of consequences and their frequencies in understanding and assessing risk. This is presented in both a philosophical and numerical perspective. Techniques to numerically evaluate risks are then presented. The techniques that will be presented are: Layer of Protection Analysis (LOPA), Fault Tree Analysis (FTA) and Chemical Process Quantitative Risk Analysis (CPQRA).

COURSE GOAL

To enhance the participants' knowledge, skills and abilities necessary to understand and apply the quantitative risk analysis techniques.

COURSE OBJECTIVES

By the end of this course, participant will be able to:

- Understand the Role of QRA in managing risk.
- Understand risk standards.
- Apply Quantitative Techniques in establishing failure rate data.
- Select an appropriate quantitative risk tool.
- Overview and apply of LOPA.
- Overview and apply of FTA.
- Overview and apply of CPQRA.

WHO SHOULD ATTEND

Managers, engineers and others with responsibility for evaluating hazards and/or for making decisions to manage these hazards.

COURSE DURATION

5 Working Days



COURSE OUTLINES

1. Fundamentals of Risk Assessment

- Understanding Risk.
- Establishing Risk Standards.
- Converting failure rate to failure upon demand.

2. Layer of Protection

- Analysis Principals of LOPA.
- Fundamental of Safety Systems.
- Developing LOPA scenarios.

3. Fault Tree Analysis

- Overview of FTA.
- Developing a fault tree.
- Developing an event tree.
- Quantifying fault/event tree.

4. Chemical Process

- Quantitative Risk Analysis.
- Overview of CPQRA.
- Evaluating societal and geographic risk.

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