

Course No. 1669

Incident Investigation & Root Cause Analysis Training Course

INDUSTRIAL SAFETY & HSE
INDUSTRIAL ENGINEERING, MAINTENANCE & OPERATIONS

DURATION

5 Days

DELIVERY

Classroom



Course Overview

The Incident Investigation & Root Cause Analysis Training Course provides a comprehensive and practical framework for investigating incidents, identifying contributing factors, determining root causes, and developing effective corrective actions. The program is designed to help organizations move beyond simply identifying what happened and establish a structured understanding of why an incident occurred and how similar events can be prevented.

Effective incident investigation requires a disciplined methodology for collecting evidence, preserving relevant information, conducting professional interviews, reconstructing event sequences, and evaluating the technical, human, operational, and organizational conditions surrounding an incident. This course provides participants with practical approaches for conducting evidence-based investigations while avoiding assumptions, premature conclusions, and a narrow focus on individual accountability.

The program covers essential incident investigation and root cause analysis methodologies, including event and causal analysis, timeline reconstruction, human factors analysis, barrier analysis, failure analysis, and systematic identification of immediate, underlying, and root causes. Participants will examine how procedures, equipment design, maintenance, training, supervision, operational practices, management systems, and organizational factors can influence incident occurrence and severity.

A strong focus is placed on developing corrective and preventive actions that address underlying and root causes rather than simply treating visible symptoms. Participants will learn how to evaluate investigation findings, prioritize recommendations according to risk and organizational significance, assign responsibilities, establish implementation timelines, and verify the effectiveness of corrective actions.

Through practical case studies, investigation exercises, evidence analysis, interview simulations, and incident scenarios, participants will develop the ability to manage an investigation from the initial response and evidence collection through analysis, reporting, corrective action, and organizational learning. The Incident Investigation & Root Cause Analysis Training Course supports organizations seeking to strengthen safety performance, reduce recurring incidents, improve operational reliability, and develop a stronger learning-oriented safety culture.

Objectives

- Analyze the fundamental principles of incident investigation and their relationship to safety, risk management, and operational performance.
- Evaluate different types of incidents and determine the appropriate investigation scope and level for each event.
- Apply structured methodologies for collecting, preserving, documenting, and analyzing incident evidence.
- Develop effective interview techniques for obtaining reliable and relevant information from witnesses and involved personnel.
- Reconstruct incident timelines and identify critical events, conditions, decisions, and contributing factors.
- Apply systematic root cause analysis techniques to distinguish immediate causes, contributing factors, underlying causes, and root causes.
- Assess human, technical, operational, environmental, and organizational factors that may contribute to incidents.
- Analyze the effectiveness of existing barriers, controls, procedures, and preventive measures.
- Develop corrective and preventive actions that directly address identified root causes and reduce the likelihood of recurrence.
- Evaluate investigation recommendations according to risk significance, priority, feasibility, and potential effectiveness.
- Prepare professional incident investigation reports that clearly present evidence, findings, causes, conclusions, and recommendations.
- Develop a practical corrective action follow-up framework to verify implementation and effectiveness by the end of the course.

Who Should Attend

This training course is designed for professionals responsible for incident investigation, occupational safety, risk management, health, safety and environment, and operational performance. It is particularly suitable for HSE managers and specialists, incident investigators, safety engineers, risk managers, process safety professionals, operations managers, maintenance professionals, reliability specialists, and personnel responsible for investigating operational or workplace incidents.

The course is especially relevant to organizations operating in oil and gas, petrochemicals, energy, manufacturing, engineering, utilities, transportation, construction, heavy industry, and other high-risk operational environments. It is also valuable for government entities and organizations responsible for investigating operational, occupational, environmental, technical, or service-related incidents.

Senior managers, department heads, executives, and decision makers responsible for safety performance, operational reliability, risk management, and organizational improvement will also benefit from the program. The course enables professionals from different functions to establish a consistent approach to incident investigation, root cause analysis, corrective action management, and organizational learning.

Learning Outcomes

- Identify and classify incidents according to their nature, consequences, potential severity, and investigation requirements.
- Apply a systematic incident investigation process from initial response through final closure.
- Collect and evaluate physical, documentary, operational, and testimonial evidence in a structured manner.
- Conduct professional interviews with witnesses and involved personnel while maintaining objectivity and information accuracy.
- Construct clear incident timelines showing relevant events and conditions before, during, and after the incident.
- Distinguish between immediate causes, contributing factors, underlying causes, and root causes.
- Apply root cause analysis methodologies to identify systemic factors requiring sustainable corrective action.
- Evaluate human, technical, operational, managerial, and organizational factors influencing incident outcomes.
- Analyze preventive and protective barriers and identify weaknesses, failures, or gaps in control systems.
- Develop corrective and preventive actions that address root causes rather than symptoms.
- Prepare professional investigation reports that communicate findings, evidence, causes, and recommendations clearly.
- Establish corrective action monitoring processes and evaluate the effectiveness of implemented improvements.

Course Outline

DAY 01

Incident Investigation Principles & Investigation Management

- Fundamentals of incidents, undesired events, operational failures, and near misses
- Purpose, objectives, and principles of effective incident investigation
- Incident classification, investigation levels, scope, and priorities
- Initial incident response, scene preservation, evidence protection, and investigation planning

PRACTICAL APPLICATION

Analyze a simulated incident and establish the investigation scope, investigation team, stakeholders, and evidence requirements

DAY 02

Evidence Collection, Interviews & Event Reconstruction

- Methods for collecting physical, documentary, digital, and operational evidence
- Incident scene documentation and management of relevant records and information
- Professional interviewing techniques for witnesses and involved personnel
- Event sequencing, timeline development, and identification of critical decision points

PRACTICAL APPLICATION

Reconstruct a simulated incident timeline using available evidence, records, and witness information

DAY 03

Root Cause Analysis & Contributing Factors

- Understanding immediate causes, contributing factors, underlying causes, and root causes
- Structured root cause analysis methodologies
- Human factors, behaviors, decisions, and performance influences
- Technical, operational, environmental, management, and organizational factors

DAY 03 — CONTINUED

PRACTICAL APPLICATION

Conduct a comprehensive root cause analysis of a simulated operational incident and identify the factors that contributed to its occurrence

DAY 04**Barrier Analysis & Corrective Action Development**

- Principles of preventive, protective, and mitigative barriers
- Barrier performance, failures, weaknesses, and control gaps
- Developing corrective and preventive actions based on investigation findings
- Prioritizing recommendations according to risk, importance, feasibility, and expected effectiveness

PRACTICAL APPLICATION

Conduct a barrier analysis and develop corrective actions that address the identified root causes

DAY 05**Investigation Reporting, Organizational Learning & Recurrence Prevention**

- Structure and principles of professional incident investigation reports
- Presenting evidence, findings, conclusions, and recommendations effectively
- Corrective action tracking, verification, and effectiveness evaluation
- Lessons learned, organizational learning, and continuous improvement

FINAL WORKSHOP

Conduct a complete simulated incident investigation and prepare a professional investigation report covering evidence, event sequence, root causes, barrier performance, corrective actions, and recurrence prevention measures



Register or Request More Information

Course page: <https://quest-training.com/courses/incident-investigation-root-cause-analysis-training-course>

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