CONCEPT

Incident Investigation and Root Cause Analysis for HSE Professionals

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Technical depth: Practitioner · **Practical mode:** Case study

Introduction

Organisations investigate incidents to prevent recurrence, yet many reports stop at the immediate cause, blame the person closest to the event and recommend retraining. The same failures then return in a different form. This Core Concept course equips investigation leads to run evidence-based investigations that reach organisational causes, meeting ISO 45001 Clause 10.2 and using recognised methods such as ICAM, Tripod Beta, fault tree analysis and HFACS. Participants analyse incident cases from several sectors and leave with an Incident Investigation Report and corrective action plan, defended before a review panel.

Course Objectives

- Classify incidents and near misses by actual and potential severity and set the matching level of investigation
- Secure evidence and interview witnesses in a way that preserves accuracy and trust
- Apply structured causal analysis methods, including ICAM, Tripod Beta and fault tree analysis, to reach underlying and organisational causes
- Distinguish human error types and apply just culture principles to questions of individual accountability
- Develop corrective actions that address root causes and verify their effectiveness
- Produce an Incident Investigation Report with a corrective action plan that withstands management review

Target Audience

- HSE managers and advisers who lead or quality-assure incident investigations
- Operations, maintenance and production managers who chair investigation teams
- Engineers and team leaders appointed to investigation teams after serious incidents
- Process safety and risk specialists analysing high-potential incidents and near misses
- Contractor HSE leads responsible for investigating incidents on client sites

Course Outline

Day 1: Incident Investigation Foundations

- Incident Classification Using the ILO Code of Practice on Recording and Notification
- ISO 45001 Clause 10.2 Incident Investigation Requirements
- Accident Causation Models: Heinrich, Bird and Reason's Swiss Cheese Model
- Potential Severity Matrix and Investigation Level Triggers
- Current-State Review of Past Reports Using an Investigation Quality Rubric

Day 2: Causal Analysis Methods

- Incident Cause Analysis Method ICAM and Organisational Factor Types
- Tripod Beta Barrier-Based Causal Analysis
- Systematic Cause Analysis Technique SCAT and the Loss Causation Model
- Fault Tree Analysis and Bow-Tie Diagrams Under ISO 31010:2019
- Human Factors Analysis and Classification System HFACS

Day 3: Conducting the Investigation

- Scene Preservation and the 4P Evidence Method: People, Position, Parts, Paper
- Cognitive Interview Technique for Witness Interviews
- Events and Causal Factors Charting and Sequence Timelines
- 5 Whys Analysis and Causal Factor Validation Against Evidence
- Investigation Report Structure and Findings Writing

Day 4: Human Performance, Culture and Corrective Action

- Reason's Error Types: Slips, Lapses, Mistakes and Violations
- Just Culture Decision Tree for Individual Accountability
- Corrective Action Design Using the Hierarchy of Controls and SMART Criteria
- Investigation Bias Checklist: Hindsight, Outcome and Confirmation Bias
- Learning From Incidents: Safety Alerts, Trend Analysis and Learning Teams

Day 5: Investigation Case Work and the Report

- Dropped Load Case Study: Timeline and ICAM Analysis
- Chemical Release Case Study: Tripod Beta Barrier Analysis
- Witness Interview Practice on a Vehicle Collision Case
- Incident Investigation Report and Corrective Action Plan Drafting
- Review Panel Challenge and Report Defence

Skills You Will Gain

- Evidence Gathering
- Witness Interviewing
- Causal Factor Analysis
- Barrier Analysis
- Human Factors Analysis
- Just Culture Assessment
- Corrective Action Planning
- Investigation Report Writing

Why Attend This Course

- Return to work with a complete Incident Investigation Report and corrective action plan built on a realistic case
- Move investigations beyond operator error to the organisational causes that repeat across incidents
- Select the analysis method that fits the incident, rather than applying one tool to every event
- Compare investigation practice with peers from energy, manufacturing, construction, transport and healthcare

Conclusion

An investigation is only as good as the change it produces. This course moves from incident classification and causation models, through the main causal analysis methods and the practical work of evidence, interviews and timelines, to human error, just culture and corrective actions that actually hold. The final day applies that material to incident cases and produces an Incident Investigation Report that participants defend before a review panel, giving them a structured method for the next investigation they lead.