

Incident Investigation and Root Cause Analysis

Incident investigation and root cause analysis (RCA) are critical to identifying why incidents (injuries, near-misses, equipment damage, or environmental harm) occur and preventing recurrence. NCC T&D's HSE management system mandates a structured, blame-free approach to ensure lessons are learned, systems are improved, and workplace safety is strengthened.

Purpose of Incident Investigation

- Prevent Recurrence: Address underlying causes, not just symptoms.
- Improve Safety Systems: Update procedures, training, and controls.
- Compliance: Meet NCC T&D's HSE requirements and legal obligations.
- Promote Accountability: Foster a culture of transparency and continuous learning.

NCC T&D Key Responsibilities

Project Leaders

- Immediate Response: Secure the scene, provide medical aid, and report incidents immediately as per NCC T&D relevant SOP's.
- Investigation Initiation: Assign a trained investigation team (Project Senior Manager, HSE, supervisors, technical experts).
- Review Findings: Approve corrective actions and allocate resources for implementation.

HSE Team

- Support and Guide the Operational team to Lead Investigations: Use standardized tools (e.g., 5 Whys, Fishbone Diagrams).
- Documentation: Complete incident reports and share lessons learned across projects.
- Trend Analysis: Identify patterns (e.g., repeated PPE violations) for proactive mitigation.

Workers

- Report Promptly: Disclose all incidents and near-misses without fear of retaliation.
- Participate Honestly: Provide factual accounts during interviews.
- Implement Fixes: Follow updated procedures post-investigation.

Incident Investigation Process

1. Immediate Response

- Secure the Scene: Isolate the area to preserve evidence (e.g., equipment, spills).
- Provide Aid: Administer first aid and evacuate if necessary.
- Notify Stakeholders: Alert HSE, project leaders, and relevant teams.

2. Gather Evidence

- Physical Evidence: Photograph conditions, equipment, and environmental factors.
- Documents: Review permits, training records, maintenance logs, and SDS.
- Witness Interviews: Ask open-ended questions (Who? What? When? Where? How?).

3. Root Cause Analysis (RCA)

Identify Contributing Factors:

- Human Factors: Fatigue, inadequate training.
- Equipment Issues: Malfunctioning tools, poor maintenance.
- Procedural Gaps: Missing steps in safety protocols.
- Environmental Conditions: Extreme heat, poor lighting.

RCA Methods:

5 Whys: Ask "why" repeatedly until the root cause is revealed.

Example:

- Why did the worker fall? Slipped on oil.
- Why was there oil? Leak from unmaintained equipment.
- Why wasn't it maintained? No scheduled inspection.
- Why no schedule? Procedure not updated.
- Root Cause: Inadequate maintenance procedures.

Fishbone Diagram: Categorize causes into branches (People, Process, Equipment, Environment).

4. Develop Corrective Actions

Hierarchy of Controls:

- Elimination: Remove the hazard (e.g., automate a risky task if possible).
- Engineering: Install guardrails or ventilation.
- Administrative: Update training or rotate shifts.
- PPE: Reinforce use of safety gear.

SMART Goals: Ensure actions are Specific, Measurable, Achievable, Relevant, Time-bound.

5. Reporting and Follow-Up

Incident Report: Include:

- Incident description and timeline.
- Root causes and contributing factors.
- Corrective actions with deadlines.
- Share Lessons: Discuss findings in safety meetings and toolbox talks.
- Audit Effectiveness: Verify fixes within 30 days to ensure compliance.

Root Cause Analysis (RCA) Simplified

What is a Root Cause?

The underlying reason an incident occurred. If removed, the incident is unlikely to repeat.

Example:

- Surface Cause: Worker cut hand on sharp metal.
- Root Cause: No procedure for inspecting materials for sharp edges.

Common Root Causes in Projects (but not limited to)

- Inadequate Training: Workers unaware of safety protocols.
- Poor Maintenance: Equipment failure due to missed inspections.
- Communication Gaps: Misunderstood instructions during high-risk tasks.
- Design Flaws: Unsafe access points on transmission towers.

Worker Responsibilities

- Report Immediately: Even minor incidents or near-misses.
- Cooperate Fully: Provide honest, detailed accounts to investigators.
- Adopt Changes: Follow updated procedures post-investigation.

Additional Considerations for NCC T&D Projects

- High-Risk Scenarios:
 - Electrical Incidents: Verify lockout/tagout (LOTO) compliance.
 - Heavy Machinery: Review operator certifications and equipment logs.
- Client Alignment: Ensure corrective actions meet NCC T&D's HSE standards.
- Remote Sites: Use digital tools (tablets, drones) to document evidence.
- Language Barriers: Provide translators during witness interviews.

Key Takeaways

- Act Fast: Secure the scene and prioritize aid.
- Dig Deep: Use RCA tools to find root causes, not blame.
- Fix Systemically: Apply the hierarchy of controls for lasting solutions.
- Share Widely: Turn incidents into learning opportunities for all teams.
- Close the Loop: Audit corrective actions to ensure effectiveness.

For templates, RCA tools, or training, visit NCC T&D's HSE Portal or contact the HSE Department.

