

Root Cause Analysis Quick Guide

A two-page summary of how to trace an incident or near miss back to its causes and correct the system. Full guide: calgarysafetyconsultants.ca/safety-guides/incidents/root-cause-analysis/

THE PATH

1 Actual or potential loss	The harm or damage that happened, or the credible harm that could have happened.
2 Event	The unplanned occurrence that brought people or property into contact with the hazard or hazardous energy.
3 Immediate causes	The conditions and actions closest to the event: what was present or happening at the time.
4 Root causes	The human factors and job factors that explain why the conditions and actions existed, continued or weren't controlled.
5 System correction	The change that removes the cause: assigned, completed and checked for effectiveness.

Record it in that order, but work it backward: start with what happened and what was lost or nearly lost, trace back to the root causes, then work forward to the corrections. Give each event a record identifier for tracking (for example, Event ID 2026-014); it isn't a cause code. One event can have several immediate and root causes.

KEY TERMS

- **Loss:** injury or illness, property or equipment damage, environmental impact or work interruption. If none occurred, say so and document the potential loss.
- **Potential loss:** the credible harm in the circumstances. Consider the energy or exposure source, its path, what was exposed and the safeguards present.
- **Harm threshold:** the level of energy, exposure or force at which harm could reasonably occur. It's often not one number; describe it from the evidence.
- **Near miss:** no loss, but something was exposed, or came close enough, that the harm threshold could reasonably have been crossed.
- **Hazard observation:** a hazard is present, but no unplanned event or near-contact has happened.

NEAR MISS OR HAZARD OBSERVATION?

Hazard observation A leak is found on a walkway before anyone encounters it.	Near miss A worker slips on the leak, regains balance and avoids a fall.	Event with actual loss A worker slips, falls and is injured.
--	--	--

For a near miss, record the energy or exposure source, what was exposed or nearly exposed, how close it came to the harm threshold, what prevented loss and the evidence for your assessment. Alberta, British Columbia and Manitoba require investigation of incidents or occurrences that could have caused serious harm.

START WITH THE FACTS

- Event ID, date, time and location; people, equipment, materials and work being done; what happened, in sequence.
- Actual and potential loss, the energy or exposure source, the safeguards present and what each did.
- Evidence: photographs, equipment condition, records, measurements and witness accounts. Keep confirmed facts, assumptions and open questions apart, and record conflicting information.

IMMEDIATE CAUSES: CONDITIONS AND ACTIONS

Conditions

- Equipment, tools or materials
- Guards or protective devices
- Work area or environment
- Hazardous energy or exposure
- Warnings or protective arrangements

Actions

- Operating or using equipment
- Work method or sequence
- Position, lifting, loading or placement
- Use of safeguards
- Use of defective equipment
- Communication or coordination
- Response to a hazard

Be specific. “Unsafe work” isn’t a finding; “the worker entered the machine’s operating area while it was running” is. An action is never the full explanation.

ROOT CAUSES: HUMAN FACTORS AND JOB FACTORS

Human factors

- Capability
- Knowledge
- Skill or experience
- Stress, fatigue or attention
- Motivation and expectations
- Communication and understanding

Job factors

- Leadership and supervision
- Engineering and task design
- Purchasing and selection
- Maintenance
- Tools and equipment
- Work standards
- Wear and deterioration
- Use or misuse
- Planning and resources
- Monitoring and learning

For each immediate cause, ask why it existed or wasn’t controlled. A human factor isn’t a finding of fault. Don’t stop at labels like “lack of training”: say what was missing, how it contributed and what shows it. Test each cause: is there evidence, would the event still have happened without it, and can the organization change it?

SYSTEM CORRECTION

- The specific change, the person responsible and the due date
- Interim controls until it’s done
- How completion and effectiveness will be checked
- Change task design, equipment, isolation, barriers or work arrangement before relying on reminders or retraining
- Close it only after the effectiveness check is recorded; if it didn’t work, revise it

BEFORE YOU CLOSE

- Event and sequence described with evidence
- Actual and potential loss identified
- Harm threshold assessed for a near miss
- Immediate causes recorded as conditions or actions
- Each traced to human or job factors
- Findings separated from assumptions
- A system correction for each root cause
- Each action assigned and dated
- Completion and effectiveness checks recorded

Describe the event. Find the condition or action. Explain it. Correct the system and verify.

General information, not legal advice. Investigation requirements differ between provinces, territories and federally regulated workplaces, so confirm the requirements that apply to your workplace. Full guide and sources: calgarysafetyconsultants.ca/safety-guides/incidents/root-cause-analysis/