Root Cause Analysis (RCA)

LEVEL 1 - DIRECT CAUSE – EXAMPLES

How did the employee get injured or become ill?

❑ Cuts, strains, burns, poisonings, falls, electrocutions, etc.

LEVEL 2 – INDIRECT CAUSE – EXAMPLES

What was the employee(s) doing wrong at the time?
What at-risk behavior was the employee performing?

❑ Unsafe/At-Risk acts performed by the workers
❑ Using equipment or tools with missing guards or are broken
❑ Using equipment or tools that have not been inspected
❑ Workers running, horseplaying, or ignoring rules
❑ Working in areas with slip, trip, or fall hazards
❑ Elevated work without guardrails or personal fall arrest
❑ Working on electrical that is energized or without LOTO

LEVEL 3 – ROOT CAUSE – EXAMPLES

The underlying issue is normally a management deficiency

❑ Outdated or no policies, procedures, processes, permits, etc.
❑ Inadequate or no training programs or requirements to attend
❑ No accountability, discipline, interventions, retraining, etc.
❑ Lack of inspections, audits, observations, or investigations

WHY IS A ROOT CAUSE ANALYSIS (RCA) SO IMPORTANT?

A root cause analysis
allows an employer to discover the underlying or systemic deficiency rather than the generalized or immediate causes of an incident. Correcting only an immediate cause may eliminate a symptom of a problem but not the problem itself.

Example 1

Level 1 Worker was punched in the face and broke nose
Level 2 Workers were horseplaying
Level 3 No policy or training against horseplay

Example 2

Level 1 Worker cut off finger using a chop saw
Level 2 Worker was using a saw with a broken or missing guard or improper hand placement
Level 3 No inspection or equipment removal procedure or lack of training

Example 3

Level 1 Worker electrocuted during electrical panel work
Level 2 Worker(s) did not use LOTO
Level 3 Lack of training or supervision or no policy or procedure

Example 4

Level 1 Worker steps on a nail and needs a tetanus shot
Level 2 Poor housekeeping or did not inspect the area
Level 3 Lack of training or no policy or procedure

ACCIDENT AND INCIDENT INVESTIGATIONS

- ❑ 85-95% of all Accidents and Incidents are Behavioral-Based
- ❑ Accidents, incidents, and near misses must be investigated to determine their direct, indirect, and root causes
- ❑ Root causes must be corrected to prevent similar events
- ❑ Investigations may identify from 10 to 27 contributing factors that must also be addressed and corrected, although they may not been a cause of the accident, incident or near-miss being investigated
- ❑ Safety should consult and help facilitate the investigation
- ❑ Frontline supervisors should perform the investigation or if it involves 2 or more groups by the next-level supervisor
- ❑ Investigations are fact-finding missions and shouldn't be bias
- ❑ Investigations identify problems and shouldn't seek blame
- ❑ Personnel should be trained/retrained and not punished since most root causes are management level deficiencies
- ❑ Asking open-ended questions in essential similar to 5 Whys and Sequence of Events. Avoid closed-ended questions like answering yes or no when possible.
- ❑ Interview 1 witness at a time, where the conversation is private, and in a cooperative environment such as an open space, vehicle, or even when the event occurred.
- ❑ The best place for interviews is where the event occurred
- ❑ An investigation is completed when your report is submitted

5 WHYS METHOD AND SEQUENCE OF EVENTS

A simple yet effective tool used in accident investigations to identify the root cause of an incident by asking "Why?" multiple times until the underlying cause is revealed.

Example Scenario: A Worker Slipped on a Wet Floor

Q1. Why did the worker slip on the floor?
A1. Because the floor was wet.

Q2. Why was the floor wet?
A2. Because water was spilled and not cleaned up.

Q3. Why was the water spill not cleaned up?
A3. Because there were no signs or procedures in place to address
spills immediately.

Q4. Why were there no signs or spill-cleaning procedures?
A4. Because the safety protocols did not include specific guidelines for spill management.

Q5. Why was there no spill procedure?
A5. Because there was no comprehensive review or update of safety procedures to include such scenarios.

Conclusion:
By repeatedly asking "Why?",
The investigation reveals that the root cause is the lack of a safety procedure that includes spill management. The organization can then address this root cause by updating the safety policies and procedures and training employees to prevent similar incidents in the future.

WHEN CONDUCTING AN INTERVIEW

- ❑ Ask open-ended questions rather than yes or no questions
- ❑ Listen & allow witnesses time to tell the story in their own words
- ❑ Ask follow-up and clarification questions
- ❑ Take notes when possible
- ❑ Get permission to record the interview if recording is preferred
- ❑ When possible, have the witness write a statement
- ❑ And, have witnesses sign & date their statement
- ❑ Keep your opinion out of the interview
- ❑ End on a positive note
- ❑ Leave your contact information to contact you if needed

WHEN CONDUCTING AN INTERVIEW, DO NOT

- ❑ Intimidate, interrupt, or prejudice the witness
- ❑ Assist the witness in answering questions
- ❑ Ask leading questions
- ❑ Become emotionally involved
- ❑ Jump to conclusions
- ❑ Reveal discoveries of the investigation
- ❑ Make promises that can't be kept

EXAMPLES OF OPEN-ENDED QUESTIONS INCLUDE:

- ❑ Where were you at the time of the incident?
- ❑ What were you doing at the time?
- ❑ What did you see?
- ❑ What did you hear?
- ❑ What did you smell?
- ❑ What did you feel? (heat, vibration, rumbling, pressure, etc…)
- ❑ What were the environmental conditions (weather, light, noise, etc.)?
- ❑ What was (were) the injured worker(s) doing at the time?
- ❑ Had that practice been previously performed frequently?
- ❑ In your opinion, what caused the incident?
- ❑ How might similar incidents be prevented in the future?
- ❑ Were any other witnesses around?
- ❑ Do you know the names of other witnesses?
- ❑ How are you connected with others involved in the incident?
- ❑ Have you been trained in?
- ❑ Did your group fill out a JSA or TSA today?
- ❑ Do you know the last time the _____ was inspected?

ANALYZING DATA

TO DETERMINE THE CAUSE(S) OF INCIDENTS

Incident analysis is a reactive examination of the factors that led to an injury or illness. Incidents can be caused by various factors (multi-causation) or one single factor (root cause).

Studies have shown that incidents could be attributed to 10 to 27 contributing factors.

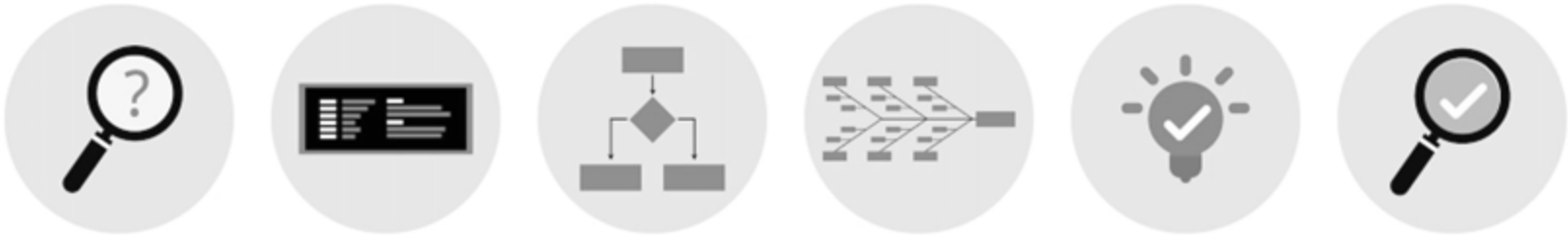
INCIDENT ANALYSIS OFTEN DISCOVERS:

1. Direct causes of injuries/illnesses
2. Surface causes of an incident
3. Root causes of an incident (can be one or multiple causes)

- ❑ There are many ways of gathering and examining data
- ❑ Historical data (lagging indicators) and predictive (leading) indicators are often used.
- ❑ Data analysis must be completed before making any changes
- ❑ Procedural changes to lower or eliminate injuries and illnesses

INVESTIGATIVE PROCESSES & PRACTICES INCLUDE

- ❑ Visiting the site of the incident and collecting photos/video and measurements of the scene if needed
- ❑ Gathering evidence that may have contributed to the incident
- ❑ Interviewing the injured, ill, witnesses, and supervisors to determine the incident cause(s) adequately, data analysis practices should include:
- ❑ Reviewing incident photos, interview notes, and statements Reviewing corporate safety policies
- ❑ Reviewing equipment, material, and chemical manufacturer manuals and instructions
- ❑ Reviewing any other data or evidence gathered during the investigation process



Root Cause Analysis Process