Root Cause Analysis

Presented by: Isaac Garcia, RCC
Objectives

• Define Root Cause
• Understand how an organization benefits from root cause
• Learn how to determine root cause using the “5 Why” method
• Learn how to determine, implement, and prove corrective action using a 5-step problem solving process.
Definitions – Root Cause

A root cause is an initiating cause of either a condition or a causal chain that leads to an outcome or effect of interest. The term denotes the earliest, most basic, 'deepest', cause for a given behavior; most often a fault.
Definitions – Root Cause Analysis

A Root Cause Analysis is a wide range of approaches tools and techniques used to uncover causes of problems.
When and Why Should Root Cause Analysis be Performed?

• If we do not get into the details of a problem, we can expect it to recur.

• Any issue can benefit from a root cause analysis.

• The depth of the analysis depends on the possible frequency and possible severity of the problem.
Benefits of Root Cause Analysis

• Problems are not repeated

• Often multiple problems have the same root cause

• Solutions determined may solve other problems

• Analysis improves communication groups
Definitions – Problem Solving Process

The process of working through details of a problem to reach a solution. Problem solving may include mathematical or systematic operations and can be a gauge of an individual's critical thinking skills.
Corrective Action Process

1. Identify a problem (may be a claim, claims, etc)
2. Contain the problem and take immediate action
3. Analyze the problem and define the root cause
4. Develop and implement corrective action plan
5. Complete and validate corrective action plan
Create Safety Committee – Pre step

- Should consist of people who are knowledgeable.
- Small group (4 to 8), more than this will slow the process.
- Must be empowered to make changes, management support
- Should have a chair
- Team membership may change based on needs. Team may become smaller or larger
Identify the Problem – Step 1

• Who? – individuals, departments, or public associated with problem
• What? – problem statement or definition
• When? – date and time problem is occurring
• Where? – location (area, facility, road, etc)
• Why? – any know explanations
• How? – how did the problem happen (root cause) and how will it be corrected (corrective action)
• How many? – size and frequency of problem
Take Immediate Action – Step 2

- Isolate the problem
- Usually Band Aid /fixes
  - Reassigning tasks
  - Re inspecting work
- **Only temporary** until corrective action is implemented
- Verify that immediate action is effective.
  - New problems should not arise from temporary action
Types of Corrective Action

• Immediate
  • Action Taken to quickly fix the impact of a problem so no further problems occur.

• Permanent
  • Root Cause Corrective Action
  • Action taken to eliminate an error in a process.

• Preventative
  • Systemic Root Cause Corrective Action
  • Action taken to prevent the error from recurring in any process.
Types of Corrective Action – Scenario 1

The public works department has submitted multiple workers’ compensation claims with missing information.

• Immediate Corrective Action
  • The paperwork is reviewed and resubmitted by Human Resources

• Permanent Corrective Action
  • Workers’ compensation forms are changed so they cannot proceed without the necessary information.

• Preventative
  • The same form becomes mandatory for all departments to submit with workers’ compensation documentation
Types of Corrective Action – Scenario 2

A road and bridge employee is injured due to improper use of a bench grinder.

• Immediate Corrective Action
  • Another employees is assigned the task while the injured employees receives medical attention.

• Permanent Corrective Action
  • The employees of the precinct are trained in the proper use of bench grinders.

• Preventative
  • Power tool safety is made a required training topic for all employees who may use power tool.
Define the Root Cause – Step 3

• Use the 5 whys to determine symptoms of causes (the child’s question)
• Brainstorm possible Causes
• Organize causes with Cause and Effect Diagram
• Determine which causes to focus on based on
  • Causes occurring most often
  • Ease of mitigation of cause
• Understand the root is often a system of causes
The 5 Whys - Scenario
Develop Corrective Action Plan – Step 4

- Solution must eliminate problem
  - Verify before implementing
    - Determine how we will determine if solution worked
  - Solution cannot create more problems
- Be Specific
  - What is the solution
  - Who is responsible
  - When will solution be completed
Complete and Validate Plan – Step 5

• Make sure the corrective action has been implemented fully
  • If any measures are not completed, we need cannot validate
  • If any measures cannot be completed, this may indicate a faulty corrective action

• Validate that the action has eliminated the problem
  • Did the problem reoccur
  • Provide evidence
  • Document
Scenario – The Barn Burned Down!
Create Safety Committee – Pre Step

• Considering this is a high level incident and that normal safety committee members may not have the information or experience to handle the matter, we may consider a special committee.

• Who has the information we need.
  • Fire Marshall?
  • Employee on duty?

• Who has the power to enact changes.
  • Commissioner or Engineer in charge of building
  • Possibly other court members
Fire Marshall Findings

- Evidence indicated that the fire started at near the west wall
- Multiple pieces of equipment were on the west wall
- The compressor was damaged but it was not the source of the fire
- The solvent in the parts washer was an accelerant
- The top of the parts washer was open after the incident
- No extinguishers were present as they were being serviced
- The building was built in 2011 in accordance with all local codes
Tom’s Testimony

- Tom heard noises coming from the shop, including small explosions.
- By the time Tom had eyes on the fire, it was large. Thought it best to call fire department and evacuate the building.
- Tom has experience with fire because last year he saw a small fire in the same barn which he put out with an extinguisher.
- Last time the parts washer was the only damaged equipment, it would no longer stay open.
- He fixed it with a paper clip and saved the county the cost of a new parts washer.
Identify the Problem – Step 1

• Who? – Tom was on site in the office at the time
• What? – The barn burned down
• When? – 8am, just after employees left to a site
• Where? – Road and Bridge Yard
• Why? – Tom’s testimony and fire marshal findings
• How? – To Be Determined
• How many? – Though this is not a frequent problem, this is a high value loss that could have resulted in the loss of life
Take Immediate Action – Step 2

• Immediate action was taken by relocating all equipment to a satellite site that is used for materials storage.
• A temporary building was rented to act as office space.
• All “shop” operations have been indefinitely suspended.
Define the Root Cause – Step 3

• Why did the shop burn down?
  • The west wall caught fire

• Why did the west wall catch fire?
  • The solvent in the parts washer was an accelerant

• Why was the solvent an accelerant?
  • The parts washer didn’t close to contain fire

• Why didn’t the parts washer close?
  • The fusible link was replaced with a paper clip
Define the Root Cause – Step 3

• Why was the fusible link replaced with a paper clip?
  • A previous small fire had melted the old clip and Tom put on a paper clip to hold the lid open.

• Why didn’t Tom replace it with a fusible link?
  • Tom did not know what a fusible link was.

• Why didn’t somebody else catch the problem?
  • Inspections are not done at this yard.
Corrective Action 1

• All employees will be trained on all equipment in the barn that pose any special hazards. This includes: parts washers, air compressors, and any other equipment present.

• Sign in sheets will be kept as documentation to ensure all employees are properly trained.

• The safety committee will review sing in sheets yearly to ensure compliance and determine if employees need any other training.
Corrective Action 2

- The safety committee will work with Road and Bridge employees to create a checklist that covers all hazards at Road and Bridge.
- A weekly inspection schedule will be implemented to ensure facilities are kept in a safety condition.
- The safety committee will review any negative findings immediately and ensure corrective action is taken.
Complete and Validate Plan – Step 5

• The safety committee has decided to have a special meeting 1 year from the date of the incident.

• During this meeting, they will be reviewing training and inspection reports to ensure all training has been done and all negative inspection findings have been completed.

• At this time, the safety committee will determine if the corrective action has worked, if further action is needed, or if the county can reduce the frequency of inspections and training.
Thanks for Attending!

**Northwest**  
Jack Coffey  
512-924-4773  
jackc@county.org

**Northeast**  
Isaac Garcia  
512-573-6596  
isaacg@county.org

**Southwest**  
Larry Boccaccio  
512-924-4769  
larryb@county.org

**Southeast**  
Joseph Szewczyk  
512-815-7869  
joes@county.org