

BEYOND

SMART CITIES



ISO 45001 LEAD AUDITOR

REFRESHER TRAINING

FOR ENVIRONMENTAL SPECIALISTS

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ENVIRONMENTAL SPECIALIST CURRICULUM



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CORRECTIVE ACTION MANAGEMENT PROCESS

FOR ENVIRONMENTAL PROFESSIONALS

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LEARNING OBJECTIVES



Corrective Action Management Process

Correction & Corrective Action

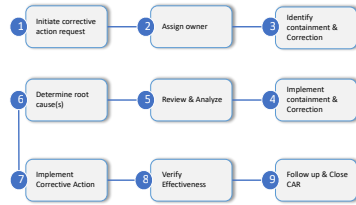
Root Cause Analysis

Effective Corrective Action

Cause and Effect Diagrams



CORRECTIVE ACTION MANAGEMENT PROCESS



CORRECTION & CORRECTIVE ACTION

Correction: is an action taken to eliminate a detected nonconformity. If the detected nonconformity is a defective product or an incorrect invoice, for example, then reworking the defective product or the incorrect invoice is considered correction. You may be able to restore the intended requirement or function, but you are only correcting the situation. Correction addresses the short-term need and gets immediate attention, and most organizations do a good job of correcting the nonconformity.

Corrective action: is taken to eliminate the cause of a detected nonconformity. This requires understanding the root cause of the detected nonconformity and taking action to eliminate the root cause(s) to prevent recurrence of the nonconformity. Corrective action, on the other hand, is a long-term solution. In my opinion, organizations do not invest adequate resources in addressing corrective action.

Both correction and corrective action may be required in many scenarios.

Even if corrective action is attempted, often due to organizations' ad hoc approaches, only symptoms are addressed rather than root causes. There are proven root cause analysis tools and problem-solving methods that can be used to take effective corrective action. For correction, you need process-specific instruction. For corrective action, problem-solving skills are required.

If an auditee is just correcting the instance detected by the auditor, he or she is not addressing the overall impact. An auditor or process owner who is truly interested in improving his or her system will take additional samples and evaluate the current controls before concluding the detected nonconformance is indeed isolated. If a nonconformity is an isolated incident and is low risk to business and customers, investing time and resources for understanding the root cause is not a value-added activity. Correction of the situation may be adequate.

ROOT CAUSE ANALYSIS

Follows a specific set of steps

- Define the problem
- Collect data
- Identify possible causal factors – 5 Whys
- Identify root cause(s)
- Recommend and implement solutions
- Evaluate solutions (Continual improvement)

ROOT CAUSE ANALYSIS



Define the problem

- What happened?
- When did it happen?
- Where did it happen?
- What was the impact?

Collect Data

- What proof do you have that the problem exists?
- How long has the problem existed?
- What is the impact of the problem?

Identify Possible Causal Factors

- What sequence of events lead to the problem?
- What conditions allow the problem to occur?
- What other problems surround the occurrence of the central problem?

ROOT CAUSE ANALYSIS



Contributing Factors:

Human causes – people did something wrong, or did not do something that was needed. Human causes typically lead to physical causes (ex no one filled the brake fluid, which lead to the brakes failing)

Physical causes – tangible, material items failed in some way (ex car's brakes stopped working)

Organizational causes - a system, process, or policy that people use to make decisions or do their work is faulty (ex no one person was responsible for vehicle maintenance, and everyone assumed someone else had filled the brake fluid)

Where to look for contributing factors

1. Tasks...policy procedures, guidelines
2. environment and site conditions (weather, noise, air, surroundings)
3. Materials/equipment
4. Personnel (training, stress, fatigue, experience)
5. Management (supervision, inspections, action plan follow-up)

ROOT CAUSE ANALYSIS



Causal Factor Identification Tools

- 5 whys – Ask “why” until you get to the root of the problem
- Drill Down – Break down a problem into small, detailed parts to better understand the big picture
- Cause and Effect Diagrams – Create a chart of all the possible causal factors, to see where the trouble may have begun
- We Have Successfully Established:
 - What the problem was
 - A pressure fitting on the machine failed.
 - How the problem occurred
 - Inspection of hoses and fittings is not part of the preventive maintenance (PM) schedule.
 - Why the system failed
 - The PM system does not consider Equipment Manufacturer's recommendations to develop PM schedules.

EFFECTIVE CORRECTIVE ACTION



5 whys

Very often, the answer to the first "why" will prompt another "why" and the answer to the second "why" will prompt another and so on; hence the name the 5 Whys strategy.

Example:

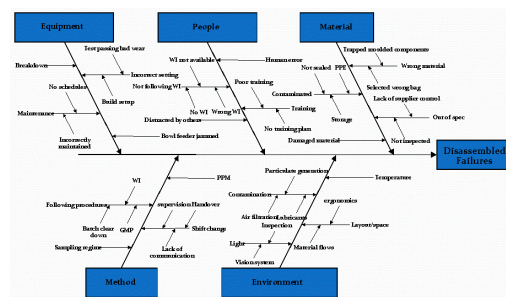
- An employee in the plant slipped and fell while performing their regular duties.
 1. Why? – There was oil on the floor.
 2. Why? – The machine in that cell was leaking oil.
 3. Why? – A pressure fitting on the machine failed.
 4. Why? – Inspection of hoses and fittings is not part of the preventive maintenance (PM) schedule.
 5. Why? – The PM system does not consider Equipment Manufacturer's recommendations to develop PM schedules.

CAUSE AND EFFECT DIAGRAMS



- Identify the problem – who, what, when, where
 - Write exact problem on a box on the left hand side of the paper and draw a line horizontally from this box
- Work out the major factors involved – there may be several
 - Draw lines off the "spine" for each factor involved and label them (these are the 'bones')
- Identify possible causes
 - Display on diagram as smaller lines coming off the 'bones' of the fish
- Analyze your diagram

CAUSE AND EFFECT DIAGRAMS



IDENTIFY THE ROOT CAUSE(S)



- Why does the causal factor exist?
- What is the real reason the problem occurred?

Use the causal factor identification tools to look at the roots of each factor. These tools are designed to encourage you to dig deeper at each level of cause and effect

- Effectiveness
- Ease of Implementation
- Return on Investment (not always applicable especially with Safety Incidents)
- Potential Negative Effects – you don't want your solution to cause other problems
- Evaluate Solutions before you implement themEffective Corrective Action will focus on eliminating the cause of the stated problem.
 - This will eliminate the **Why** and **How** and prevent the **What** from recurring.
- Disciplined problem solving will also verify the effectiveness of Corrective Actions

CONTAINMENT/ CORRECTION VS. CORRECTIVE ACTION



• Correction/Containment:

- Address the incident or symptom not the root cause
- Has no long term effect on the system

• Containment in this case should include:

- Clean up the oil leak.
- Repair the leaking equipment.
- Inspect other similar equipment for similar problems.

EFFECTIVE CORRECTIVE ACTION



• Effective Corrective Action Usually Includes the Following:

- State the problem clearly
- Select a responsible person/process owner and corrective action team
- Contain the problem (correction)
- Investigate the problem
- Perform Root Cause Analysis
- Long term Corrective Action
- Verification of effectiveness
- Closure

EFFECTIVE CORRECTIVE ACTION



• State the Problem Clearly:

Problem Statement

- **Nonconformity:** The system for ensuring employee safety in production areas is not effective.
- **Requirement:** Quality, Environmental and Occupational Health and Safety Policies require management to maintain safe production facilities. Ministry of Labor Requirements.
- **Objective Evidence:** Bob Jones slipped and fell in the plant on Dec. 15, 2005. Lost Time Accident records for December 2005.

• Select a person responsible and Corrective Action Team:

- Person responsible: xx
- Corrective Action Team: xx, xx

• Contain the Problem (Correction)

- Clean up the oil leak
- Fix broken pressure fitting
- Check other similar machines

EFFECTIVE CORRECTIVE ACTION



• Investigate the Problem:

- Interview affected personnel (Bob will have the most information about the incident).
- Look at the affected area.
- Observe the process in regular operation.
- Record the facts.

EFFECTIVE CORRECTIVE ACTION



• Corrective Actions may include:

- Updating maintenance procedures
- Revise PM schedules based on equipment manufacturer's recommendations
- Training maintenance personnel
- Testing pressure fittings on machines
- Re-Designing cell layouts to eliminate the effect of spilled oil

• Corrective Action Should:

- Address the system problem
- Eliminate the Root Cause
- Be implemented in a timely manner
- Include a detailed plan if it will take considerable time
- Be commensurate with the risk involved
 - Risk to the customer, employee, organization, public, etc.

EFFECTIVE CORRECTIVE ACTION



• Verification of effectiveness

Monitor and measure if anyone else sustains a similar injury?

- This seems like a logical way, but is reactive in nature.
- Someone has to get hurt before we take further action.
- Risk may be too great.
- Additional methods should be considered.

• Verification of Effectiveness

- Often confused with verification of implementation.
- Completion of corrective action tasks.
- Monitor and measure the process to verify the effectiveness of the actions taken.
- Poor results often indicate wrong Root Cause or wrong Corrective Action(s).
- Consider performing audits as a verification tool.

EFFECTIVE CORRECTIVE ACTION



Verification of effectiveness

- Perform regular audits of:
 - Production Areas
 - Check for oil leaks in production cells
- Preventive Maintenance Process
 - PM schedule
 - Maintenance personnel training
 - Introduction of new equipment

Closure

- Closure can only happen after successful verification of Corrective Actions.
- By nature, effective Corrective Actions will prevent recurrence.
- If Corrective Actions cannot be called effective, then Root Cause Analysis should be repeated.
- Record the date of closure.