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FACT SHEET
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HOW TO CONDUCT AN EFFECTIVE ROOT CAUSE ANALYSIS

No food operation, small or large, is problem-free. Perhaps there is a reoccurring issue that won't go away. Maybe an auditor or inspector requires that the root cause of a deviation or corrective action needs to be completed prior to submitting a response to a CAR (Corrective Action Request) or a NC (non-conformance). What is the best way to close this issue out and move on?

By definition, a **root cause** is the underlying cause of a problem, which, if adequately addressed, will prevent a recurrence of that problem.

To help visualize this, picture a stubborn weed in the lawn. The "problem" is what you can see on the surface. The "symptom or root cause" of what is causing the weed to appear is something deeper in the ground. If only the visible flower and stem is removed, the weed will come back and perhaps multiply. However, by digging deep into the soil and removing it at the roots, the risk of reoccurrence is lower.

Root cause analysis (RCA) is a problem-solving process for investigating an incident, problem, concern, or a non-conformity.

For example, oil is noticed on the barn floor. Instead of throwing oil-absorbing sand down and moving on with the day, stop and investigate what caused the oil leak, where it could be coming from, does it affect the food safety of the product in the field that the tractor is driving overtop of while it's harvested?

The goal of a root cause analysis is to determine the missing or inadequately applied controls that will prevent the re-occurrence of a problem. Root cause analysis uncovers the real cause of a problem and deals with it rather than simply dealing with the problem on the surface (the Band-Aid approach).

BEFORE BEGINNING THE ROOT CAUSE ANALYSIS, CONSIDER APPLYING THESE SIX BASIC STEPS TO PROBLEM-SOLVING

1. Identify the problem. Depending on the problem, this could mean stopping production, holding product, inspecting/sorting, removing or replacing, or even adjusting equipment settings.

2. Investigate. Look at the environment, personnel practices, equipment, etc.

3. Apply a corrective action (immediate & short term). Most operations stop here. However, repairing or replacing equipment or materials, changing procedures or methods, or conducting training may not be the true solution to the issue at hand.

4. Conduct a root cause analysis (see methods listed below).
5. Apply a proposed action plan and preventative actions (long term). This is determined through the root cause analysis above. Based on the outcome of the analysis, new procedures may need to be implemented, equipment may need to be fixed or modified and similar areas of the facility that could incur the same issues may need to be checked.
6. Verify the effectiveness of the preventative actions that are put in place. This is important to the preventative piece. Ensure that the controls are working and effective. If they aren't, return to step four as something may have been missed.

ROOT CAUSE ANALYSIS METHODS

There are many different methods that can be used when conducting a root cause analysis. Some popular options are "The 5 Why's + 2 How's", Cause and Effect Diagram (also known as Fishbone/Ishikawa), and Is/Is Not Matrix. The choice of which method to use may be a matter of personal preference, company policy, or even dependant on the type of non-conformance. Some methods may work better for different types of situations. Experiment and see what works best. The table below describes the pros and cons of three of the methods.

The 5 Why's + 2 How's	Cause and Effect Diagram (Fishbone/Ishikawa)	Is/Is Not Matrix (Kepner-Tregoe Matrix)
The concept is to ask 'why' 5 times and 'how' twice until meaningful conclusions are reached. However, it may take more than seven times to get the root cause.	It is often most useful when the 5 Why's + 2 How's is too basic. For example, where a complex issue needs to be considered in bite-size pieces or where there is a lot of data that needs to be trended.	Great for times when there is a lot of information, and it needs to be narrowed down and summarized. It helps the team clearly define the problem, decision, or situation at hand.
PROS • Team oriented • Practical • Easy to use and simplest of methods • Quick and effective for minor issues CONS • No data • Not repeatable • Can be biased, based on personal experiences • May not be the best tool for a serious incident	PROS • Team oriented • Easy to use • Thorough, captures many processes and areas of the facility CONS • As easy as it is to use, it does take some practice getting used to as it is very thorough and detailed Typically uses six categories laid out in a fishbone structure: 1. Machine – all equipment that could have a role in the NC, i.e. production line, facilities, computers or tools 2. Methods – how work is performed, i.e. policies, procedures, rules or work instructions 3. Materials – any information relating to raw materials or final products, i.e. raw material specification or goods receipt checks for a specific batch or ingredient 4. Measurement – any data collection or measurement, i.e. metal detection records, check weights or final product analysis 5. Manpower – any role involved in the implicated process 6. Mother Nature (environment) – the location, time, temperature, culture, standards of cleanliness or available time for an activity	PROS Works well for issues such as: • Production issues (labelling, damages) • Record-keeping issues • Miscommunication issues (shift to shift, department to department) CONS • This method can be time consuming

THINGS TO CONSIDER

- The root cause should be something that can be managed or changed. It is too easy to conclude that "they forgot," "not enough time," "not enough money," "made a mistake," or "staff sickness." However, most times, these things are out of control, and a proper root cause analysis should lead to controllable, manageable, and adjustable processes.
- Don't duplicate the immediate corrective actions – look beyond at the system or process.
- People rarely are the true root cause – look towards the system, policy, or process that leads to human error.
- Don't depend on extra checks solely for preventative action plans.

We often hear, "but I documented a corrective action, isn't that enough?" The answer is no. A corrective action is not the root cause. A **corrective action** is an action that is taken to manage a non-conformity. Yes, it should be completed as soon as possible after detecting the non-conformity. However, it is reactive, not preventative. Many operations get stuck in the reactive cycle and, unfortunately, waste time and money in the process as the issues keep reoccurring.

"We've applied a corrective action, identified the root cause, and documented a corrective action response. We're done right?"

No, did you develop your Proposed Action Plan and document a Preventative Action? Following a root cause analysis, the company must develop a **proposed action plan** to correct each of the root causes, to prevent re-occurrence of the non-conformity. Then document **preventative actions** that are applied to any additional areas that are likely to be affected and could incur the same non-conformity before it occurs.

The key is prevention. We want to identify the true root cause that leads to the non-conformity so that it can be permanently eliminated by improving the process – a permanent solution.

Root cause analysis should not be rushed, and every avenue must be explored to find the true root cause.

The goal is to implement effective preventative actions so that problems do not reoccur or get worse. A proper root cause analysis will reduce costs associated with the loss of product, time, and resources by fixing the issue only once and preventing the possibility of reoccurring failures.

FOR MORE INFORMATION

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