Thinking Through Corrective Actions

BY DUKE OKES

Determining why corrective action is needed can keep your quality management system on track.

ALL BUSINESSES ARE MADE UP of interconnected processes intended to 1) identify a customer's needs, and 2) produce products or services to fill those needs. To support these core processes, many ancillary processes are required, such as obtaining and managing capital, human and financial resources, as well as setting strategy and monitoring how well the business functions. Participation in a quality program, such as AISC Certification, may offer the company a way to systematically check its core and ancillary processes to ensure they are meeting their customer's needs and need for quality. Program requirements will help the company identify what should be defined by the design, purchasing and production processes, as well as support processes such as training, inspection, and calibration.

If you are a regular reader of this column, then you will be familiar with Figure 1. The Plan, Do, Check, Act Cycle (PDCA) is a key approach to systemic quality. You begin with planning your above noted processes and producing the product according to these processes. The third component is to check how well the "planning" and "doing" are working out. This is accomplished two ways: *inspection* checks on how well the product meets the customer's requirements and expectations, while *auditing* checks on how consistently the processes of the quality management system have been implemented.

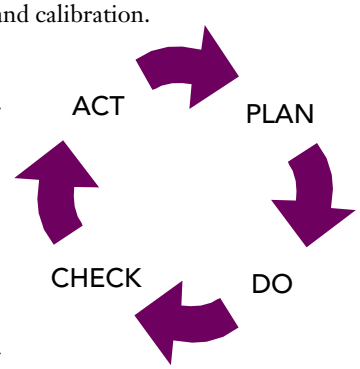

Fig. 1: PDCA cycle

By now, the reader probably realizes that we are three-quarters of the way through the PDCA cycle, so what does one do when inspection, audits, customer feedback, performance indicators, etc., indicate there are problems with your processes? This is the purpose of corrective action, and it is something that many organizations struggle with. As an example, suppose a problem is found and someone is given a corrective action. There's a high likelihood that the cause will be identified as "human error" and the solution will be "retraining," but there's also a high likelihood that the organization will waste its time doing that retraining. Why? Could there be a better end result? What does human error mean in this situation? Some examples might be:

- The individual was working at an awkward angle during the assembly process and didn't notice that it was done incorrectly.
- Lighting in the work area was too dim for the individual to accurately read the drawings or instructions.
- An important detail on the drawing or instruction was ambiguous.
- The individual did not know how to do the job well because of poor training.

Now consider whether "retraining" will logically resolve each of these. In the first case, the work layout needs to be changed; in the second, the level of lighting needs to be adjusted; and in the third case, the process of detailing a drawing needs to be revised—so only in the last case would training be aligned to the cause. But even then we should question why the training process didn't work well the first time. Which of the following may have contributed to the problem?

- The training was not properly designed to teach the required skills.
- The trainer was not effective at conducting the training.
- The trainee was suffering from a headache and couldn't focus during the course.
- The trainee does not have the cognitive or physical skills to perform the job.

The point is that if the problem really is a training issue, simply repeating the same training is unlikely to be of value unless the reason for it not working well the first time is

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Table 1 Example of documenting an approach to investigation.

Step	Questions to Answer
1. Define the Problem	• What is the problem (what is happening/not happening)? • Where was it found? • When did it begin? • How many times did it happen?
2. Understand the Process	• What are the initial boundaries for the investigation? • What are the major process steps between the boundaries?
3. Identify Possible Causes	• Which steps of the process may have created the problem? • What changes may have been made in the process which may have caused the problem? • What barriers might have failed to detect the problem earlier?
4. Collect Data	• What data could indicate that something did or did not cause the problem? • Note: Consider interviews, observation, reviews of documentation. • Can the problem be re-created?
5. Analyze Data	• What possible causes does the data indicate did or did not cause the problem? • Does the investigation need to go deeper (if so, return to Step 1)?

identified and corrected. Likewise, human error is a category of causes, not a specific cause that can be addressed without further investigation.

The process of identifying the causes for a specific problem is called root cause analysis (RCA). In order to help people become more effective at RCA, an organization should consider one or more of the following actions:

- Document a specific approach for conducting an investigation, which can be used as a guide. See Table 1 as an example.
- Train people to understand there are different types of problem causes. Table 2 lists different types of problem causes which might be found during an audit.
- Require problem investigators to document their logic and findings.
- Encourage investigators to think about problem causes at a deeper level. This can be guided by questions such as: What data or information indicated the specific cause? How was the right solution selected? Were there other contributing causes?

A final process intended to ensure that the quality management system works effectively is management review. This is when performance of the system (e.g., based on customer feedback, audit findings, corrective actions, process metrics, etc.) is reviewed by top management. It is important that the corrective action process be evaluated carefully, looking at issues beyond just how many corrective actions were closed and how long it took. The review also should look for how many problems recur and how often the same cause is found for different problems.

The corrective action process should be more involved than just trying to "close it out." It should help the company determine the actual cause of the problem, before it hampers its production schedule, or worse, reaches the customer. Research indicates companies who take their quality management system seriously and focus on the full quality cycle get better results. MSC

Table 2 Possible problem causes, referring to human error example.

Type of Cause	Example
Direct cause	Individual misread drawing due to dim lighting in work area
System cause	Lighting standards for work area not well defined
Contributing cause	Individual's safety glasses were scratched
Detection failure	Lack of monitoring for lighting levels