Faced with recurring problems? Contain and correct ... then don’t forget analyze, eliminate and prevent!

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Overview:

Some problems are probably worth just correcting with a quick fix. For instance, if a seal goes out and it only costs $20, then just correct and monitor. On the other hand, if hundreds fail, then the situation is probably worth analyzing. Problems that hurt your organization the most – in the form of repair costs, downtime, lost revenue, penalties or fines – these must be the top priority for formal corrective action.

Unless your approach includes implementing and verifying correction, containment, corrective and preventive action, you will not prevent problems from recurring. And unless your approach is grounded in thorough root cause analysis, you will not be ready and able to successfully complete the necessary steps that truly reduce risk, prevent recurrence and eliminate repeat issues.

CHALLENGES

Has your organization faced one or more of these scenarios?

- The same problem has been happening for a while, but it didn’t hit your radar before – no one caught it or thought it was important enough to report.
- When you try to address a problem, there are differences of opinion about what caused it, and what will solve it.
- People blame “the design,” asserting that a redesign will solve the problem. Even after redesigns, there are still problems.
- Corrective actions have been implemented, but the problem keeps recurring.

Best Practices

- Admit problems and learn from failures.
- Share successes
- Learn an effective problem solving methodology in which causes are backed by evidence.
- Don’t just train for the sake of training - train for the sake of solving problems. Identify and solve real-life problems when you attend training - simultaneously get the training and solve business problems.

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- Solidify your training by practicing immediately, and amassing hands-on experience and mentoring.
- Understand the difference between your actions – correction, containment, corrective and preventive. In order to truly correct and eliminate problems, you must do them all.
- Redesigning alone will not solve a problem. There always are contributing causes related to people, procedures, hardware and the environment. And unless you understand all these variables and be able to control them, you might be introducing new problems.

**Process**

- Identify and capture nonconformities.
- Consider the entire supply chain process; Customer, Output, Process, Input, Supplier
- Understand the 4 types of actions
  - Take all type of actions
    - Contain the problem - keep it from getting bigger.
    - Correct the problem - based on “known” causes - put the fire out immediately; get the customer up and running.
- Analyze or assess the situation for root causes.
  - Take corrective actions to prevent or eliminate the initial problem
  - Take preventive actions to prevent or eliminate potential similar problems
  - Corrective and preventive actions must fall on root causes
- Create metrics to measure success.
- Measure solution effectiveness and monitor recurrence based on defined metrics.

**SOLUTIONS - Example 1**

Consider this example, which has happened to every product or service-related company at least once...probably more. A customer informs you that you’ve shipped the wrong part, such as a transformer. Right away, you go into analysis thinking mode – did we really do that? Sure enough, you shipped them a transformer with the wrong voltage rating. To correct the situation, you immediately locate and send them a transformer with the right voltage rating. You would incur the typical costs relative to manufacturing and expedited shipping, and sourcing/manufacturing interruption, for the outgoing transformers, plus any expenses associated with taking back the transformer which the customer does not need – bringing it back, scrapping it, allocating it to another project, or sending it to another site, etc.

People in your organization may think the problem is all taken care of and eliminated, and that the costs are fairly minimal and contained. But, is the situation really that simple? Has your organization asked itself questions, like:

- What other problems may have resulted from the wrong part being shipped?
- Were there any negative and/or significant ramifications for the customer that will be costly, and that may – according to contracts - involve penalties assessed to your company?
- Why was the wrong part shipped to begin with?
- Were the wrong parts shipped to other customers?
- Are there issues with other parts being shipped out?
- What needs to be done to correct and contain those situations?
- How do you preserve relationships with all affected customers?
- Were other elements of the manufacturing and shipping cycle affected by the same conditions that caused this mistake?
- Are there similar or related mistakes that might occur as a result of the same systemic problem(s)?

Now that you have a more comprehensive picture of the problem’s scale, the associated costs may have reached a significant level – warranting a more detailed analysis. The overall potential significance will affect how thoroughly you
analyze the problem, which will affect the number of root causes uncovered, which will help identify the corrective actions that should be taken to eliminate this problem.

SOLUTIONS - Example 2

A turbine generator shuts down due to vibration. We all know there are significant cost ramifications. Can you correct and contain the problem easily? Of course you can, if you have a spare generator waiting in the wings and can make a prompt replacement. But in most cases, that is not possible – the part is too expensive to be easily, quickly and cost-effectively replaced. Even if you do have a spare, you probably cannot rely on that solution in future instances with this or other generators. This is a case where risk mitigation and, better yet, prevention is essential.

For starters, you can immediately lower the risk by changing the allowable vibration limit or by adding balance weights, which requires unit tear-down that comes at a high cost to you and your customer. You also can identify sites or customers with the same unit profile; warn them to watch out for the same circumstances. So although you have not yet corrected or contained the problem fully, you have recognized it and warned people to be alert.

Right away you must go into deep-dive analysis mode – to get to the root causes of the vibration. Asking questions like these will help you diagnose more effectively:

- What caused the vibration to begin with?
- Was there a foreign object or something else that caused physical damage inside the unit?
- Was the balancing weight calculation accurate?
- Was there any history relative to this unit?
- Were there any anomalies or departures from procedure related to the review and release process? For instance, was this unit allowed to be released without design review or verification, or is it a new product introduction?
- Were any other kinds of units allowed to be released with similar review processes?
- How did the system allow this?
- How do you prevent the vibration?

Answering questions like these will naturally lead to identifying the causal relationship(s) that led to the vibration, and in turn to corrective and preventive actions. These actions can then be implemented on the unit that originally had the problem — to account for the correction and corrective actions, and on other units with similar circumstances — to account for preventive actions. Performing a thorough analysis — then taking actions to correct, contain and prevent — will have incredible potential for positive and far-reaching impacts on the entire organization, not to mention positive customer experience.

Summary

Every issue you ever encountered is built upon an elemental set of causes consisting of conditional and action causes coming together to cause an effect at a common place in time and space. By understanding causal relationships - you must clearly explain how the event came about - we can devise some simple tools and methodologies that will enable us to tap the awesome power of the Cause and Effect Principle and break away from the ineffective strategies we use today.

Correction, Containment and Corrective and Preventive actions are needed to truly eliminate problems from recurring. And at a minimum Correction and Containment must be done on all problems. Even if you choose not to take an action it is still an action. Few will require analysis - RCA or other - that will lead you to implement corrective and preventive actions.

This is what Effective Problem Solving is all about.

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About the Author

_Fadi E. Rahal_ currently serves as the President of Effective Problem Solving LLC. Rahal has worked in the Energy industry for more than 18 years and additionally has extensive experience leading investigations within all types of businesses around the globe. Rahal has also institutionalized and implemented Six-Sigma program in concert with Continuous Improvement - Root Cause Analysis programs in various organizations, including GE and Black & Veatch.

As an investigator, Fadi has led countless RCA incident investigations with Fortune 500 companies resulting in millions of dollars in cost savings. His many investigation areas include: machine and plant shutdown, machine reliability, EHS incidents, fire and explosion in a mine, employee productivity, product delivery, on-time and on-budget project execution, product sourcing and purchasing, scrap and rework, and customer dissatisfaction.

As a trainer, Fadi has led more than 200 RCA facilitator training sessions and trained thousands of students across North America for such companies as GE, Honeywell, Oncor Electric, REC Silicon, The Delta Group, Moog, Siemens, Carmeuse, Quaker, Tropicana, Kennametal, Ameren, Sonoco, Smith-Aerospace, American Society of Safety Engineers and in the Middle East for such companies as ARAMCO, SABIC, SASREF, SIPCHEM, EQUATE, KPC, KNPC, QAFCO, Oman LNG, and Pakistan Exploration.

Rahal holds a Master of Engineering degree from Rensselaer Polytechnic Institute, Troy, NY. He is a graduate of the Edison Engineering Program and obtained both Black Belt and Master BB certifications, as well as RCA Leader Qualification from General Electric. In 2009, he received the Master Apollo RCA™ Instructor Certification – the only one ever awarded.

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Key Terms and Definitions

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<tr>
<th>Term</th>
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<tr>
<td>Correction</td>
<td>Actions you take to correct the problem in the form of repair, rework or replace.</td>
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<td>Containment</td>
<td>Actions you take to ensure the problem does not get any larger and to ensure you know exactly how large the problem is.</td>
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<td>Corrective</td>
<td>Actions you take to eliminate the problem you started with from reoccurring.</td>
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<tr>
<td>Preventive</td>
<td>Actions you take to prevent other similar potential problems from occurring to begin with.</td>
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