By Joel Pecoraro

Making More Effective HACCP Plans

Doug Pingel, operations manager at Bosma Industries, a company that processes and packages powder mixes, was having trouble with the company's HACCP (Hazard Analysis Critical Control Points) plan. After brainstorming all the possible problem points, the list of items to be addressed included over 30 potential hazard areas. How can a company prioritize and assign resources to the most critical areas?

HACCP AND THE FDA

The FDA recommends the use of HACCP plans to more effectively identify and attack potential problems in the growing, manufacturing, processing and transportation of food products. The essence of HACCP is the identification of all the areas that could possibly contaminate the product in each step of the process and to then take some definitive action to prevent the problems. While there are numerous risk analysis techniques to assess the severity of the problem, this doesn't necessarily paint a complete picture. For example, molding product and contaminated product at first glance may appear to have the same severity risk factor. Which area should be addressed first? The answer is simple. The company needs to combine a simple automotive technique known as FMEA (Failure Modes Effects Analysis) to objectively determine priorities.

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WHAT IS FMEA?

FMEA is an automotive, mandated risk assessment technique. The concept is to analyze all the potential matters that can go wrong with the use of the product (Design FMEA) and/or with the manufacture of the product (Process FMEA). An FMEA has the same basic components of HACCP in that one identifies hazards and assesses the severity of the situation. However, the FMEA differs in one important aspect: It forces a review of the company's current systems to detect the problem and the likelihood of occurrence. A subjective numbering system is assigned to each of these factors, including severity, occurrence and detection, and a cumulative risk priority number (RPN) is determined, which permits a company to quickly identify priorities.

FMEA's require the user to create a priority scale based on the impact of the problem to the use. High RPN numbers would require a more substantive control point. For example, perhaps there is a company that makes products that fit into an airplane. That product requires stress relief to ensure it doesn't break in flight. The company would weigh the severity of failure very high, so a nine may be assigned. The chances that this type of defect occurring may not be frequent, based on historical company data, so a six would be assigned. The company believes this is the responsibility of the suppliers and thus, do not have an internal mechanism to inspect for this defect. So their ability to detect the problem may be very low so it is weighted an eight (the numbering system is reversed for detection). When the numbers are multiplied, a risk priority number of 432 is derived. Apply that same logic to something like a package breaking in transit where the severity factor is very low and you will see that a much smaller RPN is attained.

COMBINING TECHNIQUES

By combining the same logic to the food industry, you allow yourself a chance to more effectively prioritize risks. Look at a normal produce processing plant. The company had determined that one potential hazard is cleaning chemical residue left on machines, which could cause product contamination. Another possible hazard is potential moisture in the processing environment, which could cause mold. Both issues are potential problems, but it can be difficult to determine which one should receive the greatest priority.

Let's take a look using the FMEA concept. From a severity perspective, the cleaning solution is less severe to the consumer than moisture in the product, so that receives a rating of a seven, on a scale of 1-10 with ten being the highest. Environmental moisture would receive a nine. The company determines that leftover chemical residue has a greater chance of happening than mold because the machines are cleaned two times a day, so the occurrence rating for cleaning is at an eight and the occurrence for moisture in the air is rated a six. The current ability to detect the problem is rated a seven for the cleaning solution, but a lower number, four, is assigned for moisture detection. To determine a risk priority number for the cleaning solution you multiply the three numbers (seven, eight and seven) and get a risk priority number of 392. By that same process, multiply nine, six and four to reach the risk priority number for moisture, which is a 216. By creating a more objective numbering system that takes into account occurrence and the company's ability to detect the problem, it becomes clear that creating new control points for the cleaning solution would be a bigger priority than potential moisture problems.

In Bosma's case, by simply combining some of the techniques of FMEA with the company's existing HACCP plan, it was able to objectively determine which areas require the greatest attention and resource. **pb**

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