

# WHY HACCP SYSTEMS ARE PRONE TO FAILURE

BY LARRY KEENER

## *Two observed shortcomings can be corrected.*

In this age of heightened food safety awareness, both government and industry have committed to do more to assure the safety of the food supply. The U.S. Food and Drug Administration (FDA) has changed its food safety strategy, now emphasizing prevention rather than fault detection in finished food products. Industry, too, has embraced proactive, preventive measures for managing food safety.

The Hazard Analysis & Critical Control Points (HACCP) system is a universally recognized approach for preventing food safety failures. HACCP is a systematic, science-based method for identifying and ameliorating chemical, physical and microbiological hazards that may be associated with food manufacturing and food service operations. When framed with and properly linked to the appropriate prerequisite programs, HACCP is an effective food safety strategy. The HACCP approach to food safety is the method of choice for both government and industry. Nonetheless, it is commonplace to identify food processors or food service organizations operating with less than effective HACCP plans. There are two major reasons for the shortcomings of these plans: "doing HACCP backwards," and inadequate training for the teams charged with development, implementation and maintenance of the food safety plan.

### **"DOING HACCP BACKWARDS"**

A recurrent mistake associated with HACCP development has to do with what I call "doing HACCP backwards." HACCP development activities are frequently driven by manufacturing units rather than initiated by corporate functions. This reversed role between corporate and manufacturing is in part due to

companies that have recently adopted HACCP and thus have not properly integrated food safety into their product development processes. Retrofitting existing products and processes to the HACCP model is another factor that contributes to "doing HACCP backwards." Most companies have products on the production lines when they decide to embrace HACCP. Logically, the company moves forward to incorporate these products in the HACCP process. Subsequently, the HACCP plans for these products are developed at the plant level; this is "doing HACCP backwards." There are a number of problems associated with this approach.

The typical manufacturing operation does not have personnel with the skills required for developing a HACCP plan. This is especially true for downsized companies attempting to run their businesses with the absolute minimum number of workers. Furthermore, the primary role of a manufacturing unit is just that, manufacturing. Consequently, plant staff, by and large, cannot devote the time and resources necessary for the proper development of a HACCP plan. The implication of this reality is a poorly developed plan from the outset. The inference of a faulty HACCP plan, for senior management, is an obtuse or feigned view of the state of food safety within the company.

Ideally, HACCP should be driven by the company's food safety department in conjunction with research and development (R&D), marketing, quality assurance (QA), packaging and other of the corporate functions. These departments and the personnel within them have the necessary specifications and data needed for the development of a solid HACCP plan. They know your suppliers, their capabilities and limitations. They have the technical expertise and the specialist skills that are required for developing the food safety plan. They also have an appreciation of the economic risks, for the brands and business, which are associated

with a food safety failure.

Consider the first several steps of the HACCP development process, which require a product description, a statement of intended use and the identification of the target consumer. These activities are best performed by Marketing and R&D. Product descriptions developed by manufacturing personnel, using the best available information at the plant, may radically differ from Marketing's expectations. For example, a plant's HACCP team may identify small children and toddlers as the target consumer, while Marketing, on the other hand, has identified the elderly as the consumer for the product. This type of confusion will have a profoundly negative impact on the subsequent steps in the HACCP development process and jeopardize the integrity of the entire food safety plan.

An effective method for HACCP development involves integrating food safety into the product development cycle. With this approach there is the concurrent development of food safety plans with product development activities. Most food companies have an established product development process. The product development funnel is an apparatus frequently used for this purpose (Figure 1). By using this strategy, new product ideas are sequentially advanced across the funnel and its gates in a stepwise fashion. Advancement between gates is dependent upon attainment of specific business criterion. The classical development funnel features the following phases and associated gates:

- Ideas
- Feasibility
- Capability
- Implementation
- Launch
- Feedback (Post-Launch)

For example, a company receives an idea for a new product. Before advancing that idea across the gate between the "idea phase" and the "feasibility phase" certain business criteria must be met. The con-

cept should be compatible with the company's core business; the concept should add value to the current product portfolio; the cost of developing the product must be inline with company financial expectations and guidelines and there needs to be a demonstrated return on investment, and so on. The gatekeepers, or senior management, make these determinations.

They should also consider food safety. This can be accomplished by attaching food safety criteria to the development funnel. For example, the minimum criterion for advancing a new product idea from the "feasibility phase" to the "capability phase" is a preliminary risk assessment (hazard analysis) of that product. Likewise, before advancing the concept from the "capability phase" to "implementation" all ingredients, packaging components and processes should have been evaluated, cleared and provided with hazard classifications. Similar food safety criteria are established for each subsequent phase of the development process. The objective of this technique is to provide a systematic method for identifying, assessing and controlling hazards that may be associated with a new product or process.

With this approach, those corporate units that have both the skills and expertise to ensure a properly developed food safety plan initiate HACCP development. Another major benefit of using this process is that it results in a more involved and informed management team. Consider having to advise the company's CEO at the point of a new product launch that the product is unsafe. With food safety properly integrated into the product development process, this nightmarish scenario is easily avoided.

"Doing HACCP backwards" may be necessary and justified for those companies that have products in production when they embrace HACCP. It can work provided that there is specialist involvement with the development teams. Senior management must also understand the conflict that arises for production employees (managers and line workers) who are asked to assume the challenges of HACCP development in addition to their roles in manufacturing. Because of this conflict and mixed messages from management, case count will often win out over time spent developing a food safety plan.

The most advantageous means for developing effective and sustainable HACCP

plans is to have food safety inexorably linked to the product development process. Corporate-initiated food safety development removes the burden from manufacturing and provides the optimal circumstances for doing HACCP correctly.

### PROPER TRAINING: THE ULTIMATE PREREQUISITE PROGRAM

A microbiologist, a plant quality control (QC) manager, a food scientist, chef or food service operator that has attended two or three days of HACCP training does not possess the skills or knowledge required for developing an effective HACCP plan. Clearly, then, half-day and one-day training sessions don't stand a chance of adequately preparing attendees. The current training format offered by many organizations is an outgrowth of programs originally intended to inform corporate executives about the benefits of the HACCP approach to food safety. Those programs were designed specifically for senior managers who required a broad overview of the subject in order to be convinced of its merits. It was not the intent of such programs to train those who would be charged with HACCP development, implementation and execution.

The typical HACCP short course provides discussions of food laws and regulations, pesticide residues in foods, genetically modified organisms, microbiological concepts, Good Manufacturing Practices (GMPs) and principles of food processing and food service sanitation. When these extremely relevant and

important topics are included with discussions of the seven principles of HACCP and the 12-14 steps to HACCP plan development, it is exceedingly difficult to offer the information in a meaningful and useful format. By way of surmounting this difficulty most courses offer an array of hands-on activities that are intended to drive home the importance of each HACCP principle.

Consider the first principle of HACCP: Conduct a hazard analysis and identify preventative measures. This is a seemingly easy and straightforward exercise. Risk assessment is the bedrock principle of the HACCP approach. Hazard analysis is the keystone to which the other six principles are inexorably linked. Risk assessment is the science of HACCP. It is also the most difficult to teach. The corollary of failing to properly conduct the hazard analysis is to jeopardize the entire HACCP plan. Risk assessment requires the skills of specialists, and even then it is not uncommon for experts to disagree or reach diverging opinions about the nature of risk. Assessing risk requires data and the skills necessary to interpret and manage that data. In the early days of HACCP engineers borrowed from the space program were heavily involved in conducting the hazard analysis. These "rocket scientists" had previously received extensive training in the techniques of risk assessment. Today, the food processing and food services industries rely on food scientist, cooks, or QC personnel to perform these heady tasks. It is myopic to assume that attending a HACCP short

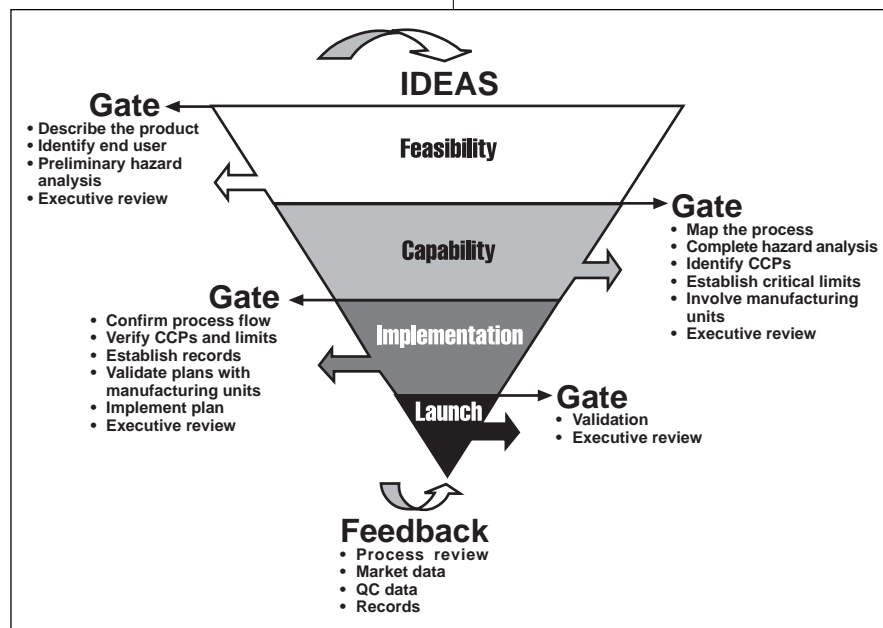


Figure 1. Generalized product development funnel with food safety criterion.


course will provide information sufficient to allow the proper use of these techniques. The consequences of this erroneous assumption are a fatally flawed HACCP plan.

HACCP is an extremely useful and effective management tool for both regulators and industry, provided that proper training is recognized as the ultimate prerequisite for its success. Perhaps it would be advisable to consider the training programs of the long-standing and highly regarded low acid canned foods (LACF) regulations as a model. The LACF regulations are generally recognized as the first attempt by the U.S. government to mandate HACCP. Since their implementation, the LACF programs have been effective in reducing the number of botulism outbreaks associated with thermally processed canned foods. Much of the program's success is directly attributable to the effectiveness of the "Better Process Control School" training program.

How can HACCP training be improved? Consider eliminating discussions of the prerequisite programs from the HACCP short course. These programs are very important and relevant to food safety, but they can also detract from the effectiveness of the short course format. Discussion of the prerequisite programs might be more effectively treated in a stand-alone seminar. Also, qualified consultants or HACCP authorities can also be an effective means for augmenting the training offered by HACCP short courses. The consultant should expand on the materials offered in the short courses and provide the students with an in-depth view to the techniques and tools that are essential for developing the HACCP plan. The consultant might also work with the HACCP core team in the actual development of a plan. This is a proven approach for providing comprehensive training for employees involved with developing, and sustaining the company's food safety program.

## TOWARD IMPROVED HACCP

The HACCP approach to food safety is preventive. Prevention relies on proper identification and early detection of the hazards, followed by the development of countermeasures that will effectively ameliorate the threat. Integrating food safety into the product development cycle is an effective means for the early detection and appraisal of food safety hazards. This integrated approach also assures

management's involvement with the food safety development process. Without proper training or the assistance of trained specialists, it is inconceivable that a HACCP team will create effective and sustainable HACCP plans. A two- or three-day short course does not constitute adequate training for HACCP developers. It is possible to envisage those situations in which "doing HACCP backwards" is defensible and necessary; however, it is neither defensible nor justifiable to require improperly trained employees to shoulder the burden of a company's food safety failure. 

*Larry Keener is the owner and general manager of International Product Safety Consultants (IPSC), Seattle, WA. Founded in 1996, IPSC specializes in food safety, microbiology, regulatory affairs and crisis management. The company has clients in Africa, Europe, Central and South America, as well as in Canada and the U.S., including; Nabisco, Lipton, ConAgra, Unilever Research (The Netherlands) and The J.M. Smucker company. He has more than 20 years of experience in the food processing industry, holding positions in private industry, with the state of California and at the National Food Processors Association. Keener has worked extensively in the development and implementation of food safety programs around the world. Prior to founding IPSC, he served as the director of Product Safety and Regulatory Affairs for Van Den Bergh Foods. He can be reached via e-mail at lkeener@aol.com.*

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