



The Behavioral Component of Food Safety

By Bart Sevin

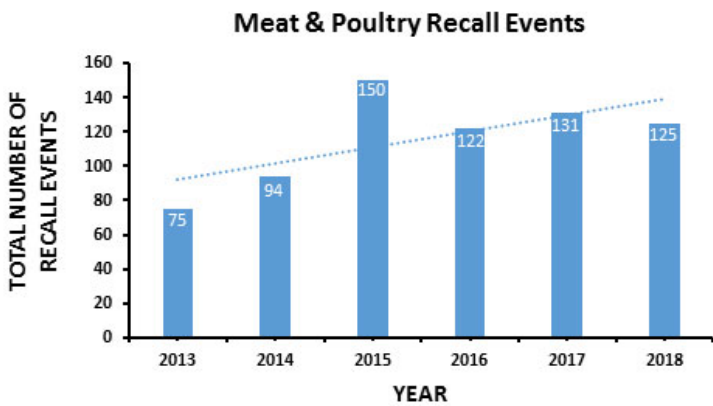
Food safety in the U.S. is an ongoing and increasing challenge to the health and safety of consumers and the profitability of food manufacturers, processors, and distributors. Some factors contributing to the increase in food recalls include increasingly global and complex food chains, continuously improving technology and practices for traceability and pathogen detection, and more stringent regulations and enforcement. Data reported by the U.S. Public Interest Research Group (PIRG) showed an increasing trend in the total number of all food recalls in the U.S. over a 5-year period (Karthikeyan & Garber, 2019). Food recalls for just meat and poultry for that same time also showed an increasing trend.

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– Karthikeyan & Garber



retailers and regulatory entities and retrieving, storing, and destroying the product. In addition to direct costs, there are indirect costs that may include litigation related to injured parties, government fines, lost production and sales, and damaged brand and reputation for a company and the industry as a whole (e.g., consider the lingering damage to the romaine lettuce industry). Alternatively, depending on the communication approaches used during the recall, another example in the study cited the cost as much as \$28 million. In either estimate, costs associated with food recalls are naturally carried over to the consumer.



Although consumers may not realize it, food recalls are usually initiated by manufacturers, processors, or distributors themselves in an effort to protect consumers, minimize losses and get in front of the issue. Recalls can also be requested by regulatory bodies such as the U.S. Food and Drug Administration (FDA) or a branch of the U.S. Department of Agriculture (USDA) known as the Food Safety and Inspection Service (FSIS).

WHAT'S THE COST OF A FOOD RECALL?

The financial impact of a food recall is staggering. A widely cited report puts the average cost of a food recall at \$10 million in direct costs. Direct costs include expenses related to notifying

HOW ARE RECALLS CLASSIFIED?

Food recalls are classified according to the level of the threat to consumers. **Class I** recalls are the most dangerous, meaning it's likely that exposure can cause serious illness and health problems, or even death. Recalls are designated as **Class II** when it's determined a product probably will not cause serious health problems, but can result in temporary issues that can be treated. Finally, **Class III** recalls represent those where exposure is unlikely to cause health problems. In the above data, Class I and II recalls accounted for an average of 92% of recalls for total food recall events and for meat and poultry recall events. For meat and poultry recalls, Class I recalls alone accounted for an average of 72% of recalls. Given how much meat is consumed in the U.S. (an average of 222.2 pounds per person in 2018), the number of Class I meat and poultry recalls may give pause to carnivores and omnivores in considering their eating habits.

WHAT TRIGGERS A FOOD RECALL?

A number of issues can set a recall in motion, with the three most common being: 1) cross contamination, 2) pathogens, or 3) physical contamination. Cross contamination occurs when trace or larger amounts of foods produced in the same facility find their way into other food products processed in the same facility. This usually isn't a problem for consumers except when the contamination contains foods to which some people are allergic (e.g., nuts and wheat). Manufacturers are allowed to sell foods with cross contamination as long as the allergens are posted on the label. When that labeling is omitted, it often prompts a recall. Pathogens are contaminants that affect all consumers and include the usual suspects such as Listeria, E. coli and Salmonella. Physical contamination occurs when non-food items such as glass, metal, and insects are found in food products. Other reasons may involve a product failing to do what it claims, or dietary imbalances in pet food, for example.

WHAT “CAUSES” CROSS CONTAMINATION, PATHOGENS AND PHYSICAL CONTAMINATION?

The word “causes” was put in parentheses because much of what's been written about root causes of cross contamination, pathogens, and physical contamination amount to what's long been referred to as “human error” in occupational safety. For example, “operational mistakes” are overwhelmingly cited as contributing factors leading to food recalls such as noncompliance with production and monitoring processes and standard operating procedures (SOPs) and poor reliability in adhering to current Good Manufacturing Practices (GMPs) and in implementing Hazard Analysis and Critical Control Point (HACCP) plans. These types of explanations go to the heart of what is often referred to as the behavioral component of safety, food safety, or any performance problem. The problem is that human error isn't a root cause, it's a symptom (hence “causes”). When patterns of at-risk or otherwise undesired behaviors are observed, they're telling us something, and it's not that the person or people are the proverbial “bad apples” (i.e., people with bad intentions), but that there are problems deeper in the system. As Dekker put it in his classic *Field Guide to Understanding Human Error* (2006):

The problem is that human error isn't a root cause, it's a symptom...

Human error is not a cause of failure. Human error is the effect, or symptom, of deeper trouble. It is systematically connected to features of people's tools, tasks and operating environment.

It's important that food manufacturers, processors and distributors work to avoid some of the missteps the field of occupational safety has been working to correct for years by refraining from blaming and disciplining employees for food safety incidents, except in the most egregious cases of willful





noncompliance and sabotage. To the contrary, only when leaders at any level look for and monitor patterns of desired and undesired behaviors can they truly be proactive in preventing food safety incidents and the accompanying recalls. Rather than labeling at-risk behavior a root cause and stopping there, organizations need to go a step further and ask, Why is at-risk behavior happening? Remember, desired and undesired behaviors are leading indicators that should be monitored and, when appropriate, trigger a mitigating response before a food safety incident actually happens. When organizations are prepared to address behavior in this way, they will begin closing the gap on the behavioral component of food safety.

THE ROLE OF BEHAVIORAL TECHNOLOGY IN FOOD SAFETY

In occupational safety, which parallels food safety in many ways, older approaches defined safety primarily as the absence of incidents and injuries. However, a more current view (adapted from the World Health Organization's definition of health) can be summarized as follows:

Safety is a state of systems, processes and consistent safe practices that prevents safety incidents, and not merely the absence of incidents.

Similarly, in an online article from food-safetymagazine.com, the results of an earlier survey were reported in which the most common definition of food safety selected by food manufacturers, food inspectors and other food safety professionals was free of harmful elements. In a more recent survey from the same site, evolving ideas about food safety were assessed and the definition that emerged was strikingly similar to the above definition of safety:

The production, manufacturing, processing, packing, or holding practices known to result in safe (wholesome) foods.

Food manufacturers, processors, and distributors develop and operate complex food safety management systems. One critical element of those systems is always people who behave, make choices, and interact with other system elements and processes. Individual behavior at every level is influenced by management practices, conditions and equipment, organizational systems and culture, and all of these components are behavioral.

Think about it, improving organizational systems, improving technology and the physical environment, improving how leaders manage food safety, improving adherence to GMPs and SOPs, improving the food safety culture, etc., are all done through the behavior of the men and women who work in the organization. So when we talk about the behavioral component of food safety, we are talking about the behavior of supervisors, managers, engineers, food scientists, lab technicians, procurement specialists and frontline employees—everyone in the organization who acts in ways that create the environment that influences how work gets done that impacts food safety.

The field often referred to as the Science of Behavior is formally known as Behavior Analysis (BA), and contrary to some grossly inaccurate and antiquated representations

of the field (e.g., people viewed as stimulus-response mechanisms in Hollnagel, 2018), BA has been thriving and growing for almost a century. BA continues to advance knowledge about how people's behavior is influenced by their environment and how to help improve consistency in performing critical behaviors at all levels that impact organizational results.

Any food manufacturer, processor, or distributor (or any organization for that matter) that has spent a lot of time and money on technology improvements and design, obtained certifications (e.g., SQF, FSSC 22000, IFS), and invested in better training, processes and procedures but continues to experience preventable incidents requiring food recalls understands the behavioral component of food safety. All these components are necessary for a comprehensive food safety management system, and so is an approach based on evidence-based behavioral technology.

For example, one set of behaviors important for preventing cross contamination is how equipment is cleaned between uses, possibly during a changeover from one product to another. Our clients have reported issues with improper cleaning related to a number of worksite issues such as the design of the equipment, training on how to clean and where to clean, and production pressure all favoring employees taking shortcuts in cleaning protocols. Some of these factors resulted in employees not knowing best practices in how and where to clean, and some lead to employees making trade-offs between food safety and productivity based on upward pressure around the need for decreased changeover times. These food safety challenges are behavioral in nature because they involve the behavior of frontline employees and leaders. Behavioral technology is perfectly equipped to help organizations

diagnose the problem and implement solutions to obtain consistency in behaviors necessary to prevent cross contamination. And the solutions don't involve blaming employees. Instead behavioral solutions may involve improving training, addressing production pressure, and implementing follow-up coaching to build in positive reinforcement for consistency in proper cleaning procedures.

Preventing physical contamination may involve employees monitoring and cleaning magnets designed to extract metal from the food stream. One client reported a food hold (and later they decided to destroy the product) of one million cans of pet food, which was about one shift's worth of production. The food was held because of excessive levels of metal in the product. Following a root cause analysis, it was discovered that employees who were supposed to inspect and clean the magnet regularly had failed to do so (aka "human error") because of the design of the equipment, meaning the magnet was hard to reach and heavy, so ergonomically it was difficult to retrieve and replace the magnet. This led to employees doing brief, cursory inspections of the magnet which were inadequate and eventually allowed the magnet to fail in removing contaminants from the food stream. Again, this example doesn't suggest that human error is a root cause, but rather patterns of insufficient magnet maintenance activities should have been a red flag, prompting someone to ask why proper maintenance activities weren't being followed. Again, this costly performance issue is one of many examples of the behavioral component that needs to be considered in an organization's food safety management system. Disciplining employees for failing to maintain the magnet will not solve this problem, but making changes to features of the environment that are functionally tied to why employees actually take shortcuts certainly will.

The concepts and tools from BA help move organizations away from blame and fear as a

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management strategy by effectively analyzing organizational and systems factors influencing the persistence of undesired food safety behaviors. A scientific understanding of at-risk behavior can then lead to more effective and sustainable improvements and build consistency in critical food safety behaviors. Remember, patterns of at-risk or desired food-safety behaviors are a window into what's going wrong and, importantly what's also going right, with the different elements of your food safety management system. Without addressing the behavioral component using science-based concepts and tools from BA, organizations will continue falling short of demonstrating their values and achieving their goals around food safety. If your organization continues to experience preventable food safety incidents,

incorporating behavioral technology is essential for a more comprehensive and sustainable food safety management system.

REFERENCES

- 1) Dekker, S. (2006). The field guide to understanding human behavior. Burlington, VT: Ashgate Publishing Company.
- 2) Hollnagel, E. (2018). Safety-II in practice: Developing the resilience potentials. London, UK and New York, USA: Routledge.
- 3) Oyarzabal, O.A., & VanRenterghem, B.B. (2020). The meaning of food safety. <https://www.foodsafetymagazine.com/magazine-archive1/aprilmay-2020/the-meaning-of-food-safety/>
- 4) Karthikeyan, V. & Garber, A. (2019). How safe is our food? Recent trends and case studies, and what they mean for our health. U.S. PIRG Education Fund.

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As a highly trained and experienced Board Certified Behavior Analyst, Bart helps organizations examine systems, processes, and people strategies to ensure that their motivational initiatives are aligned to promote business success and drive their desired outcomes. Bart works with clients from a variety of business sectors including Manufacturing, Energy, Banking, Heavy Construction, Automotive Financial Services, and Insurance. He has presented at national safety and other professional conferences, including Behavioral Safety Now and the annual meeting of the Association for Behavior Analysis International.

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