Food Safety Imperative

Protecting Your Supply Chain

Plant programs to prevent product contamination are essential, but safety is beginning to be addressed on a broader scale, involving the entire supply chain.

Kevin T. Higgins, *Senior Editor*

Production snafus, raw material prices, customer and regulatory requirements—there's a long list of issues for food company owners and CEOs to fret about. But increasingly the issue that's likely to keep them up at night is food safety.

Food safety regularly ranks in the top five priorities in CEO surveys, observes Donna Garren, vice president-food safety programs for the Global Food Safety Initiative (GFSI), but that understates today's imperative. "It's not even a priority, it's a necessity in protecting your business," says Garren.

Erring on the side of caution is becoming the rule. A dramatic example is the recent weeklong shutdown of Nestle USA's facility in Danville, VA, where Nestle Toll House refrigerated cookie dough is produced. After 69 people were stricken with E. coli illnesses linked to eating raw cookie dough produced at the plant in June, Nestle began a rigorous testing program of raw ingredients, food-contact surfaces and environmental factors. "Tens of thousands of tests" preceded the discovery of E. coli O157:H7 in two finished-goods tests in January, according to Nestle spokeswoman Roz O'Hearn. During the shutdown, Nestle installed a heat-treatment system for flour.

What makes the intervention noteworthy is that Nestle acted without proof that the flour was the source of the contamination. "Like any raw agricultural commodity, it can carry some risk," explains O'Hearn. "To improve our product safety and to minimize risk, we've made the prudent decision to switch to heat-treated flour."

Risks in food safety are found throughout the supply chain, the Nestle example makes clear. Heat treating flour and testing of raw materials amounts to triage. A more comprehensive approach is needed, which helps explain interest in GFSI. A European movement until now, Paris-based GFSI hosted its first North American conference in January, and the response surprised organizers. A record 670 attendees descended on Washington, DC, for the event, including representatives of most of the 50 largest US food and beverage companies. Raw-material contamination is costing those manufacturers billions each year in recalls and tarnished reputations. The threat to global movement of ingredients and finished goods is real.

Companies supplying Wal-Mart are well acquainted with GFSI: the retailer has mandated certification under one of the GFSI-sanctioned audit programs, a requirement that sent both manufacturers and audit firms scrambling last year. Other companies are refraining from mandated inspections under SQF, BRC and other GFSI-sanctioned standards until enough trained auditors are available. "It's one thing to write a letter, it's another thing to have the appropriate infrastructure in place," notes Mike Robach, vice president of corporate food safety and regulatory affairs at Cargill Inc. All of Cargill's meat plants are BRC certified, and all of the company's

facilities will be certified under the new FSSC 22000 standard as soon as it's feasible, according to Robach, who sits on the GFSI board.

The pecking order is complicated: GFSI certifies six manufacturing-oriented standards programs, those programs certify independent audit firms such as AIB International and NSF International's Cook & Thurber, and those firms recruit and train auditors who are certified to perform plant audits. The goal is simple: replace arbitrary audit programs with a single, rigorous, broadly accepted audit that withholds certification if a facility is deficient in prerequisite programs and HACCP execution. The audits will take longer and cost more, but the expectation is they will reduce risk and the frequency of audits, which are spiraling out of control.

A central benefit is replacing uneven reviews and meaningless ratings with transparent evaluations. The estimated cost of recalls and remedial cleanups related to Salmonella in peanut butter and peanut paste from Peanut Corporation of America is pegged at $1.2 billion, a cost some believe could have been avoided with stricter audit standards.

High-pressure washdown with caustic chemicals and hot water tends to blow the grease out of bearings, a problem addressed with Dodge Ultra Kleen ball bearings. Source: Baldor Electric Co.

Untouched by human hands

Reducing audits is a nonissue to Alan Butzbach, marketing director at Baldor Specialty Foods in New York's South Bronx. "We undergo three to four audits a month, which is fine," he shrugs. "If your plant is up to snuff, it's no big deal, and if they can show us something new, that's great."

Baldor recently transferred its fresh-cut produce operation to the Hunts Point Market, a 60-acre inner city wholesale area. The company took the opportunity to automate as many processes as possible to bolster its HACCP program and improve safety in its facility, which is certified under a proprietary standard developed by AIB International.

"We were in fresh-cut before, but we hadn't taken it to this level," says Butzbach. "Hand touching is almost totally out of the equation." A machine that automatically scores, skins and

Go wash your hands!

Maybe it's a rebellion against mothers, but inadequate handwashing remains a leading source of cross contamination of food, making it a vulnerability in food and beverage processing.

Automation helps minimize contamination issues, though manual contact often is unavoidable. Foodservice operations are particularly vulnerable. A recent investigation by the Illinois Health Department concluded that 34 confirmed cases of hepatitis A liver illnesses last summer could be attributed to a single food handler at a McDonalds in Milan, IL

The Grocery Manufacturers Association and other industry groups promote handwashing public awareness under the umbrella group, Partnership for Food Safety Education. It's better to err on the side of caution when counseling consumers, the group's spokesman explains, but that results in "food safety dogma" that is not science based and could be counterproductive, argues Doug Powell, associate professor at Kansas State University. The 20-second rule for effective handwashing is a prime example: it's overly prescriptive and invites short cuts that defeat the purpose, he says.

"Microbiologically, 10 seconds is sufficient, and water temperature doesn't matter, unless you're removing grease," says Powell, citing his own research. Water flow and vigorous rubbing, first with soap and sanitizer and then when drying with a paper towel, are the keys to effective handwashing.

Another variable is fingernail length. Researchers at University of Georgia's Food Safety Center suggest 90% of bacteria on hands lurk underneath nails.

An automatic onion peeling and processing machine boosts throughput at Baldor Food's facility in the Bronx, but a key rationale for the equipment was the elimination of human contact. Source: Baldor Specialty Food.

cleans 1,000 lbs. of onions an hour is indicative of Baldor's emphasis. The Dutch-built machine cost more than $500,000, he says, and the payback calculation factored in the reduced risk of human contamination.

Customer demand also drives food safety enhancements. Three restaurant and fast-food chains raised concerns with their suppliers about plastic contaminants in the food they were delivering a few years ago. Gaskets were flagged as the biggest problem: small pieces of polymer would break off and enter the product flow. When engineers at Eriez Magnetics learned of this, they recognized an opportunity for a copolymer they had developed for separating plastics. This copolymer combines ethylene ethyl acrylate with minute particles of 400 series stainless steel or iron oxide, with a mean size of 29 microns. It is blended with polypropylene or polyethylene when molding gaskets, seals, bucket elevators, blades and scrapers, making the plastic magnetically susceptible. If the component fractures and enters the food stream, a downstream metal detector will spot the contaminant.

W. John Collins, manager of Eriez's Polymag division in Eire, PA, submitted the copolymer for review by FDA, which concluded that the components either were generally regarded as safe or would not constitute a food additive.

"We did not anticipate this application," says Collins. "Responsible companies are doing what they can to use metal-detectable plastics."

Bearing-buster defense

Poor practices persist in food production, laments Tim Cox, and some of the new solutions create new problems or go unused for a variety of reasons.

"Many plants are still operating under the mode we were 30 to 40 years ago," reflects Cox, a Bennett, NC, consultant with a background that includes commercial baking and poultry production. "Some are still roasting and packaging in the same area where supersacks of flour are billowing dust. You test, and it's full of Salmonella."

Expanded use of high-pressure washdown is problematic, he believes, and can work against the goal of disinfecting work areas. Caustics and water at temperatures of 120° F "wash the grease right out of bearings," points out Cox. At the same time, technology is becoming a crutch that makes it easy to overlook some of the problems that are occurring.

The realities of contemporary sanitation prompted engineers at the Greenville, SC, division of Baldor Electric Co. to develop a more robust version of Dodge E-Z Kleen ball bearings. Though designed to work in wet environments, the bearings were experiencing premature failure in extreme conditions. Ultra Kleen bearings are the solution, according to engineer Chris Hosmet, with an all-stainless bearing cage replacing polymer and a triple-lip seal that functions as a shield until "it becomes a seal when under pressure," he explains.

The bearing cage was a concept Hosmet transplanted from the textile industry. "The cage fills both sides of the ball like a honeycomb," with no room for anything but a thin oil film, he says. Bearings run about 30% cooler, quadrupling the life of the grease. In tests, "we weren't able to run long enough to have failures with our new cage."

Back to basics

Upgrades in materials of construction and greater use of automation are helping improve food safety, but the fundamentals are where plants

succeed or fail, experts agree. "If you can't meet the GMPs, the base-level prerequisites for personnel hygiene and sanitary practices, you shouldn't be in the game," believes Mark Jarvis, CEO of Steritech Group Inc., a Charlotte, NC, firm providing pest control and audit services, including SQF certified audits under the GFSI umbrella.

Food manufacturers are given an opportunity to correct deficiencies cited in a safety audit, but evidence of chemical contamination or insect infestation constitutes "one of the few points that can result in an out and out failure," says Jarvis. Audits under the GFSI recognized programs will be longer and more disciplined, he adds, because auditors not only are verifying the existence of HACCP and GMP programs, they are "assessing if it actually is working."

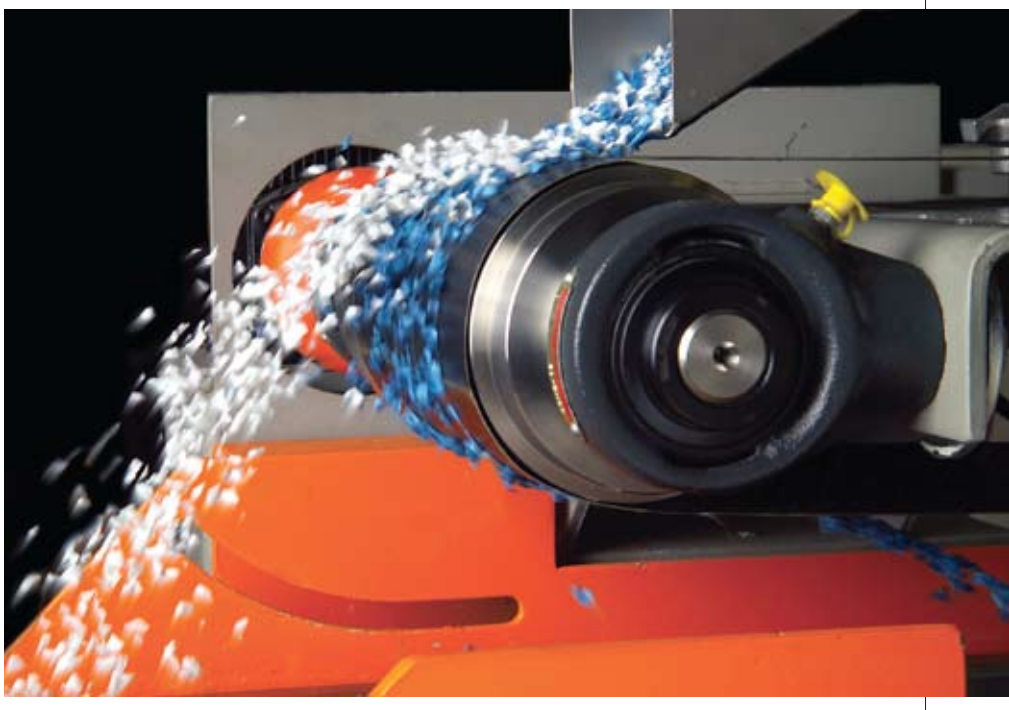
Tougher self-policing for food safety is partly driven by industry efforts to blunt tougher regulations, not only in the United States but throughout the network of nations where ingredients and finished goods circulate. Based on consultations with a politically connected advisory firm, Jarvis says there is a strong likelihood that:

- authority to order recalls will be given to USDA and FDA
- more frequent and rigorous plant audits will be performed by public health officials
- formal HACCP programs will be required in all facilities.

To an extent, some of those changes already have occurred. Only meat, poultry, seafood and juice producers are required to have a HACCP program, but surveys by the Aberdeen Group suggest 94 percent of North American plants have established HACCP. Retailers and foodservice clients insisted on HACCP, and now they are demanding more.

"Customers are legislating controls over the industry," suggests Bill Sander, senior vice president-project manager at Hixson Inc. Facilities that have not experienced recalls but have out-of-date food safety systems or lack modern sanitation systems for personnel are being mothballed. "Plants that have been productive but don't quite measure up are being idled until the capacity is needed and the equipment and the facility can be updated," Sander says.

Food safety is a continuous improvement process, adds GFSI's Garren, and improving the professionalism and commitment to improvement by both auditors and manufacturers is driven not just by GFSI but also regulators and customers. Every participant in the food supply chain is vulnerable to failures by others. Development and enforcement of best practices in this area is essential. ❖



A rare earth magnet embedded in a head pulley separates blue particles of polypropylene from white pieces of nylon. Minute particles of metal are in the blue material. The same principle is being used to identify plastic in food as it passes through a metal detector. Source: Eriez Magnetics.

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