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FOOD SAFETY

With more fresh ingredients entering the industry, it's more critical than ever to ensure brands have strong food safety practices. BY DAVINA VAN BUREN

Safety First

Technological advancements are moving the food industry forward.

Some popular brands have been forced to undertake aggressive rebranding and marketing campaigns after food safety concerns sent stocks—and consumer confidence—plummeting. Far from the afterthought it once was, food safety practices are now top of mind for restaurant owners. Depending on the severity, one infraction can haunt a foodservice operation for years.

"Public perception of food safety is huge and highly affects brand protection," says Gina McDowell, research, development, and engineering program leader of food safety at **Ecolab**. "When restaurants experience outbreaks, it is detrimental to brand protection and affects customer return."

By nature, quick-service restaurants move at a fast pace, so they must operate efficiently while also delivering quality, safe food to the consumer. "Food safety is not a separate, isolated practice," says Chris Boyles, vice president for the Steritech Institute at **Steritech**. "It must be ingrained in an organization's culture to be truly effective, and it must involve everyone—from the CEO to the line worker in a restaurant."

In terms of food safety, there are two main challenges: ensuring employees and facilities are kept clean and sanitized, and confirming that food items are cooked thoroughly. Under these two umbrellas live a myriad of other tasks: temperature tracking, product rotation, cleaning and sanitizing equipment, hand washing, and much more. "One error in any of these daily processes could negatively affect the brand, or worse, result in customer illness," says Barbara Sullivan, senior product manager of SureCheck for **PAR Technology Corporation**. "The challenge that individual quick-service operators face is ensur-

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ing that all food safety tasks and processes are adhered to in a timely and correct fashion."

After several major incidents of foodborne illnesses during the early 2000s, the Food Safety Modernization Act (FSMA) was put into place. Crafted largely by members of the Grocery Manufacturers Association, the legislation's intent was twofold: to address changes in the global food system and to shift the focus from responding to foodborne illnesses to preventing them, says Dr. Anna Starobin, leader of microbiology, food safety, and public health at Ecolab.

Former President Barack Obama signed the FSMA into law in January 2011. It gave the FDA new powers to help regulate the way foods are grown, harvested, and processed. The FSMA's focus on preventing foodborne illness emphasizes specific actions that must be taken at each point in the supply chain to prevent contamina-

Avery Dennison

> **"Food safety technology is driving the industry to become more uniform in process, efficient, accountable in daily operational tasks, and compliant in food safety regulatory mandates."**

tion. It also authorized the FDA to institute mandatory recalls of tainted foods and outlined seven principles, which together make up the Hazard Analysis and Critical Control Points (HACCP), an internationally recognized system for reducing the risk of safety hazards in food.

"Large commercial facilities used to manage these risks for the [quick-service] industry," says Adam Johnson, vice president and general manager of global retail food services at Ecolab. "Now restaurants are assuming more responsibility."

Before FSMA, food retailers relied on handwritten records—which are prone to inaccuracies and mistakes and can introduce additional sources of potential pathogen contamination—to prove FSMA compliance. Some still do. These days, however, food safety standards—in particular HACCP—have evolved. Now restaurants rely on cloud-based, food safety management solutions that can be implemented

by multiple segments of the foodservice industry. Using the Internet, restaurant operators can now disseminate food safety best practices to all locations quickly and efficiently. Brands can keep tabs on the execution of food safety protocols in real-time, highlighting best practices as well as areas that need improvement.

"It used to be that all corporate brands could offer was a few handwritten forms that were put into a file cabinet in case an inspection came up," says Miguel Ortiz, director of product for **TransAct Technologies**. "Now, that data has more

purpose and provides actionable insights while ensuring compliance with food safety standards."

As technology advances, operators are gleaning more food safety information in real time. "Today's technology helps operators track a variety of things, including ingredient and nutrition information, expiration dates, ordering information, waste, and food donation," says Ryan Yost, general manager of printer solutions at **Avery Dennison**, parent brand to Freshmarx Solution.

It doesn't stop there. Technology can

track employee handwashing behaviors with digital counters on soap dispensers. Sensors can alert employees to temperature fluctuations in food wells. Whereas restaurants once used paper files and manual tracking, today's foodservice operations can easily access purchasing systems and view and inspect training records, health department reports, chemical reports, pest inspections, and more

nates a lot of the manual burden of managing food safety across an organization and can be an extremely powerful tool for driving change and improvement."

On the consumer side, technology such as social media, iPads, and smartphones are shaking up the industry. "Consumers have easy access to all kinds of information, ranging from what menu ingredients might be harmful or healthful to customer

the risks associated with their supply, but the key is to take action on that data to mitigate those risks."

With more emphasis being placed on the availability of locally-grown foods and reduction of food waste, restaurants must be hyper-vigilant in their food safety practices. With traceability being so critical, tracking is extremely important. "Something as simple as a scannable barcode—which follows the commodities as they travel through the distribution channel—will help to identify problems as they occur," says Karen Hennessey, business development manager for **ITD Food Safety**.

To this end, Internet of Things (IOT) technology is revolutionizing food safety. For example, IoT at food distribution centers provides accountability that food items are stored and shipped correctly. Barcodes provide computerized tracking of lot and batch numbers, so that employees know instantly what product came from where, how much is on hand, and where it needs to go.

ITD Food Safety

"Consistent food safety protocols lead to consistent quality of products, which directly affects same-store growth and system expansion for the franchisee and shareholders."

online. "Food safety technology is driving the industry to become more uniform in process, efficient, accountable in daily operational tasks, and compliant in food safety regulatory mandates," Sullivan says.

Software has made it much easier to identify trends and receive notifications of non-compliant items, so they can be addressed immediately. Operators can then view and track corrective actions online. "The digital consolidation of data and information has been a massive shift for restaurants," Boyles says. "It elimi-

reports about the cleanliness of a restaurant," says Rachel Morgan, director of marketing for **Dot It Restaurant Fulfillment**.

Consumers have also begun to demand more sustainable food products, making traceability an increasingly important element in the food chain. According to Johnson, "technology is driving accountability across the supply chain by creating an unprecedented level of transparency for operators across all levels of the industry. Increased data availability can help food companies gain deeper visibility into

"With the elimination of pen and pencil, food tempterature monitoring is more efficient and accurate," says McDowell. "Alerting features also remind restaurant employees when a task is due, which takes some of the ownership off of the individual employee to memorize every task that must be completed within a certain timeframe."

Additionally, operators have access to the story behind the food, including safety records of temperature during transit and links to the farm where the food was grown. "We are seeing more efforts by producers to track food from the farm through the distribution channel to the foodservice operation," says Catherine Strohbehn, food safety consultant for **FoodHandler**.

Inside the restaurant, technology can assure that mundane food safety tasks are performed with ease and on schedule. Restaurants have long used temperature monitoring and alert systems on walk-in refrigerators and freezers to minimize losses should electricity go out or a mechanical problem occur. Other systems monitor food temperatures during storage or cooling.

Avery Dennison

Today, data from wireless IoT sensors is dispersed throughout the food chain and continually collected and analyzed. Data is typically stored in the cloud for up to two years from the collection date, per FSMA regulations.

"As HACCP compliance grows, larger amounts of data from multiple points in a distribution chain can be assessed for best practices and then adopted for all points in the chain to ensure consistency—and most importantly, food safety for the consumer," Morgan says.

While there is no doubt that technological advancements are making the food supply safer, there is also no substitute for boots on the ground. Strohbehn says it is critical for quick-service restaurants to have trained supervisors on duty during store hours—but simply being present isn't enough.

"Supervisors should be monitoring food safety behaviors, such as spot checking temperatures, checking the concentration of the sanitizer solutions used, and making sure that cleaning and sanitizing is

"Food safety should be demonstrated, monitored, measured, and rewarded—just like other critical operational functions."

done when needed," she says.

Operators should also remember that technologies are only as good as the teams analyzing the data that comes from them. "It's all well and good to know that a walk-in cooler in a location is out of temperature, but if you aren't helping your organization get it fixed immediately, you're not addressing the actual problem," Boyles says. A robust culture of food safety not only gathers data, but it also leverages that information to drive change and improvement.

It's easy to get lost in the technological

aspects, but restaurant operators should focus on the fundamentals of food safety first and foremost: a clean environment, a presentable and well-trained staff, and proper food handling practices. Often, it's the little things that not only go far in the food safety realm, but in the public perception arena as well.

Customers want to see clean uniforms, employees who are wearing gloves while preparing food, and hand washing sinks being used. They want to see food safety certificates and health department sanitation grades. "Personally, I want to see clean bathrooms with plenty of handwashing supplies because I think that's an indication that hygiene is important in the back of the house, too," Strohbehn says.

Franchised organizations should ensure that franchisees have the same training, involvement in, and level of commitment to food safety that leadership does. Everyone in the organization should be united around the common goal of protecting the customer and serving the safest possible food.

"Brand protection is paramount," says Jeff Yeager, vice president of foodservice for **Cooper-Atkins**. "Consistent food safety protocols lead to consistent quality of products, which directly affects same-store growth and system expansion for the franchisee and shareholders."

It also guards against public relations nightmares like the one Chipotle experienced in recent years. Plagued by food safety issues related to E. coli outbreaks at several of its stores, the chain continues to struggle to regain its footing, and in June, the company announced it would close up to 65 locations in the second half of 2018.

"A brand's reputation, image, and value with consumers is the most important asset a company has," says Hank Lambert, chief executive officer at **PURE Bioscience**. "If a restaurant has a food safety incident, such as an outbreak or recall associated with it—no matter the cause or source—its brand value declines and the financial implications will be severe."

This includes reduced revenues, declines in stock prices, and legal costs. The good news? The American public is generally forgiving if a mistake is handled

honestly, openly, and quickly—and if it doesn't happen again.

"Advancements in technology—including digital ordering, kiosks, digital thermometers, and equipment—are allowing restaurants to be more efficient in delivering on customer expectations and more accountable for delivering safe food," McDowell says. "More advanced equipment is increasingly easier to clean, which decreases labor spent on sanitation, while digital monitoring brings more awareness to food safety and decreases food waste by alerting operators when temperatures approach risk thresholds."

As the food safety industry moves forward, look to see more foodservice organizations implementing stricter, more comprehensive food safety standards that are heavily documented and preventive in nature. "Exponential growth with increased automation will continue to mitigate the risk of human error in food safety

"Restaurants now need to have a more robust and systematic approach to risk reduction."

control points," Yeager says. Increasing use of blockchain technology and traceability solutions will provide deeper levels of transparency into food handling practices throughout the supply chain.

"Restaurants now need to have a more robust and systematic approach to risk reduction," Johnson says. "Recognizing the increased risks and employing more active managerial controls in the form of digital food safety technologies, in-restaurant food support, and innovative intervention for fresh categories such as produce will be key to controlling risk."

Restaurant chains will likely also increase audits of suppliers in order to adhere to food safety standards and specifications. Lambert predicts an ongoing search for more effective, less toxic antimicrobial technologies for use in sanitizing and disinfecting food contact surfaces and for direct food applications.

"For restaurants in particular, identifying antimicrobials that are superior in preventing and eliminating norovirus—the leading cause of foodborne illness outbreaks in restaurants—is critical," he says.

Overall, restaurants should strive to develop a company culture that takes pride in putting cleanliness and guest safety above all else.

"Organizations should talk about food safety as much as they talk about their financial results," Boyles says. "Food safety should be demonstrated, monitored, measured, and rewarded—just like other critical operational functions." **SC**

Walking the Line

Industry experts discuss the most common food safety concerns and how to mitigate them.

A single quick-service restaurant can provide food to thousands of people in one day. While every transaction is an opportunity to provide outstanding customer service and strengthen brand engagement, it's also an opportunity to introduce harmful pathogens into the food supply.

Technology has allowed for rapid advancements in the food safety industry, so the biggest culprit when it comes to compliance is humans. Most foodborne illnesses stem from employee errors, such as not washing hands, not wearing gloves, incorrect use of gloves, and not maintaining proper temperature controls. These kinds of improper food handling practices can lead to contaminated food products and foodborne illnesses. For quick-service operators, the stakes are extremely high.

"If just one food safety infraction occurs, the scale of the potential impact is huge—hundreds or even thousands of people could become sick," says Chris Boyles, vice president for The Steritech Institute at **Steritech**. The company recently looked at data from more than 14,500 restaurant assessments conducted between January and June of 2018 to find the top 10 food safety concerns in quick-service environments.

The top issue—cited in nearly half of all assessments—was food contact surfaces not being clean. "There are dozens of food contact surfaces in a quick-service environment," Boyles says. Specialists observed that when service items, such as cutting boards, storage containers, inset pans, trays, and utensils (such as spatulas, tongs, and knives) are put away into "clean" areas, they often still had food residue on them. This indicates that kitchen staff might not be cleaning and sanitizing items as thoroughly as possible.

"The responsibility for customers' health is a big one."

Other food contact surfaces that are notorious for causing problems in quick-service environments include ice machines and soda nozzles. These items should be thoroughly sanitized on a regular basis. For soda fountains, that means completely breaking down the assembly for daily cleaning, including underneath the drip tray.

The second most commonly cited issue in quick-service establishments is cold holding. The most common cause of issues here is that items on the service or prep line are frequently found above acceptable temperatures. Items that aren't kept below the required 41 degrees Fahrenheit can rapidly grow dangerous pathogens.

"If food safety protocols are not followed—including maintaining them at the appropriate temperatures—customers can become sick and possibly die, resulting in damage to brand equity and huge financial losses due to expensive recalls," says Jeff Yeager, vice president of foodservice for **Cooper-Atkins**.

FoodHandler

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Sanitizing in the triple sink was the third most common challenge in quick-service restaurants. "Restaurants should use a sanitizer or disinfectant with rapid efficacy against norovirus," says Hank Lambert, CEO for **PURE Bioscience**. Sanitizer should be tested frequently and replaced when needed. "In periods of heavy use, it may need to be replaced more frequently," Lambert says.

Another serious food safety concern for quick-service restaurants relates to the health of employees. Employees who come to work while ill—and managers who allow it—can put customers at risk. Even though being short-staffed presents its own set of challenges, this inconvenience seems minor when the alternative outcome is considered. Having specific policies in place with regard to employee health is critical to protecting guests, other employees, and the food itself.

"Make sure to have a clear employee wellness policy in place, that all employees know and understand it, and that the policy is reinforced in training regularly," Boyles says.

Foodborne illnesses can have extremely negative impacts for the individuals involved, and may result in hospitalization, long-term health effects, and in the worst cases, even death. While these examples signify the worst that can happen, management can also offer real-life examples of how a foodborne illness could impact them and their co-workers: favorite customers sickened or hospitalized, health department shutdowns, or loss of pay due to closure, for example.

"The responsibility for customers' health is a big one," says Catherine Strohbehn, food safety consultant for **FoodHandler**. When a restaurant gets it wrong, not only are customers impacted, but the restaurant and everyone who works there is, too. Litigation can be costly

and exceed the restaurant owner's ability to pay, and negative publicity from a foodborne illness outbreak can be the death knell for a single restaurant or an entire chain. "Risk mitigation should be a high priority for any restaurant company," Strohbehn says.

It is one thing to adhere to stringent food safety practices in the restaurant, but in recent years, a new problem has moved to the forefront of food safety concerns. More and more frequently, ingredients are contaminated before they ever reach the premises—ground beef tainted with E. coli, lettuce with Cyclospora, and melons with salmonella, for example. "We need better detection methods in the supply chain to catch problems of contamination before the food is purchased and served to the consumer," Strohbehn says.

Another major concern is expired ingredients or prepared foods that aren't removed on a regular basis. Make sure kitchen and wait staff are trained on how to properly rotate product using the first in, first out (FIFO) method.

In addition to ensuring that food is fresh, the FIFO method helps reduce waste—both of which impact a restaurant's bottom line.

Operators should review their policies regularly to ensure they address all areas of food safety and that procedures are actually practiced on-site and not just written in a manual. Restaurants need robust employee training programs as well as training for supervisors on how to work with employees to implement these policies and procedures effectively.

"Quick-service restaurants tend to have young employees and high turnover, which necessitates ongoing training and supervision," says Jeannie Sneed, food safety consultant for FoodHandler. Simple shift meetings that address the basics—proper cooking and holding temperatures, proper cleaning and sanitizing, and employee health and hygiene—can go a long way in minimizing the risk of a foodborne illness.

At the end of the day, it is the people who make or break any business. Making sure all levels of staff are up to speed on food safety is step one to success in the restaurant industry. **SC**

FOODHANDLER

Now Trending

## Food safety should always be the featured menu item.

Trendy ingredients, cooking techniques, staff, owners, and management come and go in the restaurant world. One thing that never goes out of style, however, is food safety, and food trends have forced the safety industry to evolve in recent years.

"Consumer demand for local, small, and boutique food offerings has pushed expansion of the regulatory framework to incorporate new players and different risks into the marketplace," says Adam Johnson, vice president and general manager of global retail food services at **Ecolab**.

For example, think about how seasonal or constantly-changing menus impact kitchens. Today's chefs can access global ingredients within a matter of minutes. "Every new menu item or limited-time offer should be viewed through a food safety lens, and all employees should be trained on how to properly and safely handle the food," says Chris Boyles, vice president for the Steritech Institute at **Steritech**. For restaurants with high turnover, this can be a challenge, as short-staffed operations may offer less thorough food safety training in order to "get someone in place."

Another factor that influences menu decisions—and therefore food safety practices—is that customers are more educated about food than ever before. Due in part to the abundance of cooking shows and food-related documentaries, consumers are demanding healthier options.

"Trends have shifted away from processed, frozen, and pre-packaged foods," says Miguel Ortiz, director of product for **TransAct Technologies**. Indeed, many quick-service operations are moving toward fresh foods that are prepared on-premises, which in turn is influencing

Ecolab
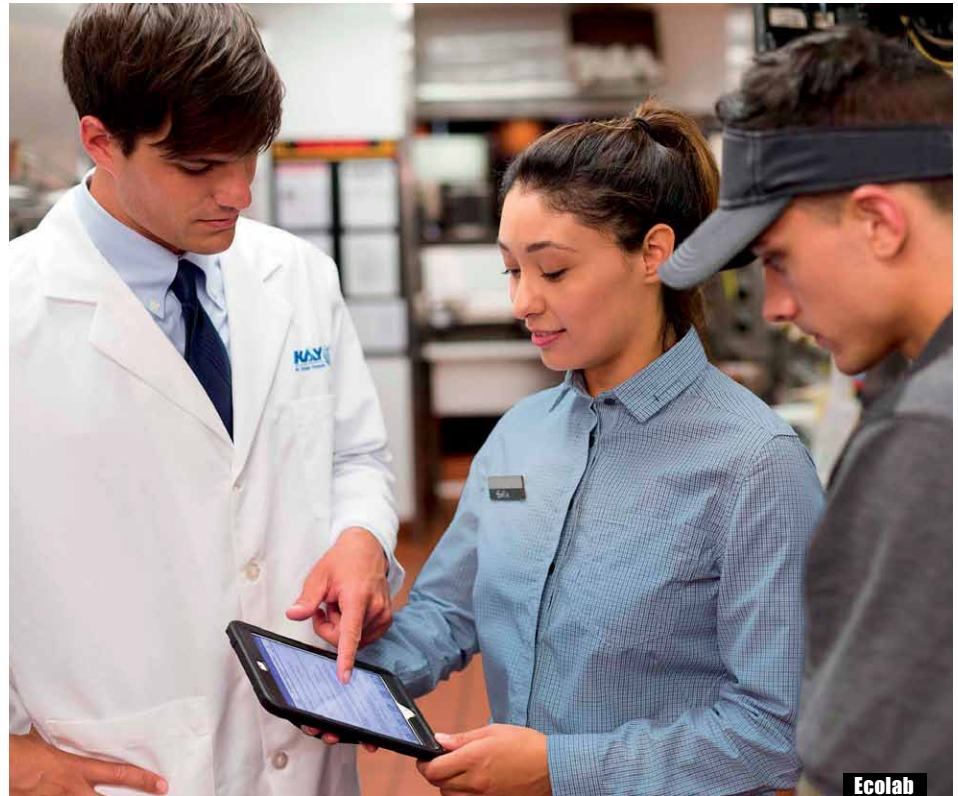
"Consumer demand has pushed expansion of the regulatory framework to incorporate new players and different risks into the marketplace."

food safety standards.

The increase in fresh and raw products brings unique challenges to the quick-service industry. "More attention is required to ensure foods are properly stored and cooked to the correct temperatures to provide safe food," says Gina McDowell, research, development, and engineering program leader of food safety at Ecolab.

"These products also increase the risks of cross contamination, so employees need to focus on more cleaning and sanitation."

Fresh foods must also be rotated more frequently, as they have a shorter shelf life than processed foods. "Labeling must be legible and accurate," says Ryan Yost, general manager of the print solutions division at **Avery Dennison**. "An automated

labeling system is key."

One example of a food trend that has influenced safety standards is the shift toward organic foods. "The organic trend reduced the use of pesticides in commercially grown produce," says Rachel Morgan, director of marketing for **Dot It Restaurant Fulfillment**. However, pesticides are used to protect fruits and vegetables from pests and resultant patho-

Cooper-Atkins

gens, and their complete discontinuation exposes the consumer to harmful bacteria if safe replacement standards are not used. This is why organic produce can still be sprayed with a surprising amount of chemicals—the main difference is that the substances allowed in organic farming are derived from natural sources instead of being produced in a laboratory. To further confuse things, "natural" doesn't always mean "better" in food safety terms.

Another rising trend is the development and expansion of quick serves to encompass convenience stores (c-stores). The need to cater to millennials and busy workers has inspired many establishments to expand their traditional grab-and-go food options to include hot and cold sandwiches, wings, pizza, burgers, and even fresh tossed salads.

"This uptick in handling additional product directly increases the risk of food-

borne-related illnesses," says Jeff Yeager, vice president of foodservice for **Cooper-Atkins**. "The need for safety standards to be adhered to even though the footprint is smaller than a typical quick serve facility is still paramount."

One of the newest trends in the foodservice industry is the growing popularity of food delivery apps, like DoorDash, Grubhub, UberEats, and Amazon. Even

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though these services are expanding rapidly, they have yet to see market regulation. "With the explosion of off-premises dining, ensuring food safety and security as food moves through the delivery process is critical," Morgan says. "For restaurants entering food delivery, it is only a matter of time before safety standards are applied industry-wide to protect customers' food throughout the delivery process."

There are a few things that restaurants should consider when offering delivery services: Is packaging designed to maintain temperatures? Do containers prevent cross contamination of allergens? Does it protect the food from tampering once in the delivery driver's hands? In anticipation of upcoming regulations, some companies have already developed tamper-resistant labels for to-go packaging so restaurants can securely fasten boxes and bags for third-party delivery.

As off-premises dining becomes more prominent, some restaurants are experimenting with delivery-only or "virtual" locations. "Without the theater aspect of an operation where the public might have some glimpses at a kitchen, we will need to ensure that these operations remain accountable for food safety," Boyles says.

Technology can help in this regard. Many food safety protocols, such as temperature monitoring and sanitizing, can now be automated, and detailed reports can be sent to operators via email, text, or SMS message. "Clipboards and haphazard temperature management systems of the past have been automated," says Karen Hennessey, business development manager for **ITD Food Safety**. "This automation results in a safer kitchen and, in turn, a safer dining experience for consumers."

As more vendors enter the food production and distribution spaces in order to meet the world's growing food demands, tracking components becomes even more essential. Radio frequency identification (RFID) was once considered cost prohibitive for smaller foodservice operations, but it is becoming more common in the restaurant industry. Companies can now track vegetables and other foods from harvest through processing, packaging, and delivery.

Blockchain technology—a digital ledger of transactions that exists as a shared and continually updated database—also shows promise in helping operators further secure their supply chains. Blockchains allow for complete transparency throughout the food distribution system, since data that has been entered into the blockchain is extremely difficult to change.

"This accountability will help reduce the occurrences of problems over time," Hennessey says. "We will be able to readily identify suppliers and transportation companies that are not following established safety protocols, and they will either be forced to follow protocols or fall by the wayside."

Trends in the food industry come and go, but food safety remains a perennial priority. As consumers demand more transparency, the industry is stepping up to the challenge. **SC**