



EXECUTIVE BRIEF

Building a technology framework for recall readiness

Cross contamination, pathogens, and faulty food labeling are just some of the possible reasons why food and beverage manufacturers must recall products. While recalls are not an inevitable outcome for all manufacturers, those that are prepared to quickly respond to recalls are more likely to minimize potential disruptions, costs, and damage to their reputations.

Recalls are complicated and involve many “moving pieces” that can involve suppliers, ingredients, recipes, labels, distributors storage, and everything in between. To comprehend the potential magnitude of a recall, it can help to break out the recall process into five logical steps: prevention, identification, notification, removal, and replenishment. Food and beverage manufacturers that can implement effective processes around these steps will be ideally positioned to optimally respond to virtually any recall issue—and perhaps even prevent a recall from being needed in the first place.

Read on to discover how food and beverage manufactures can leverage technology to optimize these steps to build a sound framework for recall readiness.

Have a plan

Customers, consumers, and regulators all expect food and beverage manufacturers to take both a proactive and responsive approach to quality and recall management. The International Fresh Produce Association's **Recall and Crisis Management: Food Safety 101** advises that food and beverage manufacturers have recall plans in place ahead of time that contain "risk assessment, an activation protocol, a chain of command, action plans, and internal and external communication programs."

A key part of being ready for a recall is being able to track and trace origins of ingredients quickly and accurately so as to contain adverse quality events across the supply network (in some cases preventing the need for recalls before they're even started). To accomplish this, some companies are looking to **blockchain**, but the technology is still in its nascent stage.

Fortunately, there are well-established and proven technologies that can help manufacturers not just identify containments and narrow the focus to specific batches, but also allow manufacturers to increase the efficiency of all stages of a recall—whether it's quickly isolating products, notifying affected parties, or getting replacement products onto the shelves as quick as possible. These technologies are leveraged with the goal of limiting the impact of a recall as much as possible, without jeopardizing safety.

To ensure manufacturers are effectively prepared for a possible recall, they should assemble a technology framework around the following five, key processes.

1. Prevention

Benjamin Franklin might not have been thinking specifically of food and beverage products when he said, "an ounce of prevention is worth a pound of cure," but it's an axiom that food manufacturers and distributors should still bear in mind. Prevention is *the most critical aspect of recall preparedness*. It's the factor that's most likely to prevent a recall or at least minimize a recall's overall impact.

Prevention stretches across the entire product lifecycle continuum, from sourcing raw materials to product consumption. Some of the processes and systems that can be put in place for effective prevention measures include:

FDA recall classifications

The US Food and Drug Administration (**FDA**) defines recalls as: "actions taken by a firm to remove a product from the market. Recalls may be conducted on a firm's own initiative, by FDA request, or by FDA order under statutory authority." Furthermore, the FDA breaks out recalls into the following classifications:

- **Class I recall:** A case in which there is a reasonable probability that use of the product will cause serious adverse health consequences or death (an example would be E. coli contamination of meat)
- **Class II recall:** A situation in which the consumption of a product may cause temporary adverse health consequences or where the probability of serious health consequences is highly unlikely (e.g., an undisclosed food dye that is known to cause mild allergic reaction in some individuals)
- **Class III recall:** A case where there is an error, but consumption of a product is not likely to cause adverse health consequences (e.g., an underweight product)

Supplier compliance—A food and beverage manufacturer's **suppliers present a high area of potential risk**. Manufacturers can improve product safety by integrating end-to-end supplier data and interacting with suppliers more often.

Technology that allows manufacturers to assess a particular supplier and the commodity, item quality, and compliance/risk rating, enables manufacturers to enforce the appropriate levels of material disclosure, supplier in-line or in-process quality testing and certification, and internal testing and certification from their suppliers.

As manufacturers process requests for information (RFIs), requests for proposal (RFPs), and plant certifications, implementing technology that supports integrated material disclosures can streamline processes for low-risk and high-quality suppliers. It can also provide additional scrutiny for higher-risk suppliers, materials, and plant certifications.

Materials disclosure and screening processes can proactively identify issues, protect product safety, and reduce process lead times and costs.

Global recipes—Using systems and processes that support global recipes can help prevent the use of unapproved ingredients in products. (This doesn't mean, though, that the recipes are precisely the same from region to region; it means that manufacturers have global control over the recipes.) Certain additives and ingredients that are permitted in one country, might not be allowed in others. Additionally, label and **health claims** that are valid for one country, could be forbidden in others. For example, claims such as “low fat,” “high fiber,” or “helps lower cholesterol” are all subject to country and regional laws. Failure to comply with these local laws can result in a recall.

Quality assurance integrated into production systems—Manufacturers can proactively protect product safety and improve the value of the end product by integrating quality assurance all the way from advanced shipment notices through inventory, production, shipping, and logistics. Technology that allows manufacturers to proactively monitor and identify risks and issues can help stop a suspect lot from being used or shipped. Not only does this help to ensure safety, it can also improve the value of the end product.

Asset maintenance practices—Improper changeover procedures, poor sanitation measures, leaky pipes or roofs, metal shavings that fall into packaging processes, and other asset maintenance issues can lead to recalls. Technology such as enterprise asset management (EAM) systems help to improve the effectiveness of preventive maintenance for production assets and equipment to safeguard product quality, reduce safety risks, and boost asset availability and longevity. Additionally, using alerting technologies that warn when conditions change that may compromise food safety (such as when the temperature is too low or the humidity is too high) can also significantly reduce the risks for contamination. By practicing preventive maintenance and being able to monitor out-of-tolerance conditions, manufacturers can proactively improve product safety, minimize write-offs, and improve fill rates.

Label compliance—**In recent years, issues associated with labelling errors have consistently been the leading cause of recalls.** There are two key areas where label compliance can be an issue. The first is ensuring that the listed ingredients match what is actually in the product, completely and in the correct order.

Failure to disclose all ingredients, especially if there is potential for allergic reactions, can result in a recall. Secondly, a product label's nutritional and health claims must be accurate and comply with government standards. Technology can help manufacturers ensure they have a means to make sure that products' labels accurately match the products, especially when complexity increases as a result of changing formulas or raw material availability fluctuations.

Recall testing—Manufacturers shouldn't wait for trouble to occur. Instead, they should perform “fire drills” of recalls and assign employees well-defined roles. Manufacturers should push concern for food traceability back into the supply chain, demanding timely and accurate feedback from suppliers as to the history of the raw materials and keep the answers on record. Food safety and quality issues can be managed more readily if collaboration is possible so that all partners in the supply chain can identify the direct source and direct recipient of traceable items. A healthful food supply depends upon a sound supply chain.

Supplier risk assessment—Manufacturers can tap into advanced business intelligence technologies—such as **artificial intelligence (AI) and machine learning**—to analyze performance to more accurately rate supplier, material, and production quality. By using supplier scorecards, which are generated from the data collected to create risk ratings, manufacturers can help drive purchase order volumes to more reliable suppliers—and also reduce safety risks. Since many suppliers are not staffed to implement advanced quality and compliance programs, manufacturers can move from doing just audits to implementing value-added education. Manufacturers can use supply chain planning to perform what-if analysis if specific suppliers were to be affected. By improving supplier quality, manufacturers can help reduce costs—and their suppliers' costs—while improving product quality and consistency.

2. Identification

Following a month-and-a-half-long investigation of a multistate Listeria outbreak in 2011, the **US FDA made Colorado-based Jensen Farms issue a voluntary recall** of its Rocky Ford-brand cantaloupes. Ultimately, 33 deaths, with a total of 147 associated illnesses in 28 states were attributed to the cantaloupes. This was **one of the deadliest** known foodborne illness outbreaks in the US to date. Jensen Farms eventually filed for bankruptcy, the company's owners were ordered to pay restitution, and they even **narrowly avoided going to jail.**

The FDA registers approximately one recall per day, but most are luckily not as lethal as the Jensen Farms recall. At the time of the investigation, the FDA found multiple problems, including “pools of water on the floor and old, hard-to-clean equipment,” according to an October 2011 [U.S. News & World Report](#) news story. According to the [Centers for Disease Control and Prevention](#) (CDC), it typically takes one to three weeks from the time a person eats food contaminated with listeria for symptoms appear.

As tragic as the Jensen Farms story is, there are lessons to be learned. When technology is implemented that can provide ready access to precise, up-to-date data, manufacturers are much better positioned to limit the consequences of a potential product recall. Modern traceability solutions add levels of visibility and transparency that allow manufacturers to execute product recalls within hours and with high precision. The alternative is trace-back which, whether it's manual or semi-manual will be a time-consuming, step-by-step process. While lot traceability is a core component of food safety, the inability to identify which specific lots were involved, often results in more products than likely needed to be recalled, for a margin of safety.

The lot recall analysis capabilities of modern enterprise resource planning (ERP) systems allow manufacturers to identify precisely where raw materials and packaging came from, how they were processed, how they were consumed, and where the finished product was shipped. Additionally, quickly identifying and locating the actual lots or affected batches of product helps to reduce cross-contamination and the likelihood of spreading pathogens through contact with machinery or equipment. Furthermore, product lifecycle management (PLM) tools can help identify additional recipes that might contain the same contaminant.

Real-time transactional data collection is the foundation of traceability. It can be used proactively in the interests of efficiency, as well as reactively in the event of a product recall. Proactive use allows manufacturers to test and verify the traceability of supply chain input as a continuous part of operations. Increasingly, food safety regulations include standards for recall speed; organizations must prove that they can find and withdraw all potentially contaminated food from the supply chain within a specified time.

3. Notification

As soon as bad lots are identified, manufacturers need to notify regulators and affected customers; retailers need to remove the products from their shelves; distributors need to alert their customers. It's not enough, however, to just communicate the problem down the supply chain; manufacturers also need to make sure all affected upstream suppliers are notified as well, so they can identify and rectify the cause of contamination.

The longer it takes to make affected customers aware of a problem, the longer those bad lots will stay on the shelves. Not only does this create potential increased health issues, but in one fell swoop it can also damage multiple brands—that of the manufacturer, its suppliers, distributors, and [retailers](#). Social media has greatly influenced the speed of how information is shared, as well as the numbers of people getting the information. Now thousands more people hear about a food recall even if it doesn't impact them directly. Which is yet another reason why it's important for manufacturers to stay on top of recall issues and make sure all affected parties are notified immediately.

In fact, in an age of instantaneous communication, it's not unreasonable to envision a day when consumers will expect to be personally informed of recalls and outages immediately, and told how to get replacement products. Market-leading companies that figure out how to do this will have a competitive advantage.

On top of having the means to provide time-sensitive notifications, manufacturers should also make sure their existing notification processes are sufficient. Performing regular mock recalls or “fire drills” allow a manufacturer to hone recall notification templates that are already in place. The collaborative capabilities of modern ERP or customer relationship management (CRM) systems can be used to quickly get notifications out to the right people.

4. Removal

The natural response for retailers is to immediately pull everything of an impacted manufacturer off the shelves—not just the affected lots—in an attempt to protect consumers and their brands. This can make an already costly undertaking even more expensive. **Recalls cost, on average, \$15 million per incident and can cause significant harm to brands' reputation and credibility.** Which is yet another critical reason why having immediate access to information on the affected actual lots can help minimize the ultimate cost of the recall. This can help limit the extent to which retailers remove products outside of the scope of affected lots from the shelves.

5. Replenishment

The longer it takes to replenish products on store shelves, the more revenue is lost. The key to minimizing the time it takes to refill stocks and shelves is by ensuring that manufacturers can effectively collaborate with suppliers and customers using supply chain management (SCM) solutions, such as advanced planning tools. This allows manufacturers to assess exactly how to estimate resources and costs and make maximum use of production capacity, while still meeting demand for its other products. Manufacturers can even use an advanced planning tool's what-if analysis to model replenishment scenarios during “fire drills” and to help build contingency plans.

Be proactive

Food safety and recall effectiveness is not a single-issue event. It encompasses numerous business processes, crosses many disciplines, and can impact multiple companies. Product recalls can do irreparable damage to brands and can even put companies out of business. Manufacturers can't wait for a problem to arise before they implement a food safety or recall plan. At that point, it's already too late; the response will likely be too slow and ineffective. Customers will be lost, reputations tarnished, and costs racked up.

Manufacturers need to assess their effectiveness in terms of prevention, identification, notification, removal, and replenishment. They need to enlist proactive strategies designed to reduce risks. The key to implementing these strategies is for manufacturers to build them into the technology they use to run the business. With modern CRM, EAM, ERP, PLM, and SCM solutions in place, manufacturers will be much better positioned to quickly and effectively respond to problems when they arise, and do so while minimizing costs and maintaining customer trust and their reputation.

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