

# Ensuring Food Safety and Brand Protection Through Supply Chain Traceability

## Executive Summary

To ensure the safety of the domestic and global food supply, demands for brand protection assurance are on the rise from customers and the food industry marketplace itself, along with increasing national and global food safety initiatives. To address these growing requirements, food processors and distribution warehouses up and down the supply chain now find automated traceability systems are a virtual necessity. For many food processors, the current challenge is to identify an automated approach to traceability that is both cost-effective and a good fit for their current business operations.

## Introduction

Today's food supply chains have expanded in complexity and number of business partners. From growers and harvesters through manufacturers of ingredients, intermediates, and packaging food processors, including storage and delivery by warehouses and transporters – each link in the supply chain actively contributes to the ultimate delivery and consumption of quality food products by consumers around the world. Efficiency improvements in lean manufacturing, faster inventory turns, increased numbers of product offerings, and the sheer volume of fresh and processed food product quantities manufactured, stored and transported, have become complicating factors in large scale food safety incidents; often reaching across country and continental boundaries.

The value of investing in food safety can be best understood by looking at the potential cost of poor product quality and lack of adequate traceability from some recent product recalls:

- Between April and August of 2008, 1,438 people in 43 U.S. states and Canada became ill due to an outbreak of a rare strain of salmonella. The epidemic was likely due to eating raw tomatoes, jalapeño peppers, and cilantro, some grown and packed in Mexico and imported to the U.S., and some of still-undetermined origin. Two people died, and 282 were hospitalized over the five months, making it one of the largest food borne outbreaks in 10 years. The Center for Disease Control added "Tracing suspect produce items back to processors and growers is an integral part of the effort to identify a single source and a possible means of contamination."
- From early August to mid-September of 2008, tainted milk in China caused kidney stones and urinary tract problems, killing at least six infants and sickening 290,000 others. Chinese investigators found the chemical melamine in 69 milk products, from more than 20 companies, which had been intentionally added so the milk products would appear to have a higher protein level. The FDA advised US consumers to avoid specific brands of instant coffee and candy products made in China.

China's quality control official Li Changjiang, was forced to resign. Twenty-one people were arrested. One main distributor, Sanlu dairy, produced 996 tons of melamine-tainted baby formula powder and sold 896 tons of tainted products made with contaminated milk. Sanlu executives were convicted for producing and selling fake or substandard products. The Sanlu Group recently filed for bankruptcy.

"The enterprises offered to shoulder the compensation liability," the country's Dairy Industry Association said late in December, according to state-run news agency Xinhua. "By doing so, they hope to earn understanding and forgiveness of the families of the sickened children." The group said victims will receive a one-time cash payment of undisclosed amounts.

As a precaution, British confectioner, Cadbury, recalled 11 products containing Chinese-made chocolate products, after finding traces of melamine. The products were sold in China, Hong Kong, Taiwan, and Australia.

- In January of 2009, the FDA and the State of Texas DSHS, managed a major recall of peanut butter related ingredients and products processed by the Peanut Corporation of America (PCA) after post-processed peanut meal tested positive for salmonella at the Texas facility. The State of Texas sent out an emergency order in February to cease manufacturing and distribution of all food products at the plant, issuing a mandatory recall for all products manufactured at the Texas plant.

Since this was an ingredient-driven outbreak, the risk of potentially contaminated ingredients impacted a large volume of food products for humans and pets. More than 2,100 products in 17 categories were voluntarily recalled by more than 200 companies. To date, 691 persons infected with the outbreak strain of Salmonella have been reported from 46 states, and may have contributed to 9 deaths. "...the large number of products and brands recalled already, and the large quantities of some products recalled, makes this one of the largest food recalls ever in the United States."

In February, 2009, the Peanut Corporation of America filed for Chapter 7 bankruptcy and is currently under criminal investigation. As a further food processor in PCA's food supply chain, Kellogg Company, the world's largest cereal maker, lost \$70 million in the salmonella outbreak, due to having to recall millions of their own packages of peanut butter crackers and cookies.

The downfall of companies like the Peanut Corporation of America and Sanlu Group highlights several points that continue to hold true for today's food processors around the globe:

- Beyond the increasing scrutiny of regulatory agencies, non-regulatory groups like the Grocery Manufacturers of America, the American Meat Institute, International Dairy Food Associations, the Global Food Safety Initiative and the Food Additives and Ingredients Association are also applying significant pressure to food processors. These industry groups and organizations are focused on industry self-regulation for food quality and safety best practices and standards and are becoming critical to food processor's business success.
- To minimize risk, food processors must be able to produce detailed and accurate records that identify the quality, quantity, disposition, and handling of products. By being able to access this information quickly and contain the scope of a recall, each company within the global food supply chain can demonstrate an "in control" status and prevent a run-away scenario.

In addition to the loss of human life and the health impact of those sickened by tainted food, the immediate financial impact on companies at the center of each of these events has been dwarfed by subsequent changes in the food industry marketplaces around the globe. Food safety outbreaks have elicited a wide range of social and economic response. Some focus on the need for insuring public safety, others on increasing pressure from the broadening powers of diverse regulatory agencies at a country level, and still others on better management of the expanding business risks facing today's food processors and their related supply chain partners.

U.S. lawmakers have introduced new legislation to remove food safety oversight from the FDA, and incorporate it into a new agency with stronger legal powers and more funding. President Obama has launched a special review of food-safety programs, which are underfunded, understaffed, and split into too many overlapping agencies, and which often rely on decades-old laws. Critics cite the need for increased inspections and basic research.

Within the commercial food industry sector itself, brand giants like Kellogg are also calling for an overhaul of how the government polices the industry. Kellogg wants food safety placed under the Health and Human Services Department, and calls for new requirements that all food companies have written safety plans, annual federal inspections of facilities that produce high-risk foods, and other reforms.

#### *The FDA and USDA are not Your Customers*

These recent product recalls, and a renewed focus on food safety, have raised regulatory pressures to unprecedented levels for food processors, compelling companies to scramble in search of automated solutions that can support lot traceability of quality, quantity, disposition, and handling of food products. In their efforts to address new and pending government regulations, many processors struggle to remain equally focused on the quality assurance and brand protection requirements of their customers.

In reality, regulatory and non-regulatory industry mandates, along with customer requirements, must all be addressed to ultimately minimize risk for both the public and food processors. A compliance issue with the FDA or USDA usually starts with a warning. But a failed mock recall or supplier audit by a customer can result in the loss of that customer, with no warning at all. And public perception of overall food safety or quality concerns at any point within a specific food market segment can have a devastating market impact, for an entire chain of food industry trading partners.

## *Are Food Safety and Brand Protection Just Overhead Expenses?*

With the growing list of large scale recalls that have occurred over the last 5 years, it's hard to imagine a food company that doesn't see the value in food quality traceability solutions. Regrettably, many processors view food quality traceability solutions in the same way they view insurance policies -- as nothing more than overhead on the business, especially during times of economic recession. However, forward-thinking companies leverage traceability, viewing it not as an externally imposed side-line requirement, but rather, as an integral part of end-to-end operations. Traceability supports food safety requirements, while providing operational performance metrics and analytical value to the business – based on information provided from suppliers, through value-add processing, and out to customers. Product quality-based traceability solutions not only track ingredients, intermediates and saleable products, but also help streamline production schedules, reduce operating costs, and improve customer service. Rather than piling on more overhead costs, inline traceability solutions can be leveraged to increase profits.

This paper examines the regulatory requirements and prevailing customer and market expectations around food safety today. Several case studies illustrate how food processors are managing these pressures, based on industry best practices that support supply chain traceability.

### **Regulatory Compliance**

As a result of U.S. terrorist attacks in 2001, government-imposed regulations have been on the rise for food processors in major economies around the world ever since. What were previously voluntary practices in food safety and traceability are now required mandates, as new policies regarding food safety continue to be enacted. While the primary intent of these regulations is to enable rapid containment in the event of an intentional contamination of the food supply, these same regulations apply equally in the event of accidental contamination.

A common requirement at the core of these regulations is often stated as “One-Up, One-Back Traceability.” This embodies two basic expectations of the food processor:

- **Trace-Back:** For all manufactured and warehoused products intended for human consumption, the processor must maintain the source identity of all ingredients contained in every individual product lot.
- **Trace-Forward:** For all ingredients received, the processor must be able to identify the disposition of the ingredients into all intermediate and food products for sale.

This poses significant challenges for many food processors who have multiple steps in their production processes - often involving mixing and blending of multiple batches, the economic re-use of incidental scrap and reworked ingredients, and managing the reality that one processing step often results in not just one, but multiple, output products. So for many food processors, there is nothing “simple” about this one-up/one-back requirement. In today's food plant and warehouse environments it is easy to see why, on the surface, traceability is viewed as nothing more than an added “overhead on the business.”

#### United States

Based on the Bioterrorism Preparedness Act of 2002, manufacturers, processors, packers, distributors, and importers of food must now maintain records showing their direct links in the “chain of custody” of food they receive from outside sources, including all in-house warehousing, handling and processing of food, as well as all immediate recipients they send food products to. Processors must maintain these records for up to two years, and must make these records available to the U.S. Food and Drug Administration (FDA) within 4 hours, if requested. The FDA also now requires adequate prior notice of food products being imported into the U.S. American food processors must also be prepared to pass ad hoc onsite FDA plant food safety audits. The likelihood of these audits are increasing, as the staffing and funding of the many agencies responsible for food safety in the U.S. are

under review to provide increased monitoring, all as part of proactively preventing the growing trend of food safety recall incidents.

Another food safety regulation which depends on the accurate traceability of select food commodity ingredients, is the USDA's Country of Origin Labeling (COOL) mandate as part of the 2002 Farm Bill, which requires disclosure labeling of the source country for beef, lamb, pork, fish, peanuts, and fresh and frozen fruits and vegetables. These rules require processors to keep track of the source supplier of all ingredients for food products that contain these ingredients, including their disposition into in all domestic intermediate and finished products.

The Food Allergen Labeling and Consumer Protection Act (FALCPA) requires food processors to clearly disclose on product package labels the presence of any of eight protein ingredients: milk, eggs, fish, crustacean shellfish, wheat, soybeans, peanuts, tree nuts. The expansion of this list to include "Gluten-Free" labeling is still pending.

The application of Hazard Analysis and Critical Control Point (HACCP) principles outlined by the USDA, and under consideration by the FDA for all food products, provides food safety preventive guidelines for food processors, based on the following seven principles: hazard analysis, Critical Control Point (CCP) identification, establishing critical limits, monitoring procedures, corrective actions, verification procedures, as well as record-keeping and documentation. Should a deviation occur during food processing, highlighting control has been lost, the exception is detectable, and allows appropriate and timely steps to be taken to reestablish control, and assure potentially hazardous products do not reach consumers. Successful application of these preventive guidelines depends on food processors having current Good Manufacturing Practices (cGMPs) in place.

One thing is very clear – these and other regulations regarding food safety within the food industry supply chain will continue to evolve at every level of government. For example, in January of 2009, California enacted AB 2098 legislation, which bans the slaughter of livestock too weak or ill to stand, to enter the meat food supply chain. And legislation was recently introduced in both the House and Senate to bar bisphenol A (BPA), a chemical additive, from all food packaging containers.

The FDA has recently launched its own newest long-term initiative, the Food Protection Plan. This Plan targets proactive food safety and food defense through effective prevention, effective intervention, and rapid response. It focuses on greater information sharing, increased access to production facilities, and gaining assurance for registration and certification system. It contains 10 new legislative proposals, including mandatory food product recalls and enhanced access to food records during emergencies. It also highlights the increasing role of third party audits and self-auditing ISO9002 certification, based on the guidelines of the International Organization for Standardization, a non-regulatory global agency.

## Global

Individual countries, as well as cross-country agencies around the world, are enacting unprecedented levels of food safety legislation. Newly enacted regulations in China, approved by the National People's Congress, have raised safety standards, increased punishments, and established risk evaluation including company monitoring. The Can-Trace initiative in Canada, the Japanese Agricultural Standards (JAS) in Japan, and regulations in Australia, to name just a few, are impacting food processors around the globe.

Cross-country organizations with regional impact are also passing legislation to collectively improve food safety standards. Regulation (EC) No. 178, for example, establishes the European Food Safety Authority and outlines the Global Food Law (GFL), focusing on traceability, product withdrawal, recall, and notification for food and feed related to safety requirements, including imports and exports, very similar to the Bioterrorism Act outlined by the U.S. FDA.

Food processors of all sizes and across all geographies are under increasing pressure to demonstrate they are "in control" and proactively gain the confidence of regulatory inspectors. To manage these evolving requirements and reduce the risks of regulatory sanctions, automated traceability and the record-keeping that supports it has

become a virtual necessity. As outlined later in the case studies, the confidence created by the use of an automated trace system, can have a significant impact on the perspectives of regulatory inspectors and auditors.

## Customer and Market “Compliance”

While the financial value of food safety compliance is most commonly associated with a food processor’s customers, in reality, compliance is equally critical between all trading partners – both suppliers and customers – that a food company does business with. It’s this auditable proof and “in control” status that’s inherited by every trading partner in the supply chain and ultimately touches the food consumers eat. It’s this level of compliance, based on conformance to current Good Manufacturing Practices (cGMP) that ultimately helps insure protection for brand owners and consumers.

### Customer Compliance

As each company in the food supply chain puts traceability safeguards in place to comply with legislation mandates for food safety, food processors must also focus on meeting the increasing expectations of their customers regarding food quality and safety, in order to remain competitive in today’s market - especially during a down economy. Customer compliance is a paramount business concern, as part of providing improved service, retaining customer loyalty, and protecting market share. And at the heart of customer compliance is the notion of “Brand Protection.”

#### *Food Safety Audits and Mock Recalls*

One of the increasingly-common ways food processors are being tested by customers in terms of insuring brand protection is through food safety audits and mock or simulated product recalls. Many processors that supply national retail chains are now conducting quarterly mock recalls at the behest of retailers, by requiring rapid access to accurate summary product lot information, with detailed supporting results. Processors are also conducting mock-recalls annually, as part of their own internal QA procedures. Additionally, some mock-recalls are being validated by external audit firms, as part of comprehensive food safety audits.

For a food processor, the cost of a failed mock recall can be catastrophic. An existing customer is not required to provide any warnings when they drop a supplier who fails even one mock recall, as compared to initial warnings that might be the only sanctions imposed by the FDA. The risk of a food processor losing a new or existing customer due to a failed mock recall is most pronounced, when the customer’s investment – and risk - in brand value is highest.

For example, as food processors seek to supply more products to the growing private label industry, they are coming under increasing scrutiny by brand marketers seeking to minimize risk. For a private label manufacturer supplying products to national brand marketers, a failed mock recall can be devastating to their business.

As retailers, food service organizations, and marketers of branded products invest to promote their brands in the marketplace, and in light of recent high-profile food contamination news events such as the recent pistachio recall by Setton Pistachio of Terra Bella Inc., which directly impacted Kraft and 35 other wholesalers, many processors are now being measured on their ability to help customers protect their brands, reputations, and profitability.

With brand protection being added as a new competitive metric to earn and keep customer’s business and loyalty, in addition to historical metrics like price, product consistency and customer service, the food processor who can demonstrate the most reliable means of brand protection can leverage a significant competitive advantage. Those who do so are in a position to command favorable pricing and enjoy “preferred supplier” status with customers, while also benefiting by raising the barrier to entry by competitors and protecting their own existing market share.

The demand for brand protection begins closest to the consumer for each customer's supply chain, cascading back through warehousing and processing of packaged products and intermediate food products, to the original source suppliers of ingredients and packaging. This means every food-based supplier must be able to support the requirements for brand protection on behalf of their customer, and their customer's customer, across their entire supply chain. As a result, every company who processes or handles food assumes responsibility for the traceability of quality results, including the safe handling, processing, storage, and related record-keeping associated with food products, to protect the brand integrity of all customers and suppliers they do business with.

## Market Compliance

In addition to government regulations and customer mandates regarding auditable food safety and product lot traceability, a growing consensus of non-regulatory agencies and industry consortiums are gaining worldwide market visibility and acceptance. These independent organizations include industry experts, food industry trading partners and stakeholders, and are proactively establishing food safety standards guidance and initiatives, aimed at defining current Good Manufacturing Practices (cGMP), often by individual market segment. They represent a strong, proactive global influence, and are more and more playing an active role in defining compliance mandates between brand owners and their suppliers, as well as participating with government agencies in establishing new food safety policies and regulations.

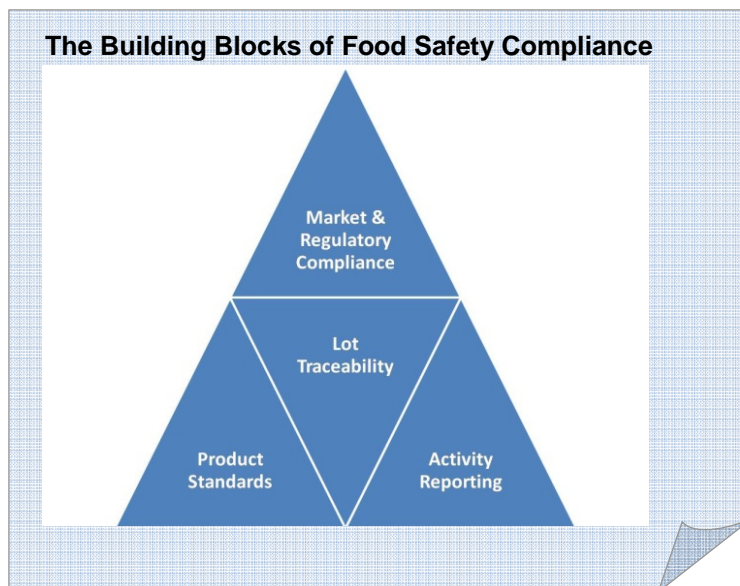
Examples of such organizations that are helping to shape government and industry food safety policies and supply chain initiatives include: the International Organization of Standardization (ISO), the Global Food Safety Initiative (GFSI) published by the CIES' Food Business Forum, the Codex Alimentarius Commission sponsored by the Food and Agricultural Organization (FAO) with the United Nations and World Health Organization (WHO), the European Food Safety Authority (EFSA), and the Grocery Manufacturers of America (GMA).

## Traceability Best Practices

The challenge for today's food processor is to develop cost-effective best practices that support food safety and product traceability requirements, while benefiting company profitability by fitting in with current supply chain business operations.

Cost and value considerations are directly related to putting efficient and effective business processes into action that insure consistent, auditable product quality based on established standards, while leveraging operational performance feedback that highlights exceptions for quick review and response. It is equally important to the business to be able to quantify the cost of product quality, and of poor product quality, as part of understanding the overall value of timely auditable "source to sale" transparency through activity reporting and traceability.

The diagram to the right illustrates those business operations which directly contribute to product traceability, and ultimately, compliance with customer, regulatory, and market food safety requirements. Effective product traceability depends on defining and applying consistent product and process standards, documenting all supply chain activities that involve the handling, processing, and storage of food products, ingredients, packaging, processing equipment, etc. - all in support of being able to rapidly and completely trace the audit trail



of any product lot, starting at any point, from ingredient suppliers, through the warehouse and one or many levels of production processing, out to final customer sale(s).

### Consistent Product Standards

Food processors depend on the most current product recipes and formulas to accurately identify all input ingredients, individual processing steps and related operator instructions, HACCP critical control points for corrective and preventive action, as well as all defined output products. This information is used across one or more facilities and departments by planning, scheduling, plant operations, procurement, and quality control personnel. These same recipes provide the basis for repeatable compliance with quality and safety targets, over time, every time. They contain performance metrics for every food product and production process, including target quantity and quality specifications (as established by both products and customers), and provide a baseline for nonconformance reporting every time a food item is produced. Included within product recipes are also details related to nutritional and food allergen ingredient information, for package labeling disclosure.

Throughout the food processor's business, similar operating standards, business process workflows, and checks and balances are established to minimize risk and support the consistent purchase, processing, storage, handling and sale of ingredients, food products, and related packaging items. For example, any food-related item whose quality can be compromised simply by sitting too long in the warehouse, has a maximum allowable number of shelf life days defined, to insure the necessary levels of food quality and safety are maintained within the supply chain.

When these product and operating standards are automated across facilities and departments within the food processor's business, centralized control information becomes available across the organization. The same food safety and manufacturing best practices information is also used during value-added activities to support consistency across the business, by validating product and ingredient properties, the quality of production work in progress, as well as trading partner preferences when buying and selling food products and services. The business benefits of automating product and process standard include increased efficiency based on one version of the truth across the supply chain, reduced waste due to formulation errors, and improved means of measuring performance across one or more production facilities and warehouses, including increased customer service through adherence to quality terms and conditions of pricing and sales.

### Activity Reporting

From the moment supply chain planning, production scheduling, and procurement decisions are set in motion, the innate variability that carries through to the storage, processing, and handling of food, means food processors must be flexible and prepared to constantly make adjustments, without compromising the quality or safety of the products they make and sell. Fluctuating levels of ingredient quality and the seasonal availability of ingredients, as well as innate changes in the production environment and equipment lines themselves, require operators to adjust standard recipes and processes, in order to deliver the expected level of quality food products. Because such changes to expected standards occur every day, it's critical to document the actions and activities that actually occur with every production batch and product lot.

Part of proactively managing food quality and safety, while also improving operating efficiency and reducing loss due to waste, means assigning a daily operating sequence for upcoming production activities. Equally important is the establishment of quality policies to insure that only warehouse inventory of the right quality is used, based on shelf life aging of inventory lots and the quarantine of any unusable inventory that must be avoided due to quality hold.

With all these safe-guards in place, record-keeping during production processing must still be flexible, to allow production personnel the authority to accept one-time formulation changes, and to keep track of these changes, every time a product is processed. Capturing quantity and lot information about ingredients going into each

production batch, and recording the assignment of new lot receipts for all co-products and by-products, insures that the chain of custody for one-up, one-back traceability remains intact.

It is equally important to be able to quickly retrieve quality information after the fact for any contributing ingredient and product lot, for up to two years after a food product is sold - including details about any stage of past production work in process, and actual quality lab test results. Quality-based information often provides critical insights about compliance with food safety mandates, both for purchased ingredients and for products processed in-house. This same information also provides the basis for evaluating supplier and production performance over time, as part of continuous improvement initiatives and in support of company goals of increased profitability.

While food safety compliance mandates allow for the manual documentation of what actually happens at all these operating levels for all ingredients, intermediates, and saleable food products, many food processors today are leveraging supply chain “operational systems of record” to automate the collection and centralization of activity reporting information. The use of bar coding and RFID technology, mobile reporting devices, and imbedding secure electronic signoff by authorized personnel as a normal part of daily operations offers today’s food processors a way to better manage the collection and retrieval of activity information. Electronic batch records (EBR) also act as a repository for all production-related activities within an operational system of record, and are often linked directly to production lines (through PLC’s and MES systems) to streamline the flow of critical data directly into the electronic batch record. All of these automated methods of collecting, validating, and organizing information reduces the risk of errors and speeds the flow of information to support real-time visibility and analysis for company executives.

The business benefits of activity reporting automation include increased profits through added efficiency, reduced reporting errors, timely access to performance results, and increased customer service through improved brand protection.

#### Lot Traceability

The combination of product and process operating standards, along with the consistent collection of activity reporting information, provides the necessary end to end audit trail visibility that allows food processors to quickly and completely trace product lot documentation in support of regulatory, customer, and market compliance.

To address increasing requirements to insure brand protection, and to efficiently satisfy the mock recall demands of customers, automated traceability systems have become a mandate of the business for food processors up and down the food supply chain. For many food processors, the challenge is to identify an automated approach to traceability that is both cost-effective and a good fit for current business operations.

**Paper-backed Spreadsheets:** Manual, paper-based record-keeping and spreadsheets are widely used “systems” for lot traceability in the food industry today. While collecting information this way is low in cost and relatively simple, it is also the highest in assumed risk, affording the least amount of protection. Manual systems rely on handling, filing, and storing paper source documents over time, as well as inputting and compiling secondary summary indexes after the fact into electronic spreadsheets. These source documents are largely dependent on financial records such as purchase receipts for ingredients, and invoices for food products sold and shipped to customers. Very little, if any, operational data is readily available.

The inherent risks with this approach include loss of speed, accuracy, and confidence by trading partners and regulators, alike. Customers expect mock recalls to be conducted quickly. The FDA imposes a 4-hour time limit for one-up / one-back traceability. Meeting these expectations can be difficult, if not impossible, during a mock audit or real emergency relying only on manual recordkeeping and spreadsheets.

With a goal of containing risk, the FDA and customers want to minimize the scope of potential product retrieval. If records are not accessible, thorough, and accurate, safety margins and the scope of the lot recall will be increased. Risk and cost will be higher for all parties involved. Speed and accuracy in retrieving product lot

information allow food processors to gain the confidence of their customers, auditors, and regulatory inspectors, as part of maintaining prices and a competitive advantage.

**Detailed Work-In-Process (WIP) Systems:** Many food processors rely on process line control (PLC) systems and manufacturing execution systems (MES) to support detailed traceability requirements. These production-based systems generally provide a wealth of detailed operational data about the manufacturing process, but do not extend into the warehouse which manages the receipt, storage, transport and sale of ingredients, packaging, and food products. While production data can be an important component in a mock or actual recall scenario, its limited scope prevents the automated collection of a complete end to end chain of custody, making it insufficient in itself to support one-up/one-back traceability requirements. The inherent risk is obvious and critical.

Records provided during a mock recall or a regulatory audit must be complete and thorough. Any gaps not filled by detailed records in the one-up/one-back chain, will result in exposure to risk for the processor, their customers, and suppliers. As with manual systems, described above, customer confidence will be compromised.

**Operational Supply Chain System of Record:** A new concept is being adopted by food processors of all sizes and at all levels in the food chain. Just as business accounting systems act as financial systems of record, food companies are utilizing enterprise resource planning (ERP) systems as their traceability and operational systems of record.

Financial systems have long been used to standardize business processes and provide audit trails that manage the sourcing and disposition of all incoming money, the valuation of company assets, as well as the details of all expenditures. As a result, the financial audit process itself has benefited and become streamlined and standardized.

With an operational system of record, incoming materials, manufacturing operations, inventory management, and customer shipments can all be traced in an automated manner comparable to that of existing financial systems. An operational supply chain system of record can directly contribute to standardized, streamlined food safety audits and mock recalls.

The advantages of automated traceability based on an operational system of record that also contains operating standards and activity reporting results can be significant, based on timely, thorough access to chain of custody quantity, quality, product and process information. At any point in the supply chain, a food processor is able to trace back to the source of all ingredients, and trace forward to the disposition of all food products made and sold. The increased confidence this provides, along with proof of “in control status” for customers, auditors, and regulatory inspectors, allows food processors to establish a competitive advantage that can add measurable business value.

When product lot traceability sits on top of an integrated operational system of record, food processors also gain the ability to improve bottom-line financial performance of the company. Transparency and timely access to product and process standards, as well as detailed activity information regarding production and exception variance costs, as well as product profitability, manufacturing efficiency, warehouse spoilage, and other operational metrics can expose hidden opportunities for business improvement.

## Conclusion

To ensure the safety of the domestic and global food supply, customer demands for brand protection and government regulations are on the rise. To address these growing requirements, operational systems of record have become a requirement for food processors up and down the supply chain. For many food processors, their current challenge is to identify an automated approach to traceability that is both cost-effective and a good fit for current business operations. In addition to addressing traceability requirements, operational systems of record deployed by progressive food companies are also used to streamline planning and production scheduling, reduce

operating costs, and improve customer service. Rather than adding to overhead costs, these solutions are being leveraged to improve bottom-line profits.

## Traceability Case Studies:

Four case studies are included below, each representing a different market segment in food processing:

<b>Litehouse Foods</b>	Dressings, Sauces and Dips
<b>Berner Foods</b>	Private Label Processed Cheese and Dairy Products
<b>Premium Brands</b>	Specialty Meats

In each case, these food processors are using their ERP system as an operational system of record to address traceability requirements and gain competitive advantage through increased confidence in the marketplace. At the same time, they are using their system to improve efficiencies and customer service levels.

### Litehouse Foods

Litehouse Foods is a leading manufacturer of refrigerated dressings, dips and sauces. Litehouse has grown rapidly in order volume and product lines – more than tripling its offerings in a five-year period. They have also grown from a regional business to distributing products nationally through mass retailers, national grocery chains, and food service channels. The company differentiates itself based on quality and customer service, with a commitment to using the freshest, highest-quality ingredients with no preservatives or artificial additives.

Prior to implementing their automated system, manual records were maintained, requiring up to three days to execute a retrieval. With a fully-automated operational system of record, Litehouse now completes mock retrievals in 15 minutes. This is particularly important as the company has expanded to national distribution. Many of its larger customers require mock recalls as part of routine operational and food safety audits. Litehouse is now able to easily satisfy these expectations and ensure that customers' brands are protected.

The detailed visibility needed to support lot trace requirements at Litehouse also now enables a wide variety of operational performance analysis and efficiency improvements. With integrated forecasting, scheduling, inventory control, and order management automation, Litehouse has been able to reduce the overall cost of operations while improving customer service levels. With detailed costing capabilities, Litehouse can also now establish efficiency goals, closely monitor, and adjust operations to ensure the goals are met. Specific operational improvements include:

- 3x Increase in product lines with no additional capital investments
- 6% Reduction in finished goods inventory
- 100% Reduction in excess safety stock
- 10% Improvement in order fill rates
- 97% On-time delivery of customer orders

Litehouse Foods now has the traceability needed to address government regulations and the brand protection requirements of its most demanding customers. In addition, the operational system of record that enables

traceability has also enabled the company to make significant improvements in efficiency, cost reduction, and customer service.

## **Berner Foods**

Founded as a family-owned business more than 60 years ago, Berner Foods, Inc. built its reputation as a contract manufacturer producing Swiss cheese for companies such as Alpine Lace. In 1988, after noticing a void in the processed cheese markets, Berner built its first processed cheese plant and began mass producing a private-label cheddar cheese sauce. Today, Berner is the dairy industry's leading private-label manufacturer of premium, processed cheese sauces, spreads, and toppings.

Berner needed to meet evolving regulatory and customer requirements for food safety and quality. As part of current Good Manufacturing Practices (cGMP) and in light of increasing scrutiny from the FDA, USDA, and other government agencies, Berner required a system that would keep them in lock-step with regulations.

As a private-label manufacturer, Berner regularly contends with tight margins and brand protection demands from its customers. They needed to maximize efficiency, ensure profitability and address the growing customer expectations.

By implementing a fully-automated operational system of record, conducting mock recalls at Berner went from taking an entire day to 30 minutes. The accountability provided by their system includes sourcing and movement of all ingredients, production processes, and equipment operators by which all products are produced, as well as destination details of where all products are stored and shipped. Berner has complete visibility and control, from the time of ingredient purchasing, to sales order fulfillment, shipment and receipt by customers.

The operational system of record used by Berner Foods also incorporates bar code scanning for automated input of all inventory activities. This provides immediate and accurate accountability to support lot traceability, and is also used to improve overall inventory management and customer service. Previously, inventory shortages resulted in production and customer order fulfillment delays. Integrated planning, scheduling, and timely inventory visibility allows Berner to leverage their operational system of record to reduce inventory costs, improve production efficiency, and significantly improve customer service. Specific improvements include:

- 38% Reduction in scrap and waste (\$200,000 saved per year)
- 10% Reduction in labor costs tied to inventory management (\$40,000 saved per year)
- 100% Reduction in inventory lag time
- 5% Improvement in production throughput
- 99% Reduction in stock-outs
- ZERO Customers lost in 12 months

Berner Foods now provides the all-important brand protection assurance required in the private-label manufacturing business. In addition, their operational system of record has enabled significant improvements in efficiency and customer service. All of these improvements enable Berner to maintain profit margins by maintaining their position as the high-quality, high-service provider in the market.

## **Premium Brands**

Premium Brands is a holding company for an expanding list of affiliate food processors in Western Canada and the United States' Pacific Northwest. They provide high-end deli and specialty meat products to food service, retail, and wholesale customers in Canada and the US. In the last few years, Premium Brands has acquired over 20 branded specialty meat products. To provide superior customer service in their markets, the company created

its own proprietary distribution network, expanding current corporate and food services channels, with a centralized warehouse for all products and its own fleet of trucks for direct store and home delivery.

By including management of their direct store delivery (DSD) in their operational system of record, Premium Brands can trace product to the store shelf in 20 minutes. With this performance, they can efficiently and accurately conduct mock recalls and contain the scope of a potential recall if necessary. This level of auditable assurance has allowed Premium Brands to reduce the cost of premiums paid for their liability insurance.

As Premium Brands has grown through acquisition of branded products, they have also acquired new processing facilities, using their operational system of record to help standardize all business functions across the company. The system enables the company to track and manage a host of business processes and has positively impacted nearly every critical aspect of the business – from costs, to revenues, to profits.

Product shelf life is of major importance in specialty foods. At Premium Brands, every individual item is date coded to the unique requirements of each customer. If product does not sell in the specified time, the company must pull it off the shelf and dispose of it, at their expense. Using expiration date management system capabilities, Premium Brands has cut lost revenues from returns by 50 percent, adding another 2 - 3% to the company's bottom-line performance.

Real-time sales order processing, tightly coupled with inventory control, also gives the company visibility to stock fleet trucks handling as much as half a million dollars in inventory, by serving as a rolling extension of plant warehouses. Delivery drivers fill new customer orders remotely, and field orders are processed by mobile technology uploaded to the system nightly. Premium Brands harvests the information daily for complete visibility to total inventory and sales.

## References

<sup>1</sup> “Cadbury’s latest to recall products in Chinese milk scare”, September 29,2008; <http://www.guardian.co.uk/world/2008/sep/29/china>

<sup>2</sup> USFDA website: *Peanut Product Recalls: Salmonella Typhimurium*, March, 2009.

<http://www.fda.gov/oc/opacom/hottopics/salmonellatyph.html>

<sup>3</sup> “Cadbury’s latest to recall products in Chinese milk scare”, September 29,2008; <http://www.guardian.co.uk/world/2008/sep/29/china>

<sup>4</sup> USFDA website: *Peanut Product Recalls: Salmonella Typhimurium*, March, 2009.

<http://www.fda.gov/oc/opacom/hottopics/salmonellatyph.html>

<sup>5</sup> Associated Press article: “*Food Industry Safety Inspections Challenged*” [Food industry safety inspections challenged - Food safety- msnbc.com](http://www.msnbc.com)

<sup>6</sup> Pistachio Product Recalls: Salmonella, by the FDA, April, 2009: <http://www.fda.gov/pistachios/>

## About CDC Software

CDC Software, The Customer-Driven Company™, is a provider of enterprise software applications designed to help organizations deliver a superior customer experience while increasing efficiencies and profitability. CDC Software's product suite includes: CDC Factory (manufacturing operations management), Ross ERP (enterprise resource planning) and SCM (supply chain management), CDC Supply Chain (supply chain management, warehouse management and order management), e-M-POWER (discrete manufacturing) Pivotal CRM and Saratoga CRM (customer relationship management), CDC MarketFirst (marketing automation and lead management), Respond (customer complaint and feedback management), c360 CRM add-on products, industry solutions and development tools for the Microsoft Dynamics CRM platform, Platinum HRM (human resources), and business analytics solutions.

These industry-specific solutions are used by customers worldwide within the manufacturing, industries. The company completes its offerings with a full continuum of services that span the life cycle of technology and software applications, including implementation, project consulting, outsourced business services, application management and offshore development. For more information, please visit [www.cdcsoftware.com](http://www.cdcsoftware.com).

### **Innovative software solutions for manufacturers worldwide**

CDC Software | Two Concourse Parkway, Suite 800 | Atlanta, GA 30328 | USA | [www.cdcsoftware.com](http://www.cdcsoftware.com) | [www.rossinc.com](http://www.rossinc.com) | +1.770.351.9600

Copyright © CDC Software 2009. All rights reserved. The CDC Software logo and Ross Enterprise logo are registered trademarks and/or trademarks of CDC Software.