



From Farm to Fork: The Need for Traceability in the Food Chain

Plex Online
White Paper

At a Glance

- This paper summarizes food and beverage manufacturers' quality and traceability challenges, along with technology solutions.
- Manufacturers need to tightly manage their production quality, even into the suppliers' operations, in order to comply with FDA requirements.
- Software products, like Plex Online, enable food manufacturers to track every ingredient in every product at least one-up and one-back in their supply chains.



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From Farm to Fork: The Need for Traceability in the Food Chain

In recent years, massive national food recalls in the United States have led to calls for greater visibility and precision in the global food supply chain. Every year, the food processing and distribution system is challenged by a number of high-profile recalls of food products including nuts, produce, milk, meat and even dog food.

For example, a salmonella contamination of peanut products led to the recall of more than 3,200 products and sickened 691 people. The outbreak was linked to nine deaths and prompted the largest food recall in U.S. history. Industry officials said the contamination was probably a result of not segregating raw and roasted nuts during processing.

“Identifying the true source of food contaminants is key to minimizing repercussions.”

As a result of this recall, the Peanut Corporation of America permanently closed down, the manufacturer Forward Foods filed for Chapter 11 bankruptcy and Kellogg has reported losing \$70 million.

The ability for industry to respond quickly to outbreaks is critical in minimizing financial losses, illness, and lost lives. In another case, more than a half-million

pounds of fresh ground beef sold in eight states over two days weren't recalled on the suspicion of E. coli contamination until some six weeks had passed. This delay— while the problem was investigated and the source confirmed— led to a greater cost for the eventual recall and dozens of illnesses that should have been prevented.

Identifying the true source of food contaminants is key to minimizing their repercussions. When a rare form of salmonella broke out in produce in 2008, the Food & Drug Administration (FDA) initially warned the public off tomatoes then later traced the true source to peppers produced by a farm in Mexico. Not only did this early misinformation cost additional illnesses as the public continued to consume contaminated peppers, it cost the tomato industry an estimated loss of \$250 million in unnecessary recalls and lost sales.

The Center for Disease Control (CDC) estimates that approximately 87 million people suffer from food poisoning each year— 371,000 become so sick that they have to be hospitalized, and 5,700 more die. The total human cost is probably far greater. The CDC also reports that for every reported case of food poisoning, ten more go unreported.



These staggering numbers have driven the federal government to introduce to Congress the “E. coli Eradication Act” and other proposed legislation to force food processors, the U.S. Drug Administration (USDA), and the FDA to get serious about tracking and eliminating food and beverage contamination. Recently the federal government has introduced more than 75 food safety legislative proposals into Congress, formed a government-backed Food Safety Working Group, and thoroughly reviewed the food safety system.

The Need for Traceability

Today, the FDA requires that all food manufacturers have the capability to rapidly identify and track every ingredient for every one of their products from receipt through

Five of the United States’ most costly food recalls include:

1. **Peanuts:** The FDA linked a deadly salmonella outbreak to a peanut plant in Georgia. All products containing peanuts produced by this plant were affected.

Cause: Raw and roasted peanuts not sorted correctly during processing

- Recall Scope: 3,200 products
- Illnesses: 691
- Deaths: 9
- Cost: \$1 billion

2. **Tomatoes:** A rare form of salmonella broke out in produce and the CDC and FDA initially pointed to tomatoes as the culprit, leading farmers to destroy tomato crops and consumers to avoid tomatoes or tomato products.

Cause: The culprit turned out not to be tomatoes, but jalapeno peppers that had been handled and sorted in an unsanitary manner at a plant in Mexico.

Recall Scope: All fresh and processed jalapeno and Serrano peppers distributed over a two-month period in 14 states. Exact total not available.

- Illnesses: 1,251
- Deaths: 2
- Cost: \$250 million

3. **Peanut Butter:** Peter Pan peanut butter manufacturer ConAgra, engaged in a massive 100 percent recall when its product was linked to salmonella outbreaks.

Cause: Broken sprinklers and rain leaking through the roof at a single plant introduced moisture and bacteria into the product.

processing, packaging, and shipping, to the exact customer location. In the case of an investigation or recall, companies must be able to demonstrate that they have recorded this information at least one step back and one step forward in their supply chain.

However, the Inspector General's Office reports that these record-keeping requirements are being met for only one in eight food products, and that most food processing facilities do not keep records with specific lot numbers that facilitate the tracking and tracing of foods.

For many non-compliant manufacturers the question is not whether they should adopt robust traceability practices. They recognize the need. The question is how to do it. Thousands of manufacturers across the food and beverage supply chain are seeking answers to practical questions, such as where to start and what steps to take to attain complete traceability.

Technology to the Rescue

Farmers and food processors are turning to the Internet and technology solutions for traceability and visibility in the global food supply chain. Today's technology gives organizations the ability to trace a problem with a finished product all the way back through the production process, through the suppliers and, in many cases, all the way back to the farms that produced their raw ingredients. Using software that isolates any quality issues, users can easily identify and quarantine all suspect material.

Recall Scope: 325 million pounds of Peter Pan and Wal-Mart peanut butter, plus 99,953 cases of peanut-butter-based toppings

- Illnesses: 492
- Deaths: 7
- Cost: \$148 million

4. **Meat:** An undercover video depicted employees of Westland/Hallmark mistreating sick cows, and an investigation ignited fears that the animals carried mad cow disease.

Cause: Cows had been sick prior to slaughter; increasing the risk that the meat carried mad cow disease (no mad cow disease was ever actually reported).

Recall Scope: 143 million pounds of beef

- Illnesses: None
- Deaths: None
- Cost: \$117 million

5. **Pet Food:** Menu Foods, a manufacturer of canned and packaged wet pet foods, recalled its products and incurred extensive lawsuit damages when consumers tied the cause of pet illnesses and deaths to their products.

Cause: An industrial chemical originating from a supplier in China contaminated the wheat-gluten in the food, causing kidney failure in pets.

Recall Scope: 60 million cans and packages

- Illnesses: 471
- Deaths: 104
- Cost: \$74 million

Food processors need to tightly manage production quality, even into the suppliers' operations. Quality management and supply chain management software systems enable them to do so effectively and easily.

The best-of-the-best software provides data on all aspects of manufacturing and supply in real-time during production and in archives for future reference – making traceability information available quickly and easily.



Some software products, such as No. 1-rated Plex Online, provide integrated solutions for food and beverage processors, including advanced product traceability functions. These systems provide the ability to track every ingredient from receipt through finished product delivery, and adapt to a company's unique manufacturing process – the “farm to fork” capability also known as e-pedigree or product genealogy.

The software solutions offer integrated traceability features that accurately track individual bins as they flow through the manufacturing process and supply chain. Such software can rapidly isolate problems with pinpoint precision. The software provides detailed historical information related to production, inspection, genealogy and usage.

Any software utilized by food processors should have traceability features within its inventory system. Required capabilities include serialized container and individual product tracking, built-in barcode printing and scanning, RFID, Direct Part Marking, and detailed container-to-container tracking both upstream and downstream through production to shipment. Software must also include key modules, such as non-conformance/corrective and preventative action, statistical process control, and more.

Traceability is one of Plex Online's primary strengths. The system provides the most effective traceability system on the market today. Because full and detailed traceability is built into its inventory system, it is simple to use and highly effective.

Plex Online provides an advanced inventory traceability module that automatically tracks the complete genealogy of all inventory containers, providing both an upstream and downstream tracking. For example, at frozen-entrée manufacturer Cuisine Solutions, employees can use Plex Online to trace product data right down

to the case number with just a few mouse clicks. Before the company launched this system, employees could trace data only down to the lot number and would have to use cumbersome manual processes to “drill down” to the case whenever they needed detailed information.

Plex Online provides detailed container-to-container traceability both upstream and downstream from any point in the process and/or shipped parts – far beyond the “one-forward, one-back” traceability mandated by federal law and touted by other software solutions. Plex Online also provides histories of every single receipt, production step, movement, inspection, rejection/sorting and shipment – even identifying the individuals who operated the machinery at each step of processing.

“Implementing a comprehensive ERP system will also link food processors’ systems and data across all of their departments.”

Hundreds of manufacturers in quality-driven industries use Plex Online manufacturing ERP software. Plex Online’s unique traceability capabilities dramatically reduce production and quality control costs, often by double-digit percentages.

Implementing a comprehensive manufacturing system will not only allow food and beverage processors to meet current and future traceability requirements, but also seamlessly link systems and data across all of their departments—streamlining operations, maximizing productivity, and increasing their profitability.

About Plex Online

Plex Online, built on a “Software as a Service” (SaaS) model, offers more than 350 functional modules, providing manufacturers instant access to vital information and management functions using a simple Web browser. The on-demand solution features product lifecycle management (PLM) functions such as program and change management, enterprise resource planning (ERP) functions such as accounting and finance modules, customer relationship management (CRM) features such as order entry and tracking, manufacturing execution systems (MES) functions such as production scheduling and machine integration and supply chain management (SCM) functions such as supplier quality and traceability.

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