Total Recall

The Need for Real-Time Track & Trace in Food Processing

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Introduction

Food traceability is the process of tracking a product's history and sharing that data along the entire processing path – so called 'farm-to-fork' or 'field-to-plate' programs.

While traceability has always been important for the food and beverage industry, in recent years the need for 'real time recalls' has increased, due to plant processing errors, recalls from Food Standards Australia New Zealand (FSANZ) and even the threat of bioterrorism [1].

The most frequent reason for FSANZ recalls, over the last 10 years, is microbial contamination – the most common of which are Listeria Monocytogenes, Salmonella and E.coli [2], all of which can cause serious illness and, in extreme cases, can prove fatal.

Contamination of food can happen at any point during production (growing, harvesting, processing, storing or shipping) and cross-contamination, where harmful organisms are transferred from one surface to another, is often the cause [3].

"The Australian Egg Corporation recalled 380 million eggs due to Salmonella contamination, which led to nearly 2000 cases of illness."

The true cost of a recall

When recalls occur, the costs can be severe, both to a company's finances and its reputation.

In 2012, a peanut-related Salmonella outbreak at a manufacturing plant in the US state of Georgia led to the recall of 3,900 products involving over 70 companies. Reputational damage resulted from over 90 reported illnesses across 19 different states, and a national news story; the economic impact was estimated to exceed $1 billion USD. [4]

Closer to home, in 2010, the Australian Egg Corporation (AECL) recalled 380 million eggs due to Salmonella contamination, which led to nearly 2000 cases of illness.

On this occasion, the Australian Government's 'track and trace' system came under fire when it emerged that there was a delay of over 2 weeks between the recall being actioned and consumers being warned.[5]

This case highlights the shortcomings in information sharing between government, processors, and suppliers; as well as the need for interlinked databases and standardised software. It also highlights the large movements of product and high volumes of data that food processors deal with. Anything that can assist in accurate and easy information gathering will save time and money.

The Solution

Real-time track and trace solutions, such as RFID, can ensure that a product is accurately tracked at every stage of the supply chain and data is reliably and accurately gathered.

Consider the production cycle of the humble egg. A feed company produces chicken feed in bulk packs. These must be tracked because contaminated feed can cause mycotoxin poisoning. A bar code reader can scan each bar coded bulk pack as it leaves the feed company, and hand held bar code readers at the farm can record which packs are opened and distributed to which broods of chickens.

Freshly laid eggs are then deposited onto trays that are RF tagged, and RFID readers record the trays as they leave the laying house and move to processing where to be sorted and washed.

A camera based vision system providing accurate 3D information allows eggs to be sorted by size and inspected for defects. Once washed, camera systems can also check for damage and cleanliness and this recorded information can be stored and accessed at a later stage.

Eggs are then packed into cartons which can be bar coded by size. This information is stored and can be used for storage and consolidation in bulk pallets. If egg cartons of different sizes are fitted with RFID tags, then there is no need to actually record individual cartons prior to consolidation. Multiple RF tags placed anywhere within the consolidated shipment can all be read at once, and the information contained on each can be recorded.

> "Real-time track and trace solutions ensure that products are tracked at every stage of the supply chain."

After consolidation, the processor wraps each pallet and adds a bar coded shipping label, which is again scanned and the information transmitted to a database.

Once shipped to a warehouse, bar code readers automatically read and track the pallets through the supply chain and, when they turn up to the local supermarket, each individual egg carton is scanned and recorded. Finally, a bar code scanner records the eggs as they pass the check out.

At every step of the process, the status of a product can be detected and that information passed to databases for storage and analysis.

[1] Electronic Product Tracking & Traceability within the Food & Beverage Industry- 2010, Food Technical Consulting and Food & Restaurant Solutions International LLC, Darrel R Suderman, Ph.D.
[2] Food recall statistics, FSANZ, 2002 – 2011
[3] Food Poisoning – the basics, Mayo Foundation for Medical Education and Research, 2010
[4] The High Cost of Product Recall, Craig Gunther- Vigilistics, 2012

[5] Food Safety: The Next Generation of Track and Trace, Food Processing Magazine, 09/07/2010

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