



Avoiding Recalls Due to Packaging & Labelling Faults

Establishing Reliable QA Processes



Executive summary

Between 2003 and 2012, the independent statutory agency [Food Standards Australia New Zealand](#) (FSANZ) co-ordinated 658 food recalls. Of those, one-third (34%) was due to incorrect labelling, including undeclared allergens.

The cost to manufacturers varies — depending on the scale, stage at which the food is recalled and any fines or penalties incurred. However, on top of the monetary loss, are other opportunity costs such as loss of sales and goodwill, along with brand damage.

Food recalls are an unnecessary waste, and can be easily reduced to achieve better efficiencies and profitability by establishing robust, reliable and objective quality assurance (QA) processes with well-designed, in-line machine vision-inspection systems.

This application paper explores the type and cost of recalls in Australia and how they can be avoided by establishing automated QA processes. Vision technology checks for many of the issues that lead to recall. It cost-effectively ensures your products are fit for purpose and shelf-ready when leaving your facility, and eliminates any potential for mistakes.

Contents

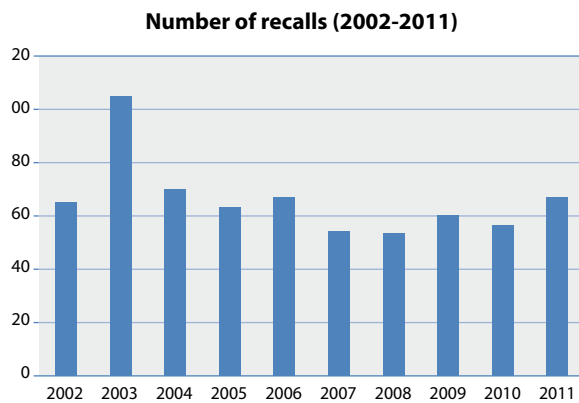
Executive summary	2
Who oversees food recalls?	3
Food recall statistics	3
A few examples	4
Labelling and undeclared allergen recalls	4
How much do recalls cost?	5
So what can be done to avoid recalls due to packaging faults? ..	5
What is machine vision?	5
Minimising the risk of recalls	6
Implementing vision systems	6
Summary	6
About Matthews Australasia	7
About iQVision	7

Who oversees food recalls?

In Australia, [Food Standards Australia New Zealand](#) (FSANZ) is the independent statutory agency established by the *Food Standards Australia New Zealand Act 1991*.

FSANZ develops standards to cover the food industry in Australia and New Zealand, including the Australia New Zealand Food Standards Code, which:

- regulates the use of ingredients, processing aids, colourings, additives, vitamins and minerals
- covers the composition of some foods (such as dairy, meat and beverages) as well as standards developed by new technologies (including genetically modified foods).
- is responsible for [labelling](#) for both packaged and unpackaged food, including specific mandatory warnings and advisory labels



Recall reason	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total
Microbial contamination	30	35	20	20	22	24	17	32	16	13	229
Labelling/Undeclared allergen	10	47	35	20	22	13	13	18	15	25	218
Foreign matter	7	13	9	10	17	14	15	7	10	18	120
Chemical/contaminant	10	8	0	7	4	3	5	2	10	3	52
Other	5	1	4	4	2	1	3	0	3	8	31
Biotoxin	3	1	1	2	0	0	1	1	2	0	11
Tampering	0	0	1	1	0	0	0	0	0	0	2
Total	65	105	70	64	67	55	54	60	56	67	663

Food recall statistics

Product recalls are common in the food, grocery and liquor industry in Australia, with the reasons ranging from contamination to packaging faults.

FSANZ has been collecting [statistics](#) on Australian food recalls since 1990, including the cause of all recalls and their domestic or overseas origins.

It classifies food recalls under these categories:

- microbial
- labelling
- undeclared allergens (since 2011)
- packaging fault
- foreign matter
- chemical/contaminant
- biotoxin
- tampering
- “other”

Of the 658 recalls FSANZ co-ordinated from 1 January 2003 until 31 December 2012, 213 (32%) were due to microbial contamination and 225 (34%) were due to labelling issues — including undeclared allergens.

Recall numbers were generally constant in that decade — between 51 and 70 per year. That is except for 2003, when recall numbers spiked because of new labelling requirements coming into effect in 2002 — including the mandatory labelling of allergens.

A few examples

It is worthwhile looking at a few examples of food recalls, to gauge their costs and magnitude — and to note it could happen to any organisation — big or small.

Woolworths Cookies with Mars 4-Pack were **recalled** in March 2012 due to a packaging fault. The Snickers-flavoured cookies were incorrectly labelled as Mars flavoured, resulting in undeclared allergen (peanuts). In another similar incident, cupcake mixes sold in Woolworths, Safeway, Food For Less and Flemings Supermarkets nationally were recalled due to a label-application error that also resulted in undeclared allergens (milk and tree nuts). (See [press ad](#) for product recall.)

In the liquor industry, McWilliams Wine Group **recalled** Assorted McWilliams Wines in May 2012, as the flagon mouth on some bottles was damaged, which could cause injury to consumers and contaminate the product with glass.

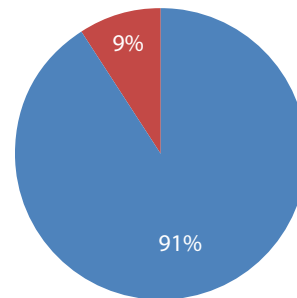
And when a production error resulted in Hummus Dip being labelled as Spicy Capsicum Dip, Coles Supermarkets had to recall Coles Deli 200g Spicy Capsicum Dip due to undeclared allergens (sesame and tree nuts) in February 2012. (See [press ad](#) for product recall.)

The common element in all the above recalls is that the packaging faults and errors could have been avoided saving these manufacturers time and money.

Labelling and undeclared allergen recalls

At 34%, labelling and undeclared allergens is the most common reason for food recalls in Australia — totalling 225 recalls between January 2003 and December 2012. While the spike in recalls followed new labelling laws being introduced in 2002, the number of recalls for labelling and undeclared allergens has remained fairly constant since. This only just pips microbial contaminations at a total 213 (32%).

Undeclared allergens alone account for approximately 91% (206 recalls) of all labelling-related recalls between 2003–2013, and FSANZ now categorises undeclared allergen recalls separately to get a more accurate picture.



■ Undeclared allergens
■ Incorrect labelling

If we look at the [data](#) on the number of recalls coordinated by FSANZ, between 1 January 2003 and 31 December 2012, clearly labelling is an issue.



How much do recalls cost?

The **cost** of food recalls varies, depending on the scale of recall (*i.e.* the geographical spread and amount of stock involved), the stage at which it is recalled (*i.e.* retailer or end consumer) and the fines and penalties incurred.

All food recalls are different, and their costs vary significantly; however, some general costs occur in most cases. The five main costs a business incurs are:

- newspaper advertisements (the FSANZ minimum size recall advertisement is two columns wide x 12 cm tall: for a single state or territory, costs range from \$500-\$1,000; a business placing multiple-product recall ads in multiple newspapers nationwide could spend \$50,000+)
- stock value
- stock recovery (in person or nationwide)
- additional company testing (if required)
- stock destruction (whether it's normal trade waste, deep burial, store-level destruction e.g.: opening packets and pouring contents down drain, or incineration)

It cost a major retailer conducting national recall of 17,680 cartons of frozen processed chicken more than \$250,000. The stock was valued at close to \$75,000, while recovering the stock cost them nearly \$120,000. And then there were other costs.

Another national retailer conducting recall of fruit cake in Victoria, New South Wales, Queensland and Western Australia had to bear a total cost of \$53,737 for the recall, while a small retailer conducting a recall of processed meat in Queensland only incurred \$183.

These costs are indicative (sourced from recalls conducted in 2003) and do not include all the other opportunity costs such as loss of sales, loss of goodwill and other possible costs in fines and penalties that may be incurred.

While most recalls are limited to business-to-business relationships, with manufacturers and wholesalers communicating with retail distributors, on occasion the product being recalled may impact on a complex range of products and services. Such circumstances may include recalling ingredients or additives used widely across the food industry. The process of initiating a product recall between the trading partners has become more efficient with tools such as [GS1 Recallnet](#).

So what can be done to avoid recalls due to packaging faults?

Recalls are an unnecessary waste in the system and should be eliminated as far as possible to achieve better efficiencies and profitability by establishing robust, reliable, objective QA processes.

Well-designed machine vision inspections installed on the packaging line can check for many of the issues that lead to recalls, making sure the product that leaves your facility is shelf ready.

Vision systems, when combined with the right software, provide intelligent image recognition — offering the high-level, automated QA a business needs during the production and packing process. This continuously evolving technology cost-effectively ensures your products are fit for purpose, eliminating any potential for mistakes.

Some of the common applications that machine vision systems can inspect are:

- matching two or more labels on a product
- matching labels to other product features, such as cap colour and product orientation
- confirming the latest and correct version of pre-printed labels, including allergen declarations
- matching selected product to packaging
- matching individual product bar codes to shipper cartons
- identifying labels based on embedded 2D codes

What is machine vision?

“Machine vision” or “machine vision inspection” uses camera and computer technologies to provide imaging-based automatic inspection, process control and robot guidance in manufacturing and industrial applications. This technology can deliver five key benefits to food and grocery manufacturers:

1. Automating quality control establishes a reliable system that delivers time and again. It also provides the ability to ensure quality based on specific parameters.
2. Quality data is collected every time a product passes through for inspection. Every product is monitored, and the information sent into production-management systems for process control.
3. These systems make it possible to demonstrate that reliable QA processes are in place to satisfy your customers.
4. Improving and optimising throughput, by providing the data that allows managers to react to upstream issues faster. It can also empower operators to fix issues to improve overall quality.
5. Cost savings in reducing waste and manual efforts.

Minimising the risk of recalls

Companies can spend a great deal of time, energy and money checking products manually; but vision systems allow for appearance, character and defect inspections to be undertaken automatically — without the need for human intervention. Using a vision system means technological devices can undertake most of the work when it comes to QA, allowing you to reduce your overheads in terms of staffing, as well as decreasing the eventuality of an unfit or faulty product leaving your doors.

It is possible to implement vision systems in a range of different environments, to take on a number of tasks from quality control to quality assurance and even process control. Vision systems are capable of inspecting, identifying, counting and measuring products across many different sectors — from food processing right through to pharmaceuticals and beyond.

Businesses gain a range of benefits when utilising a vision-inspection solution. Systems can be programmed to perform tasks, including checking labels, barcodes, caps, bottle rims, product formation, use-by dates, tamper seals, lids, label matches, and product orientation for food and grocery applications. A vision system can inform you of a problem immediately — meaning it can still be rectified before the product is shipped.

Vision systems can now be incorporated into other production-line technology, so your automated solutions work as one. Any faulty products can be redirected to be properly and correctly labelled, or rejected if the error cannot be rectified. For businesses, this level of quality control is invaluable, as it prevents costly recalls for products that are not shelf-ready and yet still shipped.

This technology can also be used for process control to sort products based on their specific markings, and inspect them, ensuring the packaging contains the contents it should contain — and at the correct levels.

In essence, vision systems are the ideal solution for businesses looking to implement the highest level of QA at every step of the production line.

Vision systems also have a short pay-back period. In addition, this technology is constantly becoming more cost effective, user friendly and manageable by operators on the line.

References:

<http://www.foodstandards.gov.au/consumerinformation/foodrecalls/>
<http://www.recalls.gov.au/content/index.phtml/itemId/1011475>
<http://www.recalls.gov.au/content/index.phtml/itemId/1010627>
<http://www.recalls.gov.au/content/item.phtml?itemId=1011366&nodeId=e09a8afa2514c234847af8ef7a204a42&fn=Woolworths-Duncan%20Hines-Press%20Advertisement.pdf>
<http://www.recalls.gov.au/content/index.phtml/itemId/1012764>
<http://www.recalls.gov.au/content/item.phtml?itemId=1010627&nod>

Implementing vision systems

Machine vision-inspection solutions begin with basic ones, that are economical and will check for code presence, right through to high-end solutions that can be programmed and configured to inspect a wide variety of quality measures, as discussed in the applications section.

Now that we have established how critical vision-inspection systems can be to ensure finished product quality, it is also important to choose the right solution for your production line. You can do your due diligence by following these simple steps:

1. Begin with establishing the quality criteria that you would like to apply; ascertain which of these can be automated using vision systems. An experienced systems integrator or vision solutions provider can help with this process and can add value to the discussion.
2. Determine the product range, and what are the natural variations in product dimensions.
3. The next step is to determine the type of hardware systems needed to meet the application needs. It is valuable to determine what the system can, and cannot, do.
4. Make sure that the solution is trialled, not in a test environment, but on your production floor, to ensure that the solution will deliver with the real conditions in your facility (lighting, line speeds, and so on).
5. Use the data from the inspection systems to improve your upstream processes so that the reject quantities are low.

Summary

With the changing competitive environment, automating quality to deliver the highest quality product can be a competitive advantage. There is also a thrust from the major food & grocery retailers in Australia to embrace this technology to enhance product quality and reduce the risk of errors to reduce waste in the supply chain.

Vision is by no means a “magic bullet”, but it can definitely improve your processes and reduce the risk of recalls due to packaging faults.

<http://www.foodstandards.gov.au/consumerinformation/foodrecalls/foodrecallstatistics/>
<http://www.ozfoodnet.gov.au/internet/ozfoodnet/publishing.nsf/Content/annual-cost-foodborne-illness.htm~annual-cost-foodborne-illness-07.htm~annual-cost-foodborne-illness-07.4.htm>
<https://recallnet.gs1au.org/>
<http://www.afgc.org.au/tools-guides/-/recall-withdrawal-form.html>

About Matthews Australasia

Matthews Australasia, a family business, is Australia's leading provider of intelligent product identification and product-traceability solutions, offering inkjet, thermal transfer, laser, label applicators, label print and apply systems, RFID, barcode-scanning solutions and machine vision inspection. All these solutions can be integrated with Australia's first identification networking and reporting software, iDSnet, winner of 2011 APPMA Design Award.

Solutions-focused, Matthews helps customers with business efficiencies and cost savings by providing production intelligence and increased automation.

Matthews' unmatched solution capability is backed by 24x7 technical support and customer service to support all installations across the country to give you peace of mind. Streamlining ensures less downtime for customers and Matthews' first-time fix rate is 97%.

No matter what your coding, labelling or data capture application, Matthews is the only company in Australia that can provide you with a complete range of end-to-end intelligent identification solutions.

To find out more about how Matthews can be of service to you, call 1300 CODING (1300 263 464), visit www.matthews.com.au or email info@matthews.com.au.



About iQVision

iQVision, a Matthews-affiliated company, is Australia's first dedicated national vision-inspection solutions company.

The company brings together Australian Machine Vision's (AMV) extensive experience with vision solutions, and [Matthews Australasia's](#) systems-integration capabilities and [project-management competence](#).

It provides reliable, robust machine vision-inspection solutions to Australian manufacturing industries, implementing objective quality assurance and enhancing process control.

Machine vision ensures that products meet a manufacturer's quality standards. Vision inspection reduces rework and wastage, making the packaging process leaner and more reliable, hence optimises profits for manufacturers.

It provides the peace of mind that products will meet an end customer's expectations, including being functional and "shelf ready".

To find out more about how iQVision can be of service to you, call 1300 478 474, visit www.iqvision.com.au or email info@iqvision.com.au.

