

# FIGHTING THE FAKES

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Protecting the integrity of brands, supply chains and products is high on the international agenda. IAN LANCASTER of the International Authentication Association explores the need for producers to demonstrate the authenticity of their products and explains how technology and policy are playing a key role.

**P**rotecting the authenticity and traceability of our food and drink has never been more important. Concern for the origin of our consumables is not new, of course, but in today's mass consumer market the need for vigilance is greater than ever before. The consequences of failing to take action can be severe – both from an economic perspective as well as a social and safety one.

With goods and products moving so quickly around the world and supply chains growing ever longer, the opportunity for fraud is increasing. Counterfeiting is big business – a €64 billion global industry – and today's brands and specialist products are providing fertile conditions for counterfeiters.

The food and drink industry is just one of the many targeted worldwide and recent estimates are that it costs the sector around €4 million every year. The latest Organisation of Economic Co-operation and Development (OECD) report published in 2008 reveals a 250 percent increase in seizures of counterfeit food and drink between 2003 and 2005.

The problems this creates are wide ranging – and include not just counterfeiting, adulteration and dilution, but also mislabelling and passing off lookalikes as 'added value' foods and drinks. Luxury and organic products carry a premium and are ideal targets for counterfeiters. So too do products produced in a particular region such as cheeses, wines and Parma Ham, which have latterly fallen under the European Commission's Protected Designation of Origin scheme.

Some of the most 'faked' products, according to a 2007 report from the OECD, are fruit such as kiwis, conserved vegetables, milk powder, butter, ghee, baby food, instant

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## MESSAGE IN A BOTTLE

With annual exports in excess of UK£2 billion, Scotch Whisky is one of the UK's leading exports and supports thousands of jobs across the economy. One of the main goals of the Scotch Whisky Association (SWA) is to protect scotch whisky from unfair competition and this includes the use of misleading names associated with Scotland.

This year the SWA engaged in a lengthy court battle to protect consumers from imitation scotch whiskies in Italy. In the late 1980s a number of whiskies were found on sale in major Italian retailers purporting to be Scottish and using names such as 'MacQueen', 'Clan 55' and 'Sullivan'. All the imitation whiskies were discovered to be supplied by an individual operating under several trade names.

A spokesman for the SWA said: "This has been a long battle to protect Italian consumers and scotch whisky distillers from imitation products unfairly trading on Scotch Whisky's reputation. Such practices left unchecked would undermine consumer confidence and the integrity of scotch whisky. Our top priority must be to protect scotch whisky from all forms of

unfair competition and we are delighted at the successful outcome of this lengthy action in Italy."

In 2004, Diageo, one of the world's leading premium drinks businesses, took important steps to protect its reputation with the launch of the whisky industry's first ever miniaturised spectroscopic portable testing kit designed to crack down on fake whisky. Diageo, whose brands include Bells, Benmore and Buchanan's, teamed up with UK based Spectroscopic & Analytical Developments Ltd, a company specialising in the design and manufacture of non-standard analytical instruments.

With the six leading whisky and spirit producers losing an estimated UK£500m per annum through counterfeit crime and approximately six percent of all whisky sold adulterated in some way, Diageo hoped that the kits will ultimately be used across the whole industry.

The equipment, aptly named the Authenticator, allows authenticity testing, which was previously only possible under lab conditions and took up to two weeks, to be transformed into a screening process lasting less than one minute.

# Kellogg's

## FAKE FLAKES

Kellogg's recently announced that it has developed a hi-tech method to stamp out imitation cereals – by branding Corn Flakes with the company logo. The new technology enables the firm, which makes 67 million boxes of Corn Flakes every year, to burn the famous signature onto individual flakes using lasers.

Kellogg's plan is to produce a number of one-off trial batches of the branded flakes to test the system and bosses will then consider inserting a proportion of branded flakes into each box to guarantee the cereal's origins and protect against imitation products.

The laser uses a concentrated beam of light which focuses the energy within the beam, down to a very small spot on the Corn Flake. Mirror galvanometers are then used to steer the beam creating multiple vectors that reflect the laser from different angles and ultimately make up the image. The energy density within the laser spot diameter is sufficient enough to give the surface of the flake a darker, toasted appearance without changing the taste.

If the system is successful it could be used on Kellogg's other brands including Frosties, Special K, Crunchy Nut and Bran Flakes.

Kellogg's embarked on the project to reinforce that they don't make cereals for any other companies and to fire a shot across the bows of makers of 'fake flakes'.

Helen Lyons, lead food technologist at the company, said: In recent years there has been an increase in the number of own brands trying to capitalise on the popularity of Kellogg's corn flakes. We want shoppers to be under absolutely no illusion that Kellogg's does not make cereal for anyone else.

"We're constantly looking at new ways to reaffirm this and giving our golden flakes of corn an official stamp of approval could be the answer. We've established that it is possible to apply a logo or image onto food, now we need to see if there is a way of repeating it on large quantities of our cereal. We're looking into it."

coffee, alcohol, drinks, confectionary and hi-breed corn seed. Alcohol products are the prime targets for counterfeiters in the drinks sector, both because of their brand value and the high tax and excise component of the final price. Indeed the EU Liquor Association estimates a quarter of all spirits sold in the EU are now counterfeit (2008).

Besides defrauding producers and consumers, passing off inferior versions also raises the spectre of contamination, spoilage and out-

of-date products. The implications of which can be serious to both consumer health and producer reputation and liability. Recent cases of adulterated baby milk in China indicate that the problem is more than just one of neglect.

Indeed food scares involving the recall of spinach, peanuts and sprouts (E.Coli, Salmonella and Listeria respectively) was one of the catalysts for the new Food Safety Enforcement Act of 2009, which is currently being driven through Congress at lightning pace in the US.

In such conditions, there is huge value to be gained in authenticating and tracing products – particularly luxury, organic, and premium foods – through the supply chain. As prices rise, the trade in counterfeit goods and the problems it brings are likely to increase. Producers must get to grips with these problems by maintaining their brand protection efforts.

Food and drink producers able to do this can drive revenues and reduce costs by differentiating their products. They can also gain easier market access via regulatory compliance schemes. The capacity to share information through the supply chain is also boosted, creating operational efficiencies. The consumer too is happy in the knowledge that the product is authenticated – a win-win situation.

Historically, the challenge for the industry in tackling these problems has been twofold: inertia and cost. Significantly, these are now barriers that are being eroded and momentum must be maintained.

The development and accessibility of more sophisticated technology, particularly digital technology that allows data to be shared, is playing a major role. All French wines travelling outside the country, for example, are now traceable by labels and engravings on bottles to determine the authenticity of the product. Similarly, in Southern Italy, milk and mozzarella cheese produced by local cows is checked using the latest spectroscopic techniques to test it matches information stored in a database and comes from the area it claims.

In the UK, the Food Standards Agency (FSA) employs DNA methods to identify a wide range of products from fish species and basmati rice to wheat pasta and exotic and common meat species. And in America, where the US food industry is now a one trillion-dollar business, new track and trace systems for fruit and other produce are being successfully pioneered to create a direct link between the consumer and grower.

Food and drink producers are increasingly turning to a wide range of technologies like this in their efforts to combat the problem. One of the latest tools are innovative edible tags which add to the proliferation of

### Percentage of food and beverage articles detained in Europe in 2008 by provenance

Indonesia	50.51%
UAE	25.86%
Turkey	5.75%
Morocco	2.79%
Lebanon	2.06%
USA	1.93%
China	1.72%
Russia	1.65%
Others	7.73%

## PROTECTING YOUR PRODUCE

devices already used to authenticate and trace products and place another layer of protection at the disposal of the brand owner.

Devices are often multi-layered for extra security, relying on a combination of sensory and digital technologies. Sensory technologies rely on one of the five human senses and include holograms, inks and reflective coatings. In the latter camp are track and trace systems, serialisation options as well as barcodes and RFID devices.

But technology alone is not enough. The problem also needs to be addressed at policy level, where technical advances are increasingly being supported by international initiatives. Within Europe, the situation of food authenticity is currently being addressed by TRACE, a five-year, EU-sponsored project intended to provide consumers with added confidence in the authenticity of European food through complete traceability along entire 'farm to fork' food chains.

Launched in 2005, TRACE is targeted at sectors and foodstuffs that command a premium on the basis of where they come from. Mineral water, for example, commands a premium price and is a lucrative market, yet there is little to prevent counterfeiters simply bottling tap water and passing it off. Whereas previous efforts have focused largely on the logistical traceability of foods through the distribution chain, TRACE is exploring the use of new technology to determine the authenticity of products.

Efforts are also being stepped up in the UK as well. Last November, the Food Standards Agency set up a new hotline to allow individuals and businesses to report fraudulent activity in food sales and marketing in a much quicker and easier way than previously.

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The Food Safety Enforcement Act is one of a number of initiatives underway in America and follows the development of the Produce Traceability Initiative Action Plan in October 2008 by a group of influential food merchants and retailers who saw the benefits of self-regulation. They have proposed that by 2010 all cases of produce should bear a label indicating the source of the product in a way that allows them to be tracked through the distribution chain. Six billion cases are currently moved each year with no tracking information, not even a barcode.

The combination of new technology, with concerted policy action like this – involving multiple agencies and governments – will ultimately make a major difference to producers worldwide, helping them to protect the integrity and authenticity of their products far more effectively. The cost – both in time and money – of implementing food traceability remains significant, but it is coming down and simply doing nothing is not an option. Failure to take collective action to protect brands will ultimately be more expensive for producers, the industry and society in the long run. ■

Food processors use a variety of techniques and technologies to enhance the security of their products. Security is essential not just in terms of keeping food unspoiled and safe to eat but also in preventing consumer tampering, bio-terrorism and product counterfeiting. With threats to brand integrity growing, devices are often multi-layered and used in conjunction with other features to enhance the level of security. This means that the top level is often visible to the consumer, while a lower layer contains a means of examination not apparent to a brand pirate.

The food industry is increasingly adopting a multi-layered and sophisticated approach, with products incorporating a range of protective measures from packaging devices to the latest track and trace systems. This often sees sensory technologies – that rely on one of the human senses – combined with digital technologies such as track and trace, RFID and bar codes.

Among the many technologies employed are:

### **Overt devices**

These are generally used in packaging and include holograms, colour change inks, iridescent films and reflective materials. They are visible to the human eye and can be seen by a trained eye or, on occasions, by the consumer.

Other overt devices include a code or tamper evident seal. Tamper evident seals aim to provide protection against malicious tampering or at least evidence of an attempt. They typically show visible signs of meddling such as a revealed message or broken seal.

### **Hidden devices**

These are also used in food packaging. They remain hidden to the human eye and are only shown through the use of a handheld inspection tool, such as a UV light, magnifying glass or overlay. They include invisible and ultra-violet inks, micro-text, scrambled images and holograms.

### **Covert devices**

These add to the level of sophistication to packaging. Devices in this category include chemical taggants, electronic identifiers, DNA, magnetic labels and embedded codes. These can only be identified with a sophisticated detection tool kit.

Increasingly, the industry is looking at using digital technologies such as track and trace systems to monitor products through the supply chain. These systems often rely on alphanumeric coding linked to a digital database. A digital check can then be made on the status of an item.