

Preventing allergen cross-contamination in foodstuffs

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The presence of allergens in food can trigger a serious and sometimes life-threatening allergic reaction in some people. 1-2% of adults and 5-8% of children are now believed to have a genuine food allergy.

According to The House of Lords Science and Technology Committee, the number of individuals diagnosed with peanut allergy increased by 117% between 2001 and 2005.

Controlling allergens is, therefore, a serious matter for ingredients suppliers, food manufacturers and retailers worldwide. It is imperative that food containing specific allergens is clearly labelled, and that food which should not contain such allergens is not contaminated.

Major food companies, retailers and organisations such as the UK Food Standards Agency (FSA) have guidelines to help with the control of allergens in the food supply chain. In the latest issue of its Global Standard for Food Safety, the British Retail Consortium (BRC) has strengthened the coverage related to allergens (Chapter 5.2) from guidance to requirements – one of the changes which has prompted enquiries and requests for technical support from Campden BRI.

In EU legislation, there are 14 foodstuffs that must be labelled on food and drink packages if they have been deliberately included as an ingredient or are contained as part of a compound ingredient that is deliberately added to a food.

This requirement extends to all products and derivatives of these ingredients, with a few specific exceptions. From 2014 in Europe, information will also be required to be provided to consumers for foods sold loose and in catering situations.

The requirement is to make the presence of the material or ingredient clearly known. These are:

- Cereals containing gluten.
- Crustaceans.
- Eggs.
- Fish.
- Peanuts.
- Soybeans.

- Milk and products thereof (including lactose).
- Nuts, i.e. almonds, hazelnuts, walnuts, cashews, pecan nuts, Brazil nuts, pistachio nuts, macadamia nuts and Queensland nuts.
- Celery.
- Mustard.
- Sesame seeds.
- Sulphur dioxide and sulphites at concentrations of more than 10mg/kg or 10mg/l expressed as SO₂.
- Lupin.
- Molluscs.

Situations when allergenic foods are unintentionally present due to cross contamination are not covered by this legislation; however, both civil and criminal legal procedures can apply. So how can contamination with these be managed?

Allergen thresholds

How small an amount of cross-contamination might still cause a problem? There are various initiatives underway to identify 'thresholds' or 'action levels' to help food safety managers make informed decisions as part of allergen management.

To complement this, Campden BRI are working with an industry group on the production of guidance to help companies understand the impact of the introduction of thresholds on allergen management systems.

The document will include a systematic tool to identify sources of allergenic contamination, advice on interpretation of testing results in the context of action levels or thresholds and guidance on making a quantitative risk assessment.

In the meantime, the food industry continues to implement extensive allergen control measures to avoid cross contamination.

Managing allergens

Allergen management involves evaluation of the potential for cross-contamination at every step of the food production process – from sourcing of raw materials to delivery of final product to the consumer.

Following a structured risk analysis of the

potential for allergen contamination, manufacturers can then identify which, if any, of the sources can be eliminated or reduced by changes to the ingredients, product or systems.

This minimisation of risk is a basic principle of food safety and entirely consistent with the guidance issued by the FSA and others and the requirements of the BRC Standard.

Only when these avenues have been exhausted should manufacturers consider resorting to allergen advisory ('may contain') labelling.

Any unavoidable risk of cross-contamination should be addressed through a rigorous allergen management system, which would involve having in place effective prerequisite programmes, a fully implemented Hazard Analysis and Critical Control Point (HACCP) system, Good Manufacturing Practice (GMP) and an effective quality management system.

Allergen management controls need to be as comprehensive as possible and may include practical measures such as:

- Supplier questionnaires to check the allergenic status of ingredients.
- Dedicated storage areas for allergenic ingredients.
- Physical segregation of ingredients and products within the production area.
- Scheduling of production runs (including appropriate cleaning between runs).
- Checking that products have the correct packaging and allergen labelling.

Where do allergens originate?

Part of Clause 5.2 of the BRC Standard, on the status of ingredients, states: "The company shall carry out an assessment of raw materials to establish the presence and likelihood of contamination with allergens."

One obvious problem with plant-derived allergens is that they are not grown in isolation, and so present a risk of cross-contamination for other raw materials.

For example, almond trees are often grown in the same groves as olives – leading to the potential contamination of olive crops at or immediately after harvest.

Knowing this can help food producers

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sourcing ingredients to consider and manage such potential routes of cross-contamination.

Campden BRI has recently published a report (R&D Report 323) describing the production and use of 14 different plant based allergens and the cross-contamination risk they present to other food materials through co-cultivation or crop rotation.

Testing for allergens

It is not possible to prove the absence of an allergen, nor for testing alone to be used to decide whether or not to declare an allergen on labels.

However, testing does provide supporting evidence that the analysed material does not contain measurable amounts of allergens.

Although this is the best that can be achieved, allergen testing can nevertheless be useful in, for example:

- Cleaning validation – sample types including final products, surface swabs and rinse waters.
- Compliance with labelling regulations and claims.
- Investigation of consumer complaints.
- Development of 'allergen-free' products.
- Confirming the allergen status of raw ingredients.

The type of test to be used depends not

only on the allergen, but also on the question being asked.

Many tests are available – for example, Campden BRI offers tests for crustacea, egg, fish, peanut, soya, milk (casein, beta-lactoglobulin, lactose), various nuts, cereals containing gluten, celery, mustard, sesame, lupin and sulphite.

Selecting and interpreting tests requires skill, knowledge and experience, and the advice of an experienced analyst should be sought where there is any doubt.

Managing changes

When it comes to new product development, it is necessary to consider the allergen implications of new ingredients for both new (for example, labelling) and existing products. This should reflect all markets to which the product is destined – domestic and export.

Similarly, any changes to the manufacturing process within the food production area or the introduction of a new product line can affect the risks of allergen cross contamination of other products.

While best practice allergen management is prevalent in most food businesses, particularly at a processing level, this ethos does not always pervade the entire organisation.

Campden BRI has been called in to crisis manage situations where a remote depart-

ment – ranging from R&D to marketing to purchasing – has embarked on a project or made a decision which compromises otherwise robust allergen management controls.

A seemingly innocuous move, such as an out-of-hours test run of a new product, or a switch to a new supplier, can often undermine the entire approach to allergen management.

Following any change, it is therefore necessary to conduct a new, thorough assessment of the risks of allergen cross contamination of a product, including an evaluation of any advisory labelling that might be necessary.

It is also important that any reformulation of existing products is communicated clearly to consumers who may, unwittingly, consume allergen-containing products where changes have been made to the recipe of a familiar product and potentially allergenic ingredients introduced.

Prominent labelling carrying suitable warnings such as 'now contains' or 'new recipe' can alert consumers to any new risks.

Clearly allergen management is something that requires sustained and often specialist attention.

Investment in a sound management system and the advice of specialists in areas such as allergen testing and legislation is a crucial part of business protection, as is keeping up with the latest developments through training, publications and industry forums. ■

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