Food allergies and intolerance – challenges for manufacturers and caterers

by Jo Paxton, head of product and supplier assurance, NSF-CMi.

On 6th January this year seven year old Ammaria Johnson of Chesterfield County, Virginia, USA, died from what is believed to be an allergic reaction to peanuts at her school.

A recent analysis of such deaths found that 58% were between 13 and 30 years old and 68% had eaten outside home, for example at a restaurant, school cafeteria or the home of friends. Approximately 10 deaths occur in the UK due to food allergy per year and about 150 in the USA.

Challenges ahead

With the incidence of food allergies and food intolerance on the increase, food manufacturers and caterers face a number of challenges in the way they prepare and label food.

Approximately 1-2% of the adult population in the UK and about 5-8% of children have a true food allergy. This equates to about 1.5 million people and it has been suggested that these numbers could continue to grow.

The symptoms of an allergic reaction can vary. Sometimes they can be very serious. Some can have a violent reaction to just a tiny amount of the food allergen causing a life threatening reaction or anaphylaxis.

The symptoms include rashes, swelling of the lips and throat, difficulty in breathing and a rapid fall in blood pressure leading to a loss of consciousness.

Food intolerance is not the same as a food allergy. Food intolerance is not normally life-threatening in the short term. However, if someone eats a food to which they are intolerant it can make them feel ill or affect their long term health.

Food intolerance can be caused by a number of things, such as a defect in how the body processes food.

A number of people avoid gluten, a type of protein found in wheat, rye and barley and oats, and 1 in 100 have coeliac disease – a life-long auto-immune disease caused by gluten intolerance, which damages the lining of the small intestine leading to poor absorption of nutrients and other health consequences.

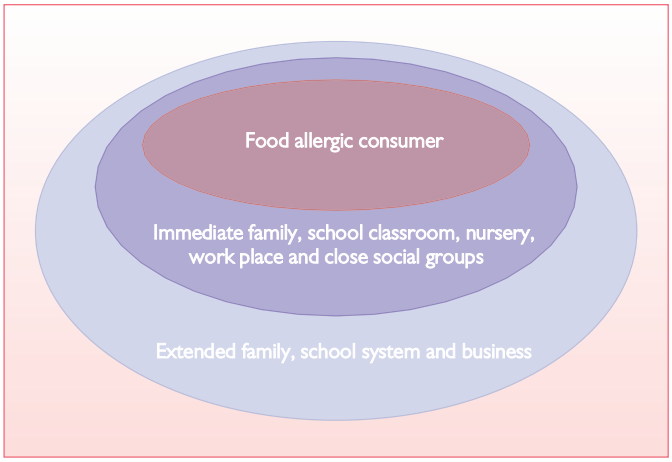
Other consumers may need to avoid other foods such as lactose, the sugar found in milk, because they lack the enzyme that breaks it down.

The University of Surrey has found that allergic individuals use food labels combined with previous experience of eating a product to select or discard it. They buy trusted brand names and from supermarkets making assumptions about a company's policies or the quality of their products.

Many use the ingredients list but most people rely only on the allergy advice box. They did not understand the voluntary nature of the boxes and some incorrectly assumed that no advice box meant the product did not contain allergens.

'May contain' warnings used to indicate possible cross-contamination with a food allergen are thought not to be credible and some ignored them. A few avoided eating these products. Most allergic people felt that to avoid eating all 'may contain' labelled products would result in a very limited diet and was almost impossible.

Fig. 1. It is estimated that one million allergic consumers can impact the purchases of 2.5 million consumers in their immediate family/ social network.



Year	2010	2011	2012 (jan-March)
No. of allergen alerts	35	57	20
Labelling errors (%)[a]	47	35	50
Cross packing (%)[b]	25	20	15
Cross contamination (%)[c]	28	45	35

[a]The ingredients of the finished product do not match those declared on the label
[b]Product packed in incorrect packaging i.e. labelled with another product's label
[c]Product accidentally contaminated during production

Table 1. Allergy alerts per year categorised by type.

Difficulties of dining out

When eating out, the nut allergic individuals often avoided Thai, Chinese and Indian restaurants, and multi component dishes. They tended to avoid or ask before ordering to manage the risk of triggering an allergic reaction.

They generally ask restaurant staff what dishes do or do not contain nuts and ask them to warn the chef they had a nut allergy. For some the need to check was a source of social embarrassment and they often chose not to mention they had a nut allergy leading to increased risk.

The legal labelling requirements of countries around the world vary. In the UK for example there is an extensive list of allergenic ingredients required to be declared by law.

All pre-packed foods (including alcoholic drinks) made using these ingredients or their derivatives must indicate their presence on the label, making a clear reference to the source allergen ingredient.

Declaration must be made for the following ingredients and their relevant derived products: Cereals containing gluten; Crustaceans; Eggs; Fish; Peanuts; Soybeans; Milk; Celery; Mustard; Sesame seeds; Sulphur dioxide and sulphites at above set limits of concentration; Lupin; Tree Nuts; i.e. almonds; hazelnuts; walnuts; cashews; pecan nuts; Brazil nuts; pistachio nuts; macadamia nuts; Queensland nuts (see the full regulation for details and exceptions).

UK Label requirements and analytical thresholds for gluten-free labelling/claims were introduced in January 2012. They are based on European Commission Regulation (EC) No 41/2009. The composition and labelling of foodstuffs suitable for people intolerant to gluten require:

- That the claim 'gluten-free' is only used where the level of gluten is 20mg/kg or less.
- That the claim 'very low gluten' is only used where the level of gluten is 100mg/kg or less.
- Only oats with 20mg/kg of gluten or less can claim to be 'gluten-free' or be used in products with the claims 'gluten-free' or 'very low gluten'.

In 2011 57 allergy alerts were issued by the UK Food Standards Agency, and it is estimated that the cost of recall to a large company can reach £3 million. Allergy alerts

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recorded in the UK so far in 2012 indicate that numbers of recalls are continuing to increase.

Acceptable limits/thresholds for most allergens have not yet been laid down in law consequently manufacturers overuse 'may contain' advice where the slightest/negligible risk is identified.

Allergen Bureau, a working group from the Australian and New Zealand food industry has developed the VITAL (Voluntary Incidental Trace Labelling) toolkit, which contains a set of action levels for cross contamination allergen labelling (See Table 2).

- Action Level 1 – no statement required.
- Action Level 2 – precautionary/ 'may contain' statement required.
- Action Level 3 – allergen present statement required.

Although these limits may be conservative they have also been adopted by numerous companies within the UK.

NSF-CMi Ltd has produced the following guidelines to assist manufacturers achieve effective allergen control by managing risk through the following stages.

Supply chain control

Ensure all suppliers are approved to supply each raw material via questionnaire and/or audit.

Be aware of the presence of any/all allergens in all raw materials, paying particular attention to the potential for cross contamination from manufacturing and handling activities on the supplier's sites as well as during harvesting and transport. Order against clear specifications that require pre-declaration that an ingredient contains allergens either as:

- A major component (for example, textured vegetable protein from soya).
- A minor component (for example, as a food additive or processing aide derived from an allergenic source for example, amylase from wheat).
- Cross contamination from food allergen (for example, chickpea flour from a mill that also mills wheat).

Store allergenic materials in clearly identified areas, for example, colour coded boxes or demarcation of storage areas using painted lines on the floor.

Allergenic raw materials should be handled, unpacked and decanted in a dedicated area, if possible away from other products to prevent cross contamination. Easily identifiable dedicated lidded and labelled containers should be used to store them.

All containers, tools and machines, unless permanently dedicated to one specific allergenic material, should be thoroughly cleaned and tested after use.

Manufacturing premises

To avoid cross-contamination with allergens it is best to dedicate production facilities to specific allergen free products. This is not easy especially in small businesses. In these cases there are a number of ways of separating the production of allergen containing products from those that do not contain the allergen.

These can include separation:

- By using physical barriers between the production lines and dedicated equipment.
- By separating the air supply, where this is practical.
- By minimising movement of materials.
- By appropriate scheduling of production runs, including appropriate cleaning of equipment.
- By not re-working allergenic material into a product not containing the allergen.

The dedication of equipment may include weighing equipment, scoops and utensils and the weighed product must be placed in dedicated, lidded and labelled containers.

Colour coding of equipment may not be practical where several allergens are being handled, or where used already for other purposes.

With dedicated areas or equipment, it is important to manage the movement of equipment, personnel, vehicles and maintenance tools into the areas. Where nut products and nut free products are produced in the same production area it may be possible to dedicate air conditioning/ extraction fan systems to contain nut dust, or positive pressure may be used in nut free rooms to prevent nut traces entering the room on the air.

When scheduling production runs, consider making products not containing the allergenic ingredient first. By planning long runs of allergenic products you minimise changeovers that involve a major clean down.

When labelling of work in progress take care that the product is not mistaken for another product with different or no allergens. Similarly, carefully label and store unused packaging materials.

Very small amounts of some allergens, for example nuts, trigger fatal anaphylactic shock. Therefore, thorough and effective cleaning is essential. A casual visual inspection is not enough.

All potential residue trouble spots must be sought out and inspected. Cleaning practices that are satisfactory for hygiene purposes may not be adequate for removing some allergens.

The method should be assessed and validated using residue swab testing and then the process should be regularly monitored and recorded. Incorrect packaging and/or labelling is a major cause of allergen related product recalls. So establish procedures to check that the correct labels are applied to products and audit regularly.

Introducing a new product or changing an existing product or process can increase the risks of allergen cross-contamination. Before any such changes conduct a new risk assessment for allergen cross contamination including a re-evaluation of any advisory labelling.

All staff (including temporary staff and contractors) involved in handling ingredients, equipment, utensils, packaging and products should be aware of food allergens and the consequences of their ingestion by sensitive individuals.

They should be trained in avoiding cross-contamination of foods by the major food allergens. Appropriate procedures on the management of allergens should also be available and/or posted wherever they need to be observed.

Table 2. Action levels for cross contamination allergen labelling.

	Level 1	Level 2	Level 3
Milk[a]	<5	5-50	>50
Egg[a]	<2	2-20	>20
Soy[ac]	<10	10-100	>100
Fish[a]	<20	20-200	>200
Peanuts[a]	<2	2-20	>20
Tree nuts[a]	<2	2-20	>20
Sesame seed[a]	<2	2-20	>20
Crustacea[a]	<2	2-20	>20
Gluten[b]	<2	20-100	>100

[a]mg/kg (ppm) of total protein
[b]Gluten includes all gluten type proteins as defined in the Food Standards Australia New Zealand, Food Standards Code
[c]The action level for soy is highly conservative

Verification

In January 2012, NSF-CMi Ltd launched its 'Allergen Due Diligence Assessment' (ADDA) designed to provide independent assessment of allergen control procedures implemented and to provide advice relating to industry best practice. The ADDA standard is the first end-to-end review of the whole manufacturing process with on-site risk assessments that focus on the real risks present.

The ADDA assessment will provide a positive benefit to the end consumer by verifying allergen control therefore leading to clearer and more concise labelling for the consumer.

The ADDA standard is based on NSF-CMi's considerable experience of working with and auditing suppliers of retailer and food service clients. Compliance with the ADDA standard will raise product profile and show that manufacturing controls are in place, increase consumer confidence and enhance company reputation.

Guidance for caterers

Food businesses serving the public should undertake the following simple steps to ensure that they prepare and serve safe food to people with food allergies and intolerances, including coeliac disease.

Ensure full ingredients listings/ specifications are available for all items delivered into the business and that full ingredient and 'may contain' information is accessible at all times.

Check when substitute or new ingredients are introduced to the business to see if they contain allergens and be sure the information is distributed.

Ensure all staff can correctly identify all products containing nuts or peanuts, sesame, fish, shellfish, wheat, egg and milk and they are kept up to date. Good hand washing controls should be in place to reduce opportunity for cross contamination. Staff should know how to clean an area/utensils/ equipment ready to prepare food for a person with an allergy.

Ensure food is covered/stored/ labelled correctly and that serving tools for allergenic products are kept separate. Dishwashers should be maintained correctly, serviced and supplied with correct detergent to ensure all food debris is removed.

Ensure online and printed menus and signage is kept up to date and they highlight the presence of key allergens in menu copy for example 'pesto sauce (with walnuts)'.

Encourage customers to highlight their allergy/intolerance and talk about ingredients. Staff taking orders should be aware of how to record customer allergies and intolerances and how to effectively communicate such requirements to kitchen and service staff.

The meals specifically prepared for allergic/intolerant/coeliac sufferers should be clearly labelled to servers.

Training all staff to recognise and respond to an allergic reaction/ anaphylactic shock would also emphasise the importance of their involvement. ■

References are available from the author on request