Food Allergen Fundamentals

Introduction to allergen principles for the food industry

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This presentation gives a general overview of food allergens and provides references to a variety of resources available to assist the food industry with the complex task of managing allergens.

The Allergen Bureau’s role is one of providing information to the food industry and we invite you to view the freely available resources on our website.
Food allergen fundamentals

Overview
- Food allergy and food allergens
- Managing food allergens
- Resources available
- The VITAL® Program
- The Allergen Bureau
The basics of food allergy

This section discusses
~ what is food allergy?
~ foods that can trigger an allergic reaction
~ the relevance of allergy to the food industry
Food allergen

A normally harmless substance that triggers an allergic reaction. Most food allergens are proteins. A food may comprise of one or more allergenic proteins.

For example ~ cow’s milk contains allergenic proteins in the whey fraction and different allergenic proteins in the casein fraction. Individuals may be allergic to only one milk protein or more.
Food allergy

A food allergy is an abnormal response to a food that is triggered by the immune system.

The body produces antibodies against the food allergen protein and when it is eaten by the food allergic individual their body will release histamine and other chemicals causing inflammation.

Trace amounts of an allergen can trigger a reaction.
The allergic reaction

- **Dermal** – skin breaks out in hives or eczema
- **Gastrointestinal** – nausea, cramps, diarrhoea
- **Respiratory** – struggle for air
- **Circulatory** – blood pressure drops, lose consciousness

Anaphylaxis is an acute allergic reaction – in rare cases, multiple organ systems are affected and death can occur in as little as ten minutes
Some symptoms of an allergic reaction to a food

Urticaria

Atopic Dermatitis

Anaphylaxis
Impact of food allergy

~ there is currently no cure

~ sensitivity differs between individuals and depends on type of food, amount ingested and other activities at time of ingestion

~ people with food allergy do not know when their next allergic reaction will occur or how severe it will be

Avoidance of the food is the only protection
Food allergy rates are increasing in Australia and New Zealand

~ rapid increase in food allergic disease in last 30 years in mainly the Western world

~ 80% of children outgrow milk, egg, soy and wheat allergy by age 5

~ individuals allergic to peanuts, tree nuts, sesame or seafood will have this for life

food allergy affects*
~ 10% infants (up to 12 months old)
~ 4-8% children (up to 5 years)
~ 2% adults (approx.)

*ASCIA 2015
www.allergy.org.au
Predominant food allergens

- peanuts
- tree nuts
- soy
- milk
- egg
- fish
- cereals containing gluten
- crustacea
- sesame
- lupin
- mustard
- celery
Foods responsible for causing allergic reactions

90%
Wheat
Peanut
Soy
Milk
Egg
Tree nut
Crustacea
Fish
Sesame

10%
Hundreds of others
The basics of allergen management

This section discusses
~ why is managing allergens important?
~ challenges the food industry faces
~ the allergen management plan
Why should the food industry manage food allergens?

~ protect allergic consumers

~ food safety necessity

~ consumers depend on food that is labelled correctly

~ legal requirement for declaring food allergens

~ costly to have non-compliance, allergen issues with consumers, recalls, withdrawals, re-labelling
-section 1.2.3-4 mandatory declaration of certain foods or substances in food sets out the requirements for declaring the following foods or substances if present in a food.

(a) added sulphites in concentrations of 10 mg/kg or more;
(b) any of the following foods, or products of those foods:
   (i) cereals containing gluten, namely, wheat, rye, barley, oats and spelt and their hybridised strains other than where these substances are present in beer and spirits;
   (ii) crustacea;
   (iii) egg;
   (iv) fish, except for isinglass derived from swim bladders and used as a clarifying agent in beer or wine;
   (v) milk;
   (vi) peanuts;
   (vii) soybeans;
   (viii) sesame seeds;
   (ix) tree nuts, other than coconut from the fruit of the palm Cocos nucifera.
Section 1.2.3-4  Mandatory declaration of certain foods or substances in food sets out further requirements for declaring these foods or substances if present in a food.

A declaration is required when these foods or substances may be present as:

(a) an ingredient or as an ingredient of a compound ingredient; or
(b) a substance used as a food additive, or an ingredient or component of such a substance; or
(c) a substance or food used as a processing aid, or an ingredient or component of such a substance or food.
Confidence in supplier information

Obtaining allergen information from ingredient suppliers should be a key component of your Vendor Assurance program

~ always clarify information from supplier – this exchange will assist in gaining confidence in supplier’s allergen knowledge and handling

~ query anything unusual or unexpected - don’t assume everything is correct

~ keep asking questions until you are satisfied with the response - do not accept data gaps
Allergens can be unintentionally added to a product

~ ingredients can contain cross contact allergens
~ cross contact can occur due to processing

Cross contact allergens are residues or other trace amounts of an allergenic food unintentionally incorporated into another food that is not intended to contain that allergen
Performing an allergen risk assessment of a manufacturing site

- assemble a cross-functional team
- perform a physical audit
- identify cross contact points
- consider the form of the cross contact
- consider the amount of cross contact present
Allergen challenges in the manufacturing environment

- Raw materials
- Processing aids
- Cross contact allergens
- Product development
- Right label right pack
- Allergen declared on label
- Processing environment
- Allergen challenges in the manufacturing environment
- Production staff
- Training and communication
- Human error
- Processing equipment
- Processing design
- Scheduling
- Rework
- Cleaning
Exercising allergen management due diligence includes …

- GMP
- HACCP adapted for allergen control
- Allergen Management Plan
- Eliminating and reducing cross contact allergens
- The VITAL® Program

It is important to identify allergens then manage and control them
Good Manufacturing Practice (GMP) principles are important for allergen control

~ food businesses need to ensure that products meet food safety, quality and legal requirements

~ can be achieved by applying appropriate manufacturing operations controls

~ allergen control can be incorporated into food safety and quality assurance systems
HACCP based food safety program adapted for allergen control

- applying classical tools of HACCP doesn’t fit for allergens and requires adaption

- identify allergen CCPs, develop and implement allergen control plans

- document allergens in HACCP plans

- all allergens requiring mandatory declaration are classified as high risk

- audit and update periodically
What is allergen management?

The sum of policies, procedures and practices which contribute towards controlling allergens in a company.

Allergen management is applicable to all levels and all areas of a company and sets the approach to the control and management of allergens.
An Allergen Management Plan (AMP)

~ is a documented systematic approach towards identifying and controlling allergens in a food plant (from incoming materials to finished product)

~ provides formality when identifying allergen challenges

~ includes processes showing how to manage allergen challenges

~ contributes towards exercising due diligence
AMPs are unique to each site / company

When creating an AMP, each site/company needs to set its own risk level, and design a plan that meets its specific needs.

Considerations may include:

- who is the target market?
- complexity / simplicity of the manufacturing site
- the allergens you have
  - spectrum (which allergens)
  - physical nature (easy or difficult to control)
  - number (none, limited, or several)
Some basics of an allergen management plan

- knowing the allergen status of raw materials
- understanding supplier allergen vulnerabilities
- up-to-date ingredient specifications
- up-to-date vendor assurance program
- allergens covered in HACCP
- measures in place to control, reduce, eliminate the possibility of cross contact
- validated and verified cleaning procedures
Need more information?

This section discusses
~ resources that are available to the food industry
~ where to find the information
~ what the information can be used for
Food Industry Guide to Allergen Management and Labelling

~ this guide provides information about allergen management and the preferred format for declaring allergens on a label

~ available on the AFGC website
AFGC Product Information Form

~ a standardised supplier information form that includes seeking information about allergens (intentionally added; cross contact; total protein levels; the processes the supplier has in place to manage food safety risks)

~ useful tool for assessing ingredient allergen risk

~ seeks information necessary for use in the VITAL® Program

~ available on the AFGC website
Unexpected Allergens in Food

- food allergens can be present in many food ingredients and are not always obvious from their name

- this guide identifies basic food ingredients and food additives that may contain or be derived from an allergen

- useful tool while reviewing ingredient specifications

- available on the Allergen Bureau website
Food Industry Guide to the Voluntary Incidental Trace Allergen Labelling (VITAL®) Program

~ this guide provides information about the VITAL Program and includes a decision tree for declaring allergens

~ useful tool when undertaking allergen risk assessments

~ available on the Allergen Bureau website
VITAL® Best Practice Labelling Guide
(Australia and New Zealand)

~ a VITAL risk assessment using VITAL Online will produce a VITAL labelling outcome

~ this guide provides examples of how to declare food allergens and cross contact allergens using the VITAL labelling outcome

~ available on the Allergen Bureau website
FSANZ food allergen portal

- contains key messages, and links to best practice food allergen resources for the food industry
- useful for accessing further information about allergens
- available on the FSANZ website
Consumer Recalls

- these websites provide both statistical and historical information about allergen related recalls
- useful for assessing risk
- available on the FSANZ (Australian recalls only) and the MPI (New Zealand recalls only) websites
ASCIA e-training

- ASCIA e-training courses provide information about food allergy, its triggers, symptoms and treatment
- useful tool for new staff to become familiar with food allergy
- available on the ASCIA website
VITAL® Training

~ VITAL Training is available through training providers who are endorsed by the Allergen Bureau

~ to obtain a VITAL training certificate you will need to attend the training course

~ a list of endorsed training providers is available on the Allergen Bureau website
Introduction to the VITAL® Program

This section provides a basic introduction to the VITAL Program concepts. To obtain VITAL training, please contact an Allergen Bureau endorsed training provider.
Voluntary Incidental Trace Allergen Labelling

The VITAL® Program is a standardised allergen risk assessment process for food industry

It provides a consistent methodology for food industry to **assess the impact of allergen cross contact** and provide appropriate precautionary allergen labelling on their products

Developed by industry for industry and adopted on a voluntary basis
The VITAL® Program ~ key concepts

**Reference Dose** The total protein from an allergic food below which only the most sensitive individual (between 1 and 5% depending on the quality of the data) in the allergic population are likely to experience an adverse reaction.

**Reference Amount** The maximum amount of a food eaten in a typical eating occasion (never less than the serving size).

**Action Levels** Are the concentrations (of protein) which define the labelling outcomes from a cross contact allergen.
What is the science behind VITAL®?

The VITAL Program determines appropriate precautionary labelling based on risk by using Action Levels that are underpinned by scientific evidence.

The science is recognised internationally and is increasingly referenced by experts throughout the world.

A collaboration of international food allergen experts established the science that underpins VITAL.
VITAL® Online ~ the user-friendly, web-based VITAL Calculator

By entering recipe information including
  ~ intentionally added ingredients
  ~ cross contact allergens due to processing
  ~ Reference Amount
  ~ any assumptions used to obtain these values

the VITAL Program uses scientifically established Reference Dose information in conjunction with individual product’s Reference Amount and provides Action Levels that set out a labelling recommendation
Use VITAL® Online to store, manage and complete VITAL assessments

https://vital.allergenbureau.net/
Allergen labelling using the VITAL® Program

~ consistent approach to assessing cross contact allergen risk
~ clear, consistent and accurate allergen declaration
~ assists consumers in making safer food choices
~ encourages the elimination of cross contact allergens where possible within manufacturing or via material supplier
~ standard precautionary statement is used
VITAL® Precautionary Statement

The ‘May be present: XXX’ statement is the only precautionary statement to be used with VITAL

Only to be used where the VITAL Program has been applied and the allergen has a VITAL labelling outcome at Action Level 2
Example of allergen labelling using VITAL®

Ingredient List

Allergen Summary Statement

The VITAL Precautionary Statement

Water, potato, carrots, celery, brown rice, **oats**, **peanut** oil, yeast extract (**barley**).

Contains cereals containing gluten, peanut.

May be present: wheat.
The Allergen Bureau

This section discusses
~ the Allergen Bureau website
~ how you can support the Allergen Bureau
~ how the Allergen Bureau supports the food industry
The Allergen Bureau website is a reliable source of information for the food industry

~ keep up to date with all the latest news and events
~ learn about the VITAL® Program and find endorsed VITAL Training providers
~ an invaluable repository of food allergen information, including Allergen Bureau conference presentations and archived news

www.allergenbureau.net
How can you support us?

The Allergen Bureau is funded by membership investment from the food industry and is a not-for-profit organisation.

You can support us by:

- becoming a member of the Allergen Bureau
- joining an Allergen Bureau working group
- providing your feedback to the Allergen Bureau
The Allergen Bureau exists to support the food industry by

~ providing a pre-competitive space to share information
~ providing information resources, practical tools and industry contacts for the better management of food allergens
~ helping to save time and money because food allergen issues are addressed in a professional and informed way
The Allergen Bureau helpline

Provides rapid responses to questions concerning the management of food allergen risks in food ingredients and manufactured foods in Australia and New Zealand

Support Line
info@allergenbureau.net

Australia: 0437 918 959
International: +61 437 918 959

see http://allergenbureau.net/contact-us/