Allergens

Assessing risk and mapping your facility

Evaluate and mitigate your allergen risks

Allergen mapping is a part of allergen risk assessment and is an effective tool to identify and track allergens in your facility. An allergen map will provide a visual guide on the location of allergens and the areas and process steps most at risk from allergen cross contamination. This guide provides a suggested approach as well as worksheets that can support you through the processes involved. The process of allergen mapping and risk assessment is also an opportunity to challenge current processes and practices to identify improvements that may provide greater assurance that allergens are effectively controlled in your facility.

Like Hazard Analysis and Critical Control Point (HACCP) food safety risk assessments, the most effective allergen risk assessments are generally completed by a multidisciplinary team made up of knowledgeable technical/quality, production, procurement, innovation (NPD) and maintenance staff. Once the team is assembled, the allergen risk assessment can be applied in a step-by-step methodology. The following process is a suggested method however due to a lack of prescriptive industry methodology, you may modify and adapt to best suit your allergen risk.

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- List all raw materials and the allergen status of each ingredient, processing aid, work-in-process and rework product.
 - The list of raw materials should be cross referenced with the most current product specifications and/or product information forms (PIF) to confirm all declared allergens have been captured.
 - This list should also be verified against actual products stored in the warehouse and the NPD store to confirm "what we think we have, is actually what we have".
 - The form of the allergen is also important as powdered allergens (flour, milk powder, soy isolate, etc) have a greater risk of becoming airborne and spreading to other areas of the facility than particulate allergens (e.g. sesame, tree nuts) which are spread through people movement and cleaning practices.

Raw material allergen matrix

List the ingredients and suppliers you use in the chart below under the appropriate headings and highlight any that fall into the categories across the top of row of the chart. A completed chart is included as an example in Appendix 1 on page 5 of this guide for reference.

Ingredient	Supplier	Peanut	Tree nut	Egg	Milk	Gluten	Soy	Sesame	Fish	Crustacea	SO2 >10mg/kg



Finished product allergen matrix

Step 1: Gather the required information continued...

Ingredient	Supplier	Peanut	Tree nut	Egg	Milk	Gluten	Soy	Sesame	Fish	Crustacea	>10n
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Step 2: Conduct the Allergen Risk Assessment continued...

Transfer to production processing area
Are all ingredients, WIP and rework covered during transit to processing areas?
Is product identification suitable to indicate allergens to production staff?
Is WIP and rework clearly labelled to indicate allergen status?
Production processes
Is production scheduling for allergen sequencing between products strictly applied?
Is there shared equipment that may have production hang up between batches?
Are validated cleaning processes used between allergens and non allergens?
Is there potential for protective clothing to be a source of allergen contamination through people movement and practices?
For allergens that form fine powders when used, (e.g. flour), is the movement of airborne dust minimized by using physical barriers or segregated areas for mixing operations?
Where are air-conditioning outlets located and does the use of ceiling or floor fans distribute airborne allergens?
Are waste-handling protocols effective to ensure waste removal processes do not spread allergens from one area to another?
Packing
Are product change over protocols for labelling strictly applied to ensure 'right product in right label'?
Finished product storage & dispatch
Is finished product stored fully enclosed in packaging to prevent allergen contamination during storage and transport processes?
Allergen risk assessment flow diagram
List each stage of your production process in the first column and assess if any fall into the categories across the top row of the chart. A completed chart is included as an example in Appendix 3 on page 6 of this guide for reference.

Process step	Peanut	Tree nut	Egg	Milk	Gluten	Soy	Sesame	Fish	Crustacea	SO2 >10mg/kg

Complete the allergen map

A completed map is included as an example in Appendix 4 on page 7 of this guide for reference.

• On the floor plan(s) for each location obtained in Step 1, mark where allergens are stored and handled; indicate which allergen is present if your facility handles multiple allergens. Confirm any variables that may change your point in time observations such as peak production, special one-off production orders, seasonal variations in products etc. NOTE: Any contamination risk identified during the facility walk-through needs to be identified in the allergen risk assessment to enable a suitable control measure to be identified.



Step 3: Apply the information from the allergen risk assessment and mapping process

When all known locations of allergen handling and storage are identified, the allergen risk assessment team need to consider the probable risk against remote opportunity for allergen contamination or cross-contact.
Any probable risks need a practicable and sustainable control measure to be identified to eliminate, reduce or prevent the allergen contamination risk.
The rigour of control measure implementation needs to be determined so that the likelihood of allergen cross-contamination can be assessed and provide a level of confidence in your practices.
Designated allergen storage and handling areas need to be identified on the floor plan with the corresponding control measure communicated to staff.

The allergen mapping process will be a key part of the validation process for any finished product with allergen 'free from' claims and will provide the rationale or justification for allergen cross contact labelling.

This process will help demonstrate all reasonable precaution and due diligence to allergen management in your facility.

Protect your business and your brand

BSI believes the world should be supplied safe, quality food. Allergens are only one of many significant issues faced by food manufacturers in production and consumers as they live their daily lives. BSI has extensive training and auditing capacity as well as supply chain management tools that can help organizations build resilience against the challenges and threats faced by today's food industry.

This guide can help support the implementation of the food safety standards outlined below that can reduce the risks faced by your organization; protecting your brand and your bottom line.

BRC Food Safety

The BRC Global Standard for Food Safety specifies the food safety, quality and operational criteria to fulfil compliance obligations and protect the consumer. It's flexible enough to allow extra voluntary modules to reduce the audit burden while reducing exposure to fraud and promoting transparency and traceability in the supply chain.

FSC 22000

FSC 22000 is specifically designed for food manufacturers and sets out the requirements for the implementation and operation of a food safety management system. It incorporates many of the principles of other GFSI (Global Food Safety Initiative) approved food safety standards, so FSSC 22000-certified organisations also meet the requirements of several global retailers and large-scale food companies under a single, internationally recognized food safety management system.

SQF

The Safe Quality Food Programme (SQF) is an internationally recognized certification system, emphasizing the systematic application of HACCP for control of food quality hazards as well as food safety. Recognized by the GFSI, the implementation of an SQF management system addresses a buyer's food safety and quality requirements.

BSI Supply Chain Management Tools

BSI VerifEye

Our supplier verification service gives your organization the on-site, third-party professional visibility into your suppliers to effectively manage your supply chain and enterprise risks. Our verification audits give you cost-effective assurance that your suppliers are not exposing your brand to potential risks through accidental or intentional misrepresentation.

SCREEN Intelligence

Determine country risks using our web-based intelligence platform with country risk maps for social, environmental and security issues. This web-based tool assists companies in identifying and understanding their supply chain security, business continuity and corporate social responsibility needs and threats.



Appendix 1

Example of a completed raw material allergen matrix

Ingredient	Supplier	Peanut	Tree nut	Egg	Milk	Gluten	Soy	Sesame	Fish	Crustacea	SO2 >10mg/kg
Wheat flour	Dingo Flours	N	N	N	N	Р	Т	N	N	N	N
Salt	Salty Company	N	N	N	N	N	N	N	N	N	N
Yeast	Bakers Ingredients	N	N	N	N	N	N	N	N	N	N
Kibbled grain mix	NZ Grain Company	N	N	N	N	Р	N	С	N	N	N
Sesame	Seeds of India	N	N	N	N	N	N	Р	N	N	N
Sultanas	Sun Fruits	N	N	N	N	N	N	N	N	N	Р

Key

P = Present

C = Potential for cross contact from shared equipment or same processing line in our facility

T = Trace allergen may be present through cross contact from our facility or from supplier

N = Not present

Appendix 2

Example of a finished product allergen matrix

Product	Peanut	Tree nut	Egg	Milk	Gluten	Soy	Sesame	Fish	Crustacea	SO2 >10mg/kg
White bread	N	N	N	N	Р	Т	С	N	N	N
Multigrain bread	N	N	N	N	Р	Т	С	N	N	N
White rolls	N	N	N	N	Р	Т	С	N	N	N
Sesame topped rolls	N	N	N	N	Р	Т	С	N	N	N
Fruit bread	N	N	N	N	Р	Т	С	N	N	Р

Key

P = Present

 ${\sf C} = {\sf Potential} \ {\sf for} \ {\sf cross} \ {\sf contact} \ {\sf from} \ {\sf shared} \ {\sf equipment} \ {\sf or} \ {\sf same} \ {\sf processing} \ {\sf line} \ {\sf in} \ {\sf our} \ {\sf facility}$

T = Trace allergen may be present through cross contact from our facility or from supplier

N = Not present



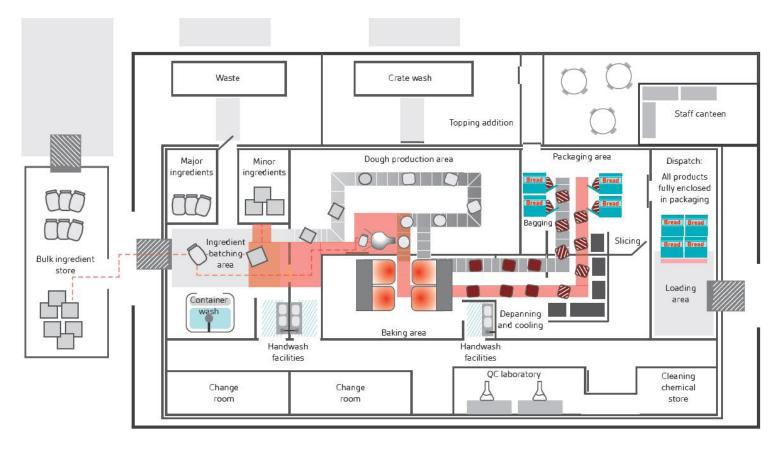
Appendix 3

Example of a allergen risk assessment flow diagram

Process step	Peanut	Tree nut	Egg	Milk	Gluten	Soy	Sesame	Fish, C	irustacea, SO2 >10mg/kg		
Ingredient receival & storage						Low risk — May be present as trace in flour received	Low risk – Designated storage in common warehouse area		Low risk — Designated storage in common warehouse area		
Weigh up						Medium risk —Handled in same area however designated storage bins; separate utensils used for weigh up; dust extraction used; compressed air not used for cleaning	Medium risk – Handled in same area however designated storage bins; separate utensils used for weigh up; dust extraction used; compressed air not used for cleaning		Low risk — Present in sultanas only. Sultanas weighed last in production day.		
Mixing					No risk – Not used in this area						
Dough diving										No risk — Not used in this area	
Proof dough		No risk – Intentionally added ingredient			,		No risk – Not used in this area	No risk – Not used			
Addition of topping - sesame	No				Not used on site				Low risk – Dough baked in unique	High risk	on site
Bake						batches with full clean down between different batches	Medium risk – Used in area in different oven		different batches		
Cool							Medium risk – Used in area in different line				
Pack & label							High risk – Used in area with no physical segregation between packing lines				
Finished product storage							Low risk – Product fully enclosed in packaging however sesame seeds are		No risk – Product fully		
Dispatch						No risk — Product fully enclosed in packaging	sticky particulate allergens that may be present in environment		enclosed in packaging		



Example allergen map



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UK and certain other countries throughout the world.

Designated sesame storage and handling areas requiring special allergen controls, production sequencing and cleaning procedures to minimize cross contamination

> At BSI we create excellence by driving the success of our clients through standards. We help organizations to embed resilience, helping them to grow sustainably, adapt to change, and prosper for the long term.

> > We make excellence a habit.



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