

Supporting document 3

Rapid evidence assessment on consumer understanding, attitudes and behaviour with respect to food allergen labelling

Labelling Review Recommendations 6 and 47

Executive summary

FSANZ has undertaken a rapid evidence assessment to investigate and characterise the issues associated with consumer understanding, attitudes and behaviour with respect to food allergen labelling for Australians and New Zealanders. The findings of this process are outlined below.

How effective are food labels at enabling those who buy food for food allergic individuals (FAI) to identify foods that are safe for them to eat?

People buying foods for FAI are generally able to correctly identify which foods are safe for FAI to eat. The studies examined in this assessment focused on individuals with medically diagnosed food allergies rather than all people who have a food allergy. Studies with more representative samples might have found people buying foods for FAI had greater difficulties correctly identifying safe foods.

Over time, the proportion of people buying food for FAI who reported always being able to find the information needed on a food label increased. This may have been due to changes to food labels (e.g. due to changes in mandatory requirements and voluntary initiatives). They may have also increased the confidence of people buying foods for FAI in selecting foods which are safe.

However, despite these improvements, buyers are still sometimes unsure whether a food is safe for FAI. They sometimes need to make judgement calls regarding particular foods, especially when they carry precautionary labelling.

The research included in this assessment suggests that the proportion of severe allergic reactions which are caused by unlabelled or incorrectly labelled food may have decreased over time. However, reactions to foods which do not mention the allergen on the label still sometimes occur.

What problems do people encounter in trying to identify foods that are safe for FAI to eat?

The most commonly mentioned (unprompted) problems relate to imported foods with different labelling; ingredient lists/allergen declarations being difficult to find or non-existent; the prevalence of precautionary labelling, and ingredients being described in non-specific ways. Problems with non-specific terms for ingredients appear to have decreased over time.

Would boldening of allergens and/or including them in a separate list help people identify

Embodening of allergens was a popular (unprompted) suggestion in the FSANZ allergen labelling research, although less popular in the 2008 survey than in the 2003 survey. There may have been an increase in the use of

foods that are safe for FAI to eat? emboldening over this time period on food labels. This is supported by the increase in respondents that reported noticing allergens declared in bold between 2003 and 2008.

When prompted, one study suggests that FAI would prefer allergens to be declared in bold in the ingredient list as well as in an allergen summary statement at the end of the ingredient list.

What other changes would assist people in identifying foods that are safe for FAI to eat? People who buy foods for FAI would like to see precautionary labelling only used on foods that pose a 'true risk' to FAI.

Some people who buy foods for FAI expressed a desire for more specific information about ingredients, such as the source they are derived from.

Table of contents

EXECUTIVE SUMMARY.....	1
TABLE OF CONTENTS.....	3
INTRODUCTION.....	4
USE OF LABELS TO IDENTIFY FOOD ALLERGENS	8
EASE OF USING FOOD ALLERGEN LABELLING	10
ABILITY TO USE INGREDIENT LISTS TO IDENTIFY APPROPRIATE FOODS	12
UNCERTAINTY AND TRUST IN FOOD ALLERGEN LABELLING	13
REACTIONS ATTRIBUTED TO UNLABELLED/INCORRECTLY LABELLED FOOD	14
PROBLEMS ENCOUNTERED IN IDENTIFYING SUITABLE FOODS.....	16
CHANGES NOTICED IN FOOD ALLERGEN LABELLING	20
POTENTIAL IMPROVEMENTS TO FOOD ALLERGEN LABELLING	22
PRECAUTIONARY LABELLING.....	26
LIMITATIONS IN THE LITERATURE	30
APPENDIX 1: PROTOCOL FOR THE RAPID EVIDENCE ASSESSMENT OF CONSUMER RESPONSE TO ALLERGEN LABELLING.....	35
APPENDIX 2: SUMMARY OF STUDIES INCLUDED IN THE RAPID EVIDENCE ASSESSMENT	40
APPENDIX 3: FINDINGS FROM THE FOOD LABELLING MONITORING SURVEY	42

Introduction

This rapid evidence assessment has two main objectives:

Objective 1: To investigate and characterise the issues associated with consumer understanding, attitudes and behaviour with respect to food allergen labelling, taking into account:

- a) format and presentation
- b) wording.

Objective 2: To investigate the impact on consumers of making it mandatory for food allergens to be declared in bold type both in the ingredient list and in a separate list.

This rapid evidence assessment contributes to FSANZ's technical evaluation and advice on two Labelling Review Recommendations:

- Recommendation 6: That the food safety elements on the food label be reviewed with the aim to maximise the effectiveness of food safety communication.
- Recommendation 47: That warning and advisory statements be emboldened and allergens emboldened both in the ingredients list and in a separate list.

These objectives were addressed by identifying studies which explored Australian and New Zealand consumers' responses to and understanding of the labelling of allergens on food products. This was done through searches of online research databases and using professional networks. Detail on the inclusion and exclusion criteria; keywords search; and databases searched are included as Appendix 1. Appendix 2 includes a table summarising the studies which were included in this rapid evidence assessment.

Food allergen labelling requirements

In 2002, new allergen labelling requirements came into effect through the *Australia New Zealand Food Standards Code*¹. The Code introduced new requirements to declare the presence of ingredients that can cause adverse or allergic reactions to foods including foods which were exempt from declaring an ingredient list. These requirements are outlined in Standard 1.2.3 – Mandatory Warning and Advisory Statements and Declarations. Generally, food allergens must be declared on the food label². However, the Code does not specify the format of the declaration or where on the label it must appear.

In practice, food manufacturers will often declare food allergens in the ingredient list and/or in an allergen summary statement (e.g. 'Contains milk, soy'). In most cases, these substances would require declaration in the ingredient list even without the specific requirements of Standard 1.2.3. This is because Standard 1.2.4 – Labelling of Ingredients requires the statement of ingredients to list every ingredient in the food, with some exceptions (e.g. for processing aids).

Where Standard 1.2.3 imposes additional requirements is where the food allergen is:

- an ingredient of a compound ingredient; or
- a food additive or a component of a food additive; or

¹ Prior to 2002 Australia and New Zealand did not have a joint food code.

² For some foods, declaration on a label is not required. However, in these cases information on food allergens in the product must be made available to purchasers by being declared upon request, or by being declared in connection with the display of food.

- a processing aid or component of a food processing aid.

Standard 1.2.4 of the Code also requires that certain conditions be met where particular generic names are used. Some of these conditions may assist individuals shopping for FAI. For example, where the generic name 'nuts' is used, the specific name of the nut must be declared (e.g., 'cashew nuts'). This would assist people trying to avoid specific nuts.

Similarly, under the new Code, the source of certain starches and cereals in food products must be declared (e.g. starches from wheat or rye). Where vegetable oil has been produced from peanut, soy bean or sesame the new Code requires that the specific source of the vegetable oil must be declared.

Food labels must declare the ingredients of compound ingredients if they include food additives or food allergens that have mandatory declaration requirements, even if the proportion of the compound ingredient in the final product is less than 5 per cent³.

Manufacturers may choose to use precautionary labelling where a food allergen has not been used as an ingredient, food additive or processing aid (i.e. has not been intentionally added) but where there is the potential for allergen cross contact with the food (e.g. due to use of shared equipment). Precautionary labelling includes statements such as 'May contain soy' and is voluntary. The purpose of precautionary labelling statements is to alert FAI to the possibility of allergen cross contact, so that they may avoid the products that carry them.

The two FSANZ surveys

This rapid evidence assessment has a particular focus on two consumer surveys commissioned by FSANZ on food allergen labelling:

- The 2003 'Quantitative consumer survey on food allergen labelling: Benchmark survey' (NFO Donovan Research 2004)
- The 2008 'Consumer study on food allergen labelling: Follow-on survey' (TNS Social Research 2009).

These are the focus of the assessment as they contained such a large number of pertinent questions on food allergen labelling and used Australian and New Zealand samples. Findings from these studies are interspersed with those from other studies found in the literature search. The two FSANZ surveys are described briefly, below. Appendix 2 contains further detail on all of the studies included in the rapid evidence assessment. In the text, 'food allergic individuals' (FAI) will be used to describe people with food allergies.

The first consumer survey on food allergen labelling (the 'benchmark survey') was conducted in 2003, soon after the *Australia New Zealand Food Standards Code* became fully enforceable in 2002 (after a transition period).

Due to a stock-in-trade provision, foods manufactured prior to the December 2002 deadline were able to be sold for a further 12 months. This means respondents in the 2003 benchmark survey would have been exposed to a mixture of food labels: those that were compliant with the old Code (Australia) or the New Zealand Food Regulations 1984 (New Zealand); as well as those that were compliant with the new (joint) Code. The second survey (the 'follow-on survey') was conducted in 2008, by which time all food labels had to comply with the new Code.

³ Compound ingredients which comprise less than 5 per cent of the final product are not generally required to have their ingredients declared (with the exception of food allergens and those food additives that perform a technological function in the final food).

In both the 2003 benchmark and the 2008 follow-on surveys, allergy clinics and allergy support groups were approached and asked to distribute the questionnaire to their patients or members. In the benchmark survey, the questionnaire was only available in paper format (mailed to the respondent). For the follow-on survey, respondents could respond via either mail or online questionnaire.

Respondents had to meet the following criteria to be eligible to complete the benchmark or follow-on surveys. They had to be either a main or joint grocery buyer in their household *and*:

- have the most serious food allergy in their household; or
- be the parent or guardian of someone under 18 with the most serious food allergy in their household.

The 2003 benchmark survey had a total of 513 respondents (416 from Australia and 97 from New Zealand). The 2008 follow-on survey had 1,028 respondents (893 from Australia and 135 from New Zealand).

The sampling changed somewhat between the benchmark and follow-on survey, meaning that comparisons over time need to be made with caution. The proportion of New Zealand respondents who were sourced through support groups increased from 41 per cent in the benchmark survey to 73 per cent in the follow-on survey. In contrast, the proportion of Australian respondents sourced from support groups decreased from 32 per cent in the benchmark to 8 per cent in the follow-on. The sample for the follow-on survey was also slightly older, on average, and had a higher level of education than the benchmark sample.

Changes to food labels in response to the 2002 Code

In addition to the consumer surveys on food allergen labelling, FSANZ also commissioned label monitoring research to examine changes to food labels (Food Standards Australia New Zealand 2004). This research was conducted in two stages (in 2002 and 2003) to examine how food labels were changed by manufacturers to shift from complying with the old regulations to the new Code. The changes found in the research provide information on the changes survey respondents may have been noticing in food labels in the benchmark research. In particular, respondents in the 2003 benchmark research were asked what (if any) changes they had noticed to the way allergens were listed on food labels in the past twelve months.

The main changes between 2002 and 2003 were:

- an increase in the proportion of food labels which declared one or more food allergens in the ingredient list⁴
- an increase in the proportion of food labels with allergen summary statements (e.g. 'Contains milk, soy')
- an increase in the proportion of food labels with 'may contain allergen' statements⁵
- an increase in the use of common names instead of technical ingredient names when declaring food allergens in ingredient lists
- an apparent drop in the proportion of allergen summary statements and precautionary statements which were displayed in bold.

⁴ NB: The survey assessed the presence or absence of allergen declarations in the ingredient list and allergen summary statements (e.g. 'Contains milk, soy'). It was not able to examine what proportion of food labels fully complied with allergen labelling requirements.

⁵ NB: It is not clear from the labelling survey report whether this category of statements included other precautionary statements (e.g. 'made in a plant that also produces products containing sesame seeds') or only 'may contain allergen' statements.

Edible oils and emulsions, and ice creams and edible ices were the two product categories which showed significant increases in the use of allergen summary statements (e.g. 'Contains milk, soy') between 2002 and 2003, as well as declarations of food allergens in the ingredient list.

It is not clear to what extent changes in the proportion of labels declaring food allergens were due to changes brought in by the new Code or by other possible factors (e.g. increases in the use of allergenic ingredients by manufacturers).

Further information on the findings of the food label monitoring survey are available in Appendix 3.

Voluntary industry initiatives

In addition to the requirements of the Code, some food manufacturers also choose to follow the Australian Food and Grocery Council's 'Food Industry Guide to Allergen Management and Labelling'⁶. The Guide contains recommendations on the production and labelling of foods containing any of the allergens listed in Standard 1.2.3, including a standardised format for declaring food allergens. The format recommended in the Guide includes: declaring allergens (and products of allergens) in the ingredient list; listing food allergens in an allergen summary statement; and, if relevant, a precautionary statement. The AFGC recommends that all three of these elements be presented in bold type.

The Guide also outlines the VITAL (Voluntary Incidental Trace Allergen Labelling) system, a standardised risk assessment tool for food producers. Food producers can use this tool when deciding whether to include precautionary labelling for a particular food allergen on their product.

The main concept behind the VITAL system is that precautionary labelling should be applied only to products that have cross-contamination from an allergen that is above a certain concentration. Where this condition is met, food manufacturers following the system would include a 'may be present..' statement for that particular food allergen. Under the VITAL system, precautionary labelling is not used where the concentration of the allergen is below the Action Level threshold for that food allergen. In addition, 'may be present..' is the only precautionary statement included in the VITAL system. The Guide advises against the use of other precautionary statements, such as 'made in the same factory as products containing...'.

The VITAL system was launched in 2007. It is possible that uptake of VITAL and the recommendations in the Guide may have caused changes in the labelling of food allergens by food manufacturers. For example, the recommendation to display food allergens in the ingredient list in bold may have led to an increase in this practice. The FSANZ follow-on survey (the last FSANZ survey relating to allergen labelling) was conducted in 2008. Some labelling changes resulting from the adoption of VITAL by food manufacturers may have occurred since then. An increase in use of VITAL may make precautionary labelling more useful for people shopping for FAI. This is because VITAL encourages the judicious use of precautionary labelling as well as a standard format.

⁶ The guide is available at the AFGC's website:
<http://www.afgc.org.au/download/655/>

Use of labels to identify food allergens

Key points

- Food allergic individuals (FAI), and people who buy food for them, rely heavily on food labels to identify foods that are safe for them to consume.
- Between 13 and 23 per cent of Australians and New Zealanders report reading food labels to look for information on food allergens.⁷
- The burden of label reading on those trying to avoid food allergens is high, as all products need checking and many people buying foods for FAI check the labels every time they purchase a product (even if it is one that has been consumed safely before).
- FAI and those who buy groceries for them tend to check both the ingredient list and precautionary labelling (where present) when checking for ingredients of concern.

The careful use of food labels is essential for people purchasing food for FAI, as avoidance of the food allergen is the only way to prevent a reaction.

What proportion of the general population looks for food allergens on food labels?

Usage of food allergen declarations was explored in two surveys of the general population commissioned by FSANZ (i.e. not conducted specifically allergic individuals). The first, conducted in 2003 (NFO Donovan Research) as a door-to-door survey found that 13 per cent of all respondents said that they used allergen declarations on food products. Among respondents who nominated three or more elements of food labels that they used, only 5 per cent said that they used allergen declarations the most.

The second general population survey was commissioned by FSANZ in 2007 (Food Standards Australia New Zealand 2008). The study found that around 23.3 per cent of Australians and 16.7 per cent of New Zealanders reported usually looking for 'Information about food allergens, such as in ingredient list or statement on package' (Food Standards Australia New Zealand 2008, pp.50) when purchasing a food product for the first time. In addition, of people who reported looking at food labels when purchasing food, 22.9 per cent of Australians and 21.4 per cent of New Zealanders reported that the reason they did this was because of 'food allergies' (Food Standards Australia New Zealand 2008, pp.52).

Population Research Laboratory (2009) found, using an online survey of Australians, that 16 per cent of respondents use the ingredient list to identify food allergens when they are deciding whether to buy a packaged food or beverage. In addition, 4 per cent of respondents reported looking for 'Nut free' labels, 13 per cent for 'Gluten free' labels and 7 per cent for 'Lactose free' labels.

What proportion of FAI (and those who buy food for FAI) look for allergens on food labels?

The follow-on food allergen labelling survey found that individuals who purchase food for FAI tend to refer to food labelling more frequently than the general population in Australia and New Zealand (TNS Social Research 2009).

These findings are supported by those of Zurzolo et al. (2013). In a survey of parents of children with medically diagnosed food allergies, they found that 73-74 per cent of parents

⁷ The prevalence of food allergy in Australia and New Zealand is estimated to be 1-2 per cent of the adult population and 4-6 per cent of children (Food Standards Australia New Zealand 2010).

reported checking both the ingredient list and any precautionary labelling information when buying food products (see Table 1, below). Only 1-2 per cent of respondents did not use either the ingredient list or precautionary labelling.

Table 1. Which parts of food labels parents of allergic children check for allergens

	Anaphylaxis (%)	Mild-moderate reactions (%)
	N=113	N=133
Ingredients only	24	25
Precautionary information only	1	2
Both	73	74
Neither	2	1

Reproduced from: Zurzolo GA, Koplin JJ, Mathal ML, Tang MKL, Allen KJ (2013) Perceptions of precautionary labelling among parents of children with food allergy and anaphylaxis. Medical Journal of Australia 198(11):621–623

This caution is also reflected in the findings from Anaphylaxis Australia Inc.'s⁸ (2003) survey, in which respondents were very unlikely to purchase a food product with no ingredient label for a FAI (see Table 2, below).

Table 2. Would you purchase a food product...

	Yes (%)*	No (%)*	No response (%)*
That has no ingredient label	2	98	<1
That bears an ingredient label in a foreign language, which you do not understand	0	99	1
From a deli or bakery that bears no ingredient list	24 [^]	76	0
Via the internet or mail order that contains no ingredient label	<1	99	<1

Reproduced from: Anaphylaxis Australia Inc (2003) Survey of members on product labelling, history of reactions and severity. <http://www.allergyfacts.org.au/images/pdf/AAI%20Food%20Labelling%20Survey%202003.pdf>, accessed 3 April 2013

**Total sample N=243. Absolute number of respondents who chose each answer is unknown for this study (not included in AAI's summary).*

[^]Anaphylaxis Australia Inc. note that many of these respondents clarified that they would request information about what was in the product.

When do people buying food for FAI check labels for food allergens?

Many respondents in the FSANZ research reported that they look at food labels every time they buy a product, although this has decreased over time (47 per cent in 2003, 36 per cent in 2008, statistically significant). The proportion of respondents who look at labels only the first time they purchase a food product increased from 16 per cent (2003) to 29 per cent (2008, statistically significant).

Henderson (2003) found that all people with food allergies who were surveyed read food labels prior to purchase (100 per cent), and 57 per cent read food labels prior to using a food. This compared to only 29 per cent of general consumers reading food labels prior to use.

Respondents from the Zurzolo et al. (2013) survey varied in how often they checked the precautionary labelling of a product. For example, 30-34 per cent reported only using it the first time they bought a product, while 29-33 per cent said that they use it every time they buy a product.

These results suggest that people shopping for FAI have a high level of motivation to use food labels to identify the presence of food allergens.

⁸ Anaphylaxis Australia Inc. is now Allergy & Anaphylaxis Australia.

Ease of using food allergen labelling

Key points

- The ability of people to find the allergen information needed on a label increased over time, possibly due to the labelling changes introduced in 2002 in Australia and New Zealand and/or the voluntary 'Food Industry Guide to Allergen Management and Labelling' released by the AFGC in 2007.
- However, food labels are still not easy for people to use when trying to avoid food allergens.
- People with less experience reading food labels (such as people with a newly diagnosed food allergy or those who are buying for an FAI for the first time) may be less able to accurately identify food products which are free of the allergen of concern.

The proportion of respondents who responded 'tend to agree' with the statement 'Always been able to find information needed on a label' increased between the FSANZ benchmark survey and the follow-on survey from 32 per cent to 43 per cent (statistically significant). This was accompanied by a reduction in the proportion of respondents tending to disagree (from 36 to 28 per cent, statistically significant) or strongly disagree (from 18 per cent to 11 per cent, statistically significant).

However, the proportion of respondents agreeing with the statement 'Easy to understand info on food labels' did not change between 2003 and 2008. Only 4-5 per cent of respondents strongly agreed with this statement, and a further 37-40 per cent 'tend to agree'. In both 2003 and 2008, 29 per cent tended to disagree that the information on food labels was easy to understand.

Similar results were found in Zurzolo et al.'s (2013) survey; only 48 per cent of parents with children who had a history of anaphylaxis said that the ingredient list information on food labels was easy to understand and use.

In the 2003 door-to-door survey (NFO Donovan Research) commissioned by FSANZ, the most common reason provided for why food allergen declarations were not clear was 'the use of scientific language'.

In Anaphylaxis Australia Inc.'s (2003) survey, only a third of respondents agreed that ingredient labels 'Are easy to understand' (see Table 3, below). In particular, respondents thought that young children and babysitters would find it difficult to understand an ingredient list.

Table 3. I think ingredient labels...

	Agree (%)*	Disagree (%)*	No response (%)*
Are easy to understand	33	65	2
Are simple enough	33	65	2
Give enough info about allergens	11	86	3
Can be understood by a 7 year old child	5	93	2
Can be understood by a babysitter	14	84	2

Reproduced from: Anaphylaxis Australia Inc (2003) Survey of members on product labelling, history of reactions and severity.

<http://www.allergyfacts.org.au/images/pdf/AAI%20Food%20Labelling%20Survey%202003.pdf>, accessed 3 April 2013

*Total sample N=243. Absolute number of respondents who chose each answer is unknown for this study (not included in AAI's summary).

Henderson (2003) examined whether general consumers (not specifically people with food allergies) were aware of where food allergens are declared⁹. Thirty nine per cent reported that food allergens were declared in the ingredient list. Thirty six per cent reported that they were on the front of a food label, and one third (33 per cent) thought that they were located with the nutrition information panel. No response category was included for allergen summary statements. It is not clear whether the respondents understood what an 'allergen declaration' is. It is possible that some assumed this meant statements such as 'nut-free', which do commonly appear on the front of the food label, rather than in or near the ingredient list.

⁹ The Code does not stipulate where allergens must be declared on the food label. In practice, many manufacturers declare them in the ingredient list or in allergen summary statements placed close to the ingredient list.

Ability to use ingredient lists to identify appropriate foods

Key points

- People who shop for FAI are generally able to correctly categorise foods as safe or unsafe for the FAI. However, this does vary depending on the ingredient and the type of product being examined.
- Analysing food labels to determine whether foods are safe or unsafe to eat takes FAI and people who buy food for them a significant amount of time.
- This process appears to take longer for people assessing unfamiliar products, and for people who are recently diagnosed with a food allergy (and therefore have less experience).

Respondents in the FSANZ benchmark and follow-on research were shown fifteen examples of ingredient lists taken from real life food labels and asked to assess whether the food would be suitable for their household.

Understanding of how to identify ingredients of concern in food ingredient lists appeared to be quite high among respondents. For example, among people who shop for people with a milk allergy, over 90 per cent identified foods that contained milk derived ingredients (not just foods that just contain traces of milk, etc.) as foods they would need to avoid.

On the other hand, only 79 per cent of people shopping for someone with a soy allergy identified bread containing soy flour as being a product they would need to avoid.

Respondents in the Anaphylaxis Australia Inc. (2003) survey were asked 'When I see the term *allergen oil* on an ingredient I think the product is...?'. I.e. the respondent was asked whether they would buy a food that included oil derived from the ingredient they are allergic to (e.g. whether a person with a peanut allergy would avoid foods containing peanut oil). Ninety-one per cent reported that they would consider the food unsafe for the allergic individual to eat.

Research conducted by Swain (2006) examined the time allergy clinic attendees took to categorise a food as free from or not free from a target food allergen. Each attendee completed four of these tests. Swain found that new patients took longer, on average, to determine whether a food contained an allergen (21 seconds) compared to follow-up patients (9 seconds). However, no statistical analysis was conducted to determine whether the difference in performance was statistically significant. Even among follow-up patients, who have more experience in using food labels to identify allergens, the amount of time the task took ranged from 1 to 43 seconds.

Similarly, people with food allergies report that it takes longer to read food labels for new products compared to regularly purchased products (Henderson 2003). The majority of allergy sufferers in Henderson's (2003) research reported that reading the label of a regularly purchased product took 19 seconds or less. In contrast, for new products the majority of respondents would take 30 seconds or more.

Uncertainty and trust in food allergen labelling

Key points

- Between the FSANZ benchmark survey in 2003 and the follow-on survey in 2008, food labels appear to have improved in the level of certainty they can give to people who buy foods for FAI.
- Trust in food labels may have increased between the benchmark and follow-on survey among people who buy food for FAI.
- However, trust in precautionary labelling appears to be low.

Respondents in the FSANZ benchmark and follow-on surveys were asked 'When reading food labels because of concerns about allergens, how often are you unsure about food items or particular ingredients?'. The proportion of respondents who were always or often unsure decreased between 2003 and 2008 (statistically significant). The proportion who reported they were sometimes unsure increased from 66 per cent to 71 per cent (statistically significant), as did the proportion who said they were never unsure, 2 per cent to 8 per cent (statistically significant). These results suggest that the confidence of people buying food for allergic individuals increased between 2003 and 2008.

Trust in the information on food labels increased between 2003 and 2008. The proportion of respondents who indicated they were 'Pretty sure I can trust' increased from 57 per cent to 66 per cent (statistically significant), while the proportion indicating 'Not sure that I can trust' reduced from 39 per cent to 26 per cent (also statistically significant).

Trust in precautionary labelling may be poorer. In Zurzolo et al.'s (2013) study only 5.4 per cent of respondents with a child with a history of anaphylaxis said that they 'completely trust' the information on precautionary food labels. However, around 40 per cent indicated that they were 'pretty sure' they could trust the information.

Reactions attributed to unlabelled/incorrectly labelled food

Key points

- The proportion of severe allergic reactions which were attributed (by respondents) to unlabelled or incorrectly labelled foods appears to have decreased between the FSANZ benchmark survey in 2003 and the follow-on survey in 2008.
- However, allergic reactions to foods which do not list the allergen on the label are still not uncommon for FAI.

FSANZ respondents in the benchmark and follow-on surveys were asked whether the person in the household with the most serious food allergy had had a severe allergic reaction since their food allergy was first identified. The rate of allergic reactions to food remained unchanged in New Zealand respondents (52 per cent in 2003, 54 per cent in 2008, not statistically significant). However, among Australian respondents the rate had increased somewhat from 40 per cent in 2003 to 46 per cent in 2008 (statistically significant).

Between the FSANZ benchmark and follow-on surveys, the most common reason given for the severe allergic reaction remained 'accidentally consumed' (36 per cent in 2003 and 42 per cent in 2008, not statistically significant). This was followed by 'came into contact' (not consumed) (21 per cent in 2003 and 16 per cent in 2008, not statistically significant). Between 2003 and 2008 the proportion of severe reactions which were attributed by survey respondents to 'unlabelled/incorrectly labelled food' decreased from 14 per cent to 5 per cent (statistically significant).

The survey did not examine these incidents further to assess which incidents were due to non-compliant packaging and which were due to foods which were compliant with the Code but were still consumed by an FAI. An example of a non-compliant food causing a reaction would be a packaged food which contains peanut oil as an ingredient, but which does not have the source of the oil specified on the packaging (e.g. the peanut oil is listed as 'vegetable oil'), and is then consumed by someone with a peanut allergy. An example of a compliant food causing a reaction would be an unpackaged food which contains peanuts as an ingredient and which is consumed by the FAI, unaware of the presence of peanuts in the product. This could occur if the supplier chooses to provide allergen information for unpackaged foods on request and the purchaser does not ask for this information.

A large proportion of respondents still reported that 'An allergic reaction occurred after eating a product that didn't have the allergen of concern in the ingredient list on the label'. Unlike the 'unlabelled/ incorrectly labelled food' question, this question was not limited to severe allergic reactions. Table 4 shows that, in 2008, 22 per cent of respondents still reported that allergic reactions 'sometimes happen' after the allergic individual consumes a food which does not have the food allergen listed on the label. However, the frequency of these reactions appears to have reduced over time, with the proportion of respondents reporting that this often or sometimes happens declining between the benchmark and follow-on survey (statistically significant).

Table 4. How often an allergic reaction has occurred after eating a product that didn't have the food allergen listed

	2003 (%)	2008 (%)
	N=510	N=1028
Often happens	7 ^b	3 ^a
Sometimes happens	30 ^b	22 ^a
Seldom happens	14 ^a	19 ^b
Never happens	41 ^a	50 ^b
Don't know	7	7

NB: Notation ^a and ^b indicates that there was a statistically significant difference (at the 95 per cent confidence level) in responses between the 2003 and 2008 surveys for this item.

In the Anaphylaxis Australia Inc. (2003) survey, 32 per cent of respondents answered 'Yes' to the question 'Has the FAI ever had an allergic reaction to an ingredient in a food that did not appear on the label?'.

Problems encountered in identifying suitable foods

Key points

- People buying food for FAI encounter a range of problems when trying to identify safe foods.
- Common problems mentioned in an open ended question included: imported foods, difficulty locating ingredient lists or allergen declarations on food labels, the way some ingredients are described (i.e. not specific enough, or source not declared); and the prevalence of precautionary labelling.
- Problems relating to the way ingredients were described appeared to be less common in the FSANZ follow-on survey in 2008 than in the benchmark (e.g. 'do not understand what is meant by some things'). However, 'Code numbers meaningless' remained a problem in 2008.
- Reports of other problems (e.g. imported foods) increased. NB: Imported foods sold in Australia and New Zealand are required to comply with the Code, including the provisions relating to labelling of food allergens.
- Among targeted questions on problems with food labelling, the frequency with which these problems occurred had either stayed the same between the benchmark and follow-on surveys or decreased.
- The proportion of people (20 per cent) reporting that they often saw the ingredient they need to avoid in the product (despite the ingredient not being included in the ingredient list) remained stable between the benchmark and follow-on survey.

In the FSANZ benchmark and follow-on food allergen labelling surveys, two types of questions were asked regarding problems encountered when selecting food products: open ended and closed questions. The first was an open ended question, completed by people who had indicated they had issues that caused concern when trying to identify appropriate foods for the person with a food allergy. The second type was a series of close ended questions about specific labelling issues that were asked of all respondents.

In the 2003 benchmark survey, 66 per cent of respondents answered 'yes' to the question "While trying to identify foods that are suitable for the person(s) with the allergy, are there any other labelling issues that have caused you concern?". This compared with 58 per cent of respondents in 2008.

These respondents were then asked to describe the problems they had encountered as an open ended question. The responses to the open ended question were grouped into themes by the research consultants using a code frame developed using the first 100 responses¹⁰. However, the way responses were assigned to each of the codes appears to have differed between the benchmark and follow-on survey. For example, one category used in the benchmark report, 'Location of information non-standard' was not carried across to the follow-on survey and the responses for this category do not appear to have been transferred to any of the follow-on survey categories for examining changes over time between the two surveys. Nine per cent of the benchmark respondents who indicated that they encountered problems identifying suitable foods had provided this response.

Because some of the categories used in the follow-on research were new, it is not clear whether no respondents provided similar responses in the benchmark survey or whether

¹⁰ The 2008 follow-on report notes that the code frame for the follow-on survey was 'guided by previous code frames developed in response to open ended questions in the benchmark study' (TNS Social Research 2009, p.125)

they would have been coded differently then¹¹. This means that responses may be categorised differently in the two reports, making comparisons between 2003 and 2008 difficult.

The responses provided to the open ended question using the follow-on survey categories are shown in Table 5, below:

Table 5. Problems encountered when trying to identify foods that are suitable for the person(s) with the food allergy

	2003 (%)*	2008 (%)*
	N=336	N=595
Imported products have different labelling	7 ^b	16 ^a
Location of ingredients or allergen warning hard to find/non-existent	- [#]	15
Code numbers meaningless	13	12
Labelling inconsistent / not enough info	-	10
Many names for same thing	12	10
'May contain' does not give risk level	10	9
Some ingredients are unlisted	10	8
Do not understand what is meant by some things	19 ^b	7 ^a
What is ingredient derived from?	12 ^b	7 ^a
Writing too small /illegible	7	7
'Flavours' 'Colours' and 'Spices' not explicit	7	5
Manufacturers avoiding responsibility	3	5
Prepared items unlabelled (restaurants, bakeries)	4	5
'May contain' overused	9 ^b	4 ^a
'May contain' cuts down food options	5	4
Non-specific terms	10 ^b	4 ^a
'Made in same premises/on same line' confusing	4	3
My allergen not common allergen so is not listed	-	2
May contain traces of which nuts?	-	2
Ingredients change constantly	3	2
Previously safe items now 'may contain'	4	2
Unlabelled products	-	1
Percentage labelling to indicate level of risk	4 ^b	1 ^a
'Emulsifier' confusing	4 ^b	1 ^a

* Of respondents who responded 'Yes' to the question 'While trying to identify foods that are suitable for the person(s) with the allergy, are there any other labelling issues that have caused you concern?':

NB: Notation ^a and ^b indicates that there was a statistically significant difference (at the 95 per cent confidence level) in responses between the 2003 and 2008 surveys for this item. A dash, '-' indicates that there were no responses in the category in the 2003 survey. This maybe because no respondents provided this type of response in 2003, or it may be due to changes in how free text responses were categorised between 2003 and 2008.

In the 2003 benchmark survey 9 per cent of respondents answering this question nominated 'Location of information non-standard' as an issue. However, it appears that responses in this category have not been assigned to any of the categories used for coding the 2008 responses. I.e. those responses do not appear in the table above in the 2003 column. 'Location of ingredients or allergen warning hard to find/non-existent' is likely to be the most applicable category for them.

'Imported products have different labelling' was the most common problem mentioned by respondents in the follow-on survey in 2008. Imported foods sold in Australia and New Zealand are required to comply with the Code, including the provisions relating to labelling of food allergens. As a result, differences in the labelling of imported foods may be due to non-compliance with the Code.

Many of the responses listed separately in the table relate to the same overall theme. These

¹¹ For example, 'May contain traces of which nuts?' was new in the follow-on report. This could be because no respondents mentioned this in the 2003 benchmark survey (and so it was not included in the code frame). Or, it could be because these types of responses were coded into another category, such as 'Non-specific terms', in the benchmark survey.

have been grouped together for the purpose of this rapid evidence assessment in order to identify broader issues that consumers might have with food allergen labelling.

The following items indicate that insufficient information is provided for some ingredients, making it difficult for people to know whether they are safe for the person with the food allergy to consume or not:

- Code numbers¹² meaningless
- Many names for same thing
- Do not understand what is meant by some things
- What is ingredient derived from?
- 'Flavours' 'Colours' and 'Spices' not explicit
- Non-specific terms
- 'Emulsifier' confusing.

Similarly, a number of different responses related to issues with precautionary ('may contain') labelling:

- 'May contain' does not give risk level
- 'May contain' overused
- 'May contain' cuts down food options
- 'Made in same premises/on same line' confusing
- May contain traces of which nuts?
- Previously safe items now 'may contain'.

The main changes between responses from 2003 and 2008 appear to be:

- An increasing concern regarding labelling of imported foods
- A decrease in the proportion of people reporting that they 'Do not understand what is meant by some things'
- A decrease in the proportion of people who are unsure what ingredients are derived from.

Two of these findings (the decrease in not understanding what is meant by some things, and the decrease in people being unsure what ingredients are derived from) may have been due to the new requirements in the Code. For example, the requirement for certain food allergens to be declared where they had previously been exempt from ingredient labelling, and the requirement for ingredients to be declared using their common name.

The second type of question was closed questions about specific problems people might encounter when selecting food products for FAI. Between 2003 and 2008, the proportion of people reporting that 'Some products have different names on their label for the ingredient(s) I need to avoid' often happens decreased from 25 to 20 per cent (statistically significant). There was a decline in the proportion of respondents who thought it 'often happens' that a packaged product they have been using safely suddenly has a statement saying it contains the ingredient(s) they need to avoid (from 31 per cent in 2003 to 16 per cent in 2008). Due to the labelling changes which would have been occurring around 2003, it may have been that this was due to a one-off increase in the prevalence of food allergen declarations or precautionary statements at that time¹³.

¹² 'Code numbers' refers to food additive code numbers.

¹³ See Appendix 3 for the findings of the food labelling monitoring survey which found an increase in the proportion of foods which declared allergens in the ingredient list and which carried 'may contain' statements.

The proportion of respondents reporting that 'A label on an outside package of a product varies from an individual package label inside' stayed stable between 2003 and 2008, with around 20 per cent of respondents reporting that this 'sometimes happens', and over 50 per cent of respondents indicating that this seldom or never happens.

There was no change in the proportion of respondents reporting that 'I have seen the very ingredient I need to avoid, in the actual product, even though it is not listed as an ingredient on the label' between 2003 and 2008. Around 20 per cent of people indicated that this often or sometimes happens.

Changes noticed in food allergen labelling

Key points

- People who buy foods for FAI reported noticing changes in food allergen labelling in the benchmark survey when the new Code came into place.
- Some (although fewer), also reported noticing changes in the follow-on survey in 2008.
- Some of the specific changes which were noticed related to voluntary labelling (e.g. precautionary labelling, emboldening allergens) rather than mandated changes.
- FAI and those who buy groceries for them generally thought that the changes they had noticed made it easier to buy safe foods.

Respondents in the FSANZ benchmark and follow-on surveys were asked 'In general, have you noticed any changes to the way allergens (foods or ingredients that cause allergies) are listed on food labels in the past twelve months?'. As would be expected, a higher proportion of respondents in the benchmark survey (when changes to the Code were being implemented) reported noticing changes (63 per cent, compared to 36 per cent of follow-on survey respondents, statistically significant).

The benchmark and follow-on survey respondents who had noticed changes were asked 'What sorts of things have you noticed?'. The responses to the open ended question were grouped into themes by the research consultants using a code frame developed using the first 100 responses. The 2008 code frame was 'guided by previous code frames developed in response to open ended questions in the benchmark study' (TNS Social Research 2009, p.125).

In 2003, the most common change noticed was 'More products containing 'may contain' etc.' (i.e. precautionary labelling), which was reported by 45 per cent of respondents in the benchmark who had noticed label changes, compared to 34 per cent in the follow-on survey (statistically significant). In contrast, in 2008 the most common change noticed was 'Common allergens listed in bold', reported by 46 per cent of respondents in 2008 compared to 23 per cent of respondents in 2003 (statistically significant). In addition, 16 per cent of 2008 respondents reported that they had noticed 'separate allergy summaries', which was a change 2003 respondents had not noted. This change over time could have been due to the release of the AFGC's 'Food Industry Guide to Allergen Management and Labelling' in 2007 which recommended the use of allergen summary statements (in addition to declaring allergens in the ingredient list).

Similar proportions of 2003 and 2008 respondents reported that 'More details now included' (14 per cent and 12 per cent, respectively, not statistically significant). Only 5 per cent (in 2003) and 6 per cent (in 2008) had noticed that labels 'Now specify origin of ingredient' (not statistically significant).

The changes that respondents had noticed made a positive difference to their ability to use food allergen labelling. In the benchmark survey, 53 per cent of people who had noticed changes chose the response 'Yes, suitable products are now easier to identify', and this was even higher in the follow-on survey (69 per cent of respondents, statistically significant). Only 16 per cent (benchmark survey) and 14 per cent (follow-on survey, not statistically significant) felt that the changes they had noticed made no difference to their ability to identify suitable products. In the benchmark survey, 28 per cent indicated that the changes they had noted made it more difficult for them to choose appropriate foods. This reduced to 13 per cent in the follow-on survey (statistically significant).

Henderson et al. (2003) also found that allergy support group members had noticed changes to food labels, and that these changes provided useful information to allergy sufferers. Among the support group members, 92 per cent had noticed changes to allergen declarations on food labels, and 80 per cent of them had noticed changes to the ingredient list (Henderson 2003). Forty-two per cent of respondents agreed that the new Code requirements made finding safe foods easier, and just under 20 per cent strongly agreed with this. A total of 25 per cent of FAI respondents disagreed or strongly disagreed that the changes made it easier.

Potential improvements to food allergen labelling

Key points

- Emboldening allergens or displaying them in larger writing on labels was the most commonly suggested improvement in the 2003 benchmark research. Respondents in the 2008 survey did not suggest this change as frequently. It is unclear whether this is due to a reduced desire for emboldening in 2008, or whether voluntary emboldening on labels may have become more prevalent (as suggested by the 46 per cent of respondents in the 2008 study which reported noticing allergens being declared in bold).
- Precautionary labelling was also an issue. Respondents wanted it to be used more judiciously so that its presence indicated a 'true risk' to FAI.
- Respondents in the follow-on survey appeared to have fewer problems with terms for ingredients in ingredient lists being non-specific.
- Respondents' desire for foods labelled 'free from' their ingredient of concern may have diminished over time between the benchmark and follow-on surveys.
- A study which tested different ingredient list formats (Henderson 2003) found that those with emboldened allergens (within the list) as well as an allergen summary statement was the most preferred by members of an allergy support group.

Respondents in the FSANZ benchmark and follow-on research were asked to provide suggestions for how food labels could be improved to make it easier for them to find products that were appropriate for people with food allergies. This was an open-ended question, which was later coded. The most commonly mentioned improvements changed between the benchmark survey (see Table 6) and the follow-on survey (see Table 7).

Table 6. Most common improvements suggested by respondents in 2003

	2003* (%)
	N=510
Should be bold print or larger writing on labels	16
Use standard plain English names for all ingredients - no numbers	12
Should say does or does not contain, not may	11
Should say 'no nut' / 'nut free'	11
Need more detail about meaning of things	7
Symbols for free or safe products	6
Provide more 'egg free', 'milk free' etc. labelling	6
List ingredient derivatives for e.g. emulsifiers, thickeners	5
Include % of each ingredient	5
Improve label consistency	5
Manufacturers using 'may contain' to cover themselves	5

* Of respondents who replied 'yes' to the question 'In general, have you noticed any changes to the way allergens (foods or ingredients that cause allergies) are listed on food labels in the past twelve months?'

Table 7. Most common improvements suggested by respondents in 2008

	2008 (%)*
	N=1028
Reduce 'may contain' warnings to only products with true risk	10
Improve labelling of deli/ bakery/ restaurant products	9
Ensure labels are readable and easy to access	9
Be specific with types of ingredients, such as oil, spices, etc.	7
Put common allergens in bold / different colour	7
List ingredient derivatives for e.g. emulsifiers, thickeners	6
Include % of each ingredient	6
Improve label consistency	6
Provide manufacturer contact details to call if unsure [^]	6
Locate allergy warnings next to ingredients list	6

* Of respondents who replied 'yes' to the question 'In general, have you noticed any changes to the way allergens (foods or ingredients that cause allergies) are listed on food labels in the past twelve months?'

[^] Standard 1.2.2 – Food Identification Requirements of the Code requires the label on a package of food to include the name and business address in Australia or New Zealand, of the supplier of the food.

In the benchmark survey, 16 per cent of respondents mentioned 'Should be bold print or larger writing on labels', while 7 per cent of respondents in the follow-on survey mention emboldening, 'Put common allergens in bold / different colour'. Emboldening went from the most common improvement suggested in 2003, to the fifth most commonly mentioned change in 2008. It is not clear whether this means the desire for emboldening of allergens on food labels may have decreased among people buying food for FAI, or whether voluntary emboldening by some food manufacturers may have satisfied this desire somewhat. As described above in 'Changes noticed in food allergen labelling', the proportion of respondents reporting that they had noticed allergens being declared in bold increased between the 2003 benchmark survey and the 2008 follow-on survey.

In the 2003 Anaphylaxis Australia Inc. survey, a small number of respondents noted that emboldening of allergens was helpful for making allergens stand out on food labels.

The use of 'may contain' statements appears to have been a problem in both the FSANZ benchmark and follow-on surveys. Responses were coded into (somewhat) different categories between the two surveys. However Table 8, below, groups together the responses relating to 'may contain':

Table 8. Improvements suggested that relate to 'may contain' statements

	2003 (%)*	2008 (%)*
	N=510	N=1028
Reduce 'may contain' warnings to only products with true risk	-	10
Manufacturers using 'may contain' to cover themselves	5	-
'May contain' overused	4	-
'May contain' should substantiate claims	3	-
Be more specific about risk in products containing traces	-	5

* Of respondents who replied 'yes' to the question 'In general, have you noticed any changes to the way allergens (foods or ingredients that cause allergies) are listed on food labels in the past twelve months?'

NB: A dash, '-' indicates that there were no responses in the category in the 2003 or 2008 survey. This maybe because no respondents provided this type of response in that year, or it may be due to changes in how free text responses were categorised between 2003 and 2008.

These results suggest that some consumers are sceptical about the usefulness of 'may contain' statements, in particular because of their prevalence.

This scepticism was also reflected among Zurzolo et al.'s (2013) respondents. For a range of precautionary statements, 89-96 per cent of them indicated that the statements 'only protects the manufacturer from litigation'.

The prevalence of precautionary labelling and the way this restricts foods which are suitable for FAI to eat was also a major theme in the qualitative comments provided by respondents to Anaphylaxis Australia Inc.'s (2003) survey.

In the FSANZ benchmark and follow-on research there were a variety of responses which fell under the theme of a desire for more specific information about ingredients (including the desire for information on what ingredients were derived from). See Table 9, below.

Table 9. Improvements suggested that relate to specificity of labelled ingredients or what they are derived from

	2003 (%)*	2008 (%)*
Be specific with types of ingredients such as oil, spices, etc.	4 ^b	7 ^a
List ingredient derivatives for e.g. emulsifiers, thickeners	5	6
Use standard plain English names for all ingredients - not numbers	12 ^b	4 ^a
Need more detail about meaning of things	7	-
Code numbers are meaningless	4	-
Dairy has lots of other claims	4	-
Need to know the source of vegetable oil	3	-

NB: Notation ^a and ^b indicates that there was a statistically significant difference (at the 95 per cent confidence level) in responses between the 2003 and 2008 surveys for this item.

NB: A dash, '-' indicates that there were no responses in the category in the 2008 survey. This maybe because no respondents provided this type of response in 2008, or it may be due to changes in how free text responses were categorised between 2003 and 2008.

It appears that, between 2003 and 2008, the proportion of respondents finding that the ingredients listed were described too generically (e.g. 'spices') or without the source they were derived from may have reduced.

Some respondents expressed a desire for labels that clearly signalled products which were safe for the food allergic individual to consume (rather than signalling only unsafe foods). Research conducted with consumers with nut and peanut allergies in the United Kingdom also found this to be a popular suggestion, as people found this made safe foods easier to identify (Barnett et al. 2011). Labelling that signals safe foods may also provide greater certainty to FAI than foods which simply do not mention the ingredient of concern on the food label.

Table 10 shows the responses from the FSANZ benchmark and follow-on surveys that related to positive signalling of safe products. It appears that respondents' desire for foods labelled 'free from' their ingredient of concern may have weakened between 2003 and 2008.

Table 10. Improvements suggested that relate to positively signalling safe products

	2003 (%)	2008 (%)
Provide more 'egg free' / 'milk free', etc. labelling	6	4
Should say does or does not contain, not may	11	-
Should say 'no nut' / 'nut free'	11	-
Symbols for free or safe products	6	-

NB: A dash, '-' indicates that there were no responses in the category in the 2008 survey. This maybe because no respondents provided this type of response in 2008, or it may be due to changes in how free text responses were categorised between 2003 and 2008.

The responses analysed above were for free-text responses to a question asking about elements of food labels that could be improved. It is possible that by including direct questions on some of these factors (e.g. 'Do you think 'May contain' statements are on too many products?') that the proportion of respondents indicating that they want these changes would be higher. For example, it may not have occurred to some respondents to mention 'may contain' labels, but they would have had an opinion regarding them if they had been prompted to provide one.

Henderson (2003) tested four different ingredient list formats with respondents to examine which declared food allergens in the most useful way. A format which displayed allergens in bold in the ingredient list and also listed them in a summary statement underneath the ingredient list was rated as the most useful by FAI as well as health professionals and consumers¹⁴. The second most useful format was an ingredient list with allergens displayed in bold in the list but with no summary statement.

¹⁴ The emboldening of allergens in the ingredient list as well as in a separate allergen summary statement is recommended in the AFGC's 'Food Industry Guide to Allergen Management and Labelling', released in 2007.

Precautionary labelling

Some earlier sections of this report have touched on the issue of precautionary labelling, particularly where this has been raised by respondents in open ended questions. This section expands on the issue of precautionary labelling by covering research that has deliberately explored consumers' understanding and perceptions of precautionary labelling. FSANZ does not regulate precautionary labelling. It is the choice of manufacturers as to whether they use precautionary labelling and (if so), how they do this.

Key points

- General consumers (those without food allergies) were more likely to rate precautionary labelling statements (such as 'may contain...') as useful for people with allergies than FAI.
- FAI and those who buy groceries for them generally report that precautionary labelling is not useful for them.
- Results from benchmark and follow-on research suggest that FAI and those who buy groceries for them may have become more likely to ignore precautionary labelling over time.
- Many of the people who buy foods for FAI report that they would sometimes ignore the presence of precautionary labelling statements and give the food to the FAI anyway.
- FAI and those that buy groceries for FAI tend to perceive the range of precautionary labels as indicating differing levels of risk. For example, statements such as 'may contain...' are more likely to result in a food being avoided than 'Made in the same premises as...'
- FAI and those who buy groceries for FAI appear to be uncertain as to whether foods carrying precautionary labelling should be avoided. Some are frustrated by the prevalence of precautionary labelling.
- One study found parents with FAI children felt that there should be government regulation of precautionary labelling.
- It is possible that precautionary labelling on food labels in the market may have changed since the 2008 FSANZ follow-on survey.

How useful is precautionary labelling?

Respondents in the FSANZ benchmark and follow-on research were asked to indicate how useful the following precautionary labelling statements were and whether they would avoid an item with that particular statement (if it related to an ingredient they were allergic to):

- May contain traces of
- Made in the same premises as products containing
- Made on the same equipment as products containing
- May be present¹⁵.

Between 42 and 54 per cent of respondents indicated that each of the precautionary labels was 'Not very useful', with the exception of 'Made on the same equipment as products contain'. For this particular precautionary label, only 37 per cent (2003) and 32 per cent (2008, not statistically significant) of respondents thought this was not very useful. Forty-six per cent (2003) and 34 per cent (2008, statistically significant) thought that it was 'very useful'.

¹⁵ 'May be present' was only included as a precautionary statement in the 2008 research.

The 2003 door-to-door survey (NFO Donovan Research) found that over half (53 per cent) of the respondents considered a ‘may contain traces of nuts’ statement on a chocolate bar package would be very useful for people who needed to avoid nuts due to an allergy. Twenty six per cent reported that it was ‘not very useful, because it doesn’t say whether nuts are definitely in the product’. However, when the analysis examined only those respondents who had an allergy to nuts, 36 per cent reported that the statement was not useful. These results suggest that the general population may have a poor understanding of the types of labelling that are useful for FAI and people who buy groceries for FAI.

Henderson’s (2003) research found a similar trend, with FAI being the least likely group (compared to health professionals and general consumers) to consider ‘May contain...’, ‘Contains traces of...’, ‘Made on same equipment as...’, and ‘Made on same premises as...’ statements to be useful for people with food allergies.

Zurzolo et al. (2013) also collected information on how useful respondents found precautionary labelling statements¹⁶. For all of the precautionary statements examined, 78 to 84 per cent of respondents with a child with a history of anaphylaxis reported that these were not useful as they did not know whether the food was safe to eat.

Do consumers avoid foods carrying precautionary labelling?

Interestingly, the proportion of respondents indicating that they would ‘always avoid’ foods carrying precautionary statements relating to their allergen of concern reduced between the benchmark and follow-on FSANZ surveys, see Table 11 (below). For example, the proportion of respondents who said they would ‘always avoid’ a food carrying a ‘May contain traces of’ statement relating to the food they are allergic to reduced from 51 per cent (2003) to 42 per cent (2008) (statistically significant). This may indicate that, as people have become more accustomed to precautionary labelling, the perception of risk associated with foods carrying these labels has reduced. Alternatively, it may indicate that a greater proportion of people have begun to ignore the precautionary labelling.

Table 11. Whether respondents would avoid foods with precautionary statements

	May contain traces of (%)		Made in the same premises as products containing (%)		Made on the same equipment as products containing (%)		May be present (%)	
	2003 N=510	2008 N=1028	2003 N=510	2008 N=1028	2003 N=510	2008 N=1028	2003 N/A	2008 N=1028
Always avoid	51 ^b	42 ^a	41 ^d	33 ^c	66 ^f	47 ^e	N/A	60
Sometimes avoid	40	44	43	48	25 ^f	39 ^e	N/A	31
Always use	8 ^b	12 ^a	10 ^d	16 ^c	3 ^f	11 ^e	N/A	5
Not sure	1	2	6 ^d	3 ^c	5 ^f	2 ^e	N/A	3

NB: Notation ^a and ^b, ^d and ^c, ^e and ^f, indicates that there was a statistically significant difference (at the 95 per cent confidence level) in responses between the 2003 and 2008 surveys for this item.

Respondents in Zurzolo et al.’s (2013) study were reluctant to give their child with a food allergy foods carrying precautionary labelling statements (see Table 12, below). Around 60 per cent of respondents indicated that they would not give a food which included the allergen of concern in a precautionary labelling statement to their allergic child. However, 30-35 per cent indicated that they would give the product to their child, suggesting that some parents

¹⁶ The precautionary statements included were: “may contain traces”, “made on the same production line”, “made on the same equipment”, “made in the same factory”, “made in the same premises” and “may be present”.

may consider these products to be low risk.

Table 12. Whether parents would give an allergic child a food carrying precautionary labelling

	Anaphylaxis (%)	Mild-moderate reactions (%)
	N=113	N=133
No	58	62
Not sure	7	8
Yes	35	30

Reproduced from: Zurzolo GA, Koplin JJ, Mathal ML, Tang MKL, Allen KJ (2013) Perceptions of precautionary labelling among parents of children with food allergy and anaphylaxis. Medical Journal of Australia 198(11):621–623

Interestingly, Zurzolo et al. (2013) found that respondents were particularly likely to ignore some precautionary labelling statements, such as ‘made in the same factory’ and ‘made in the same premises’. This suggests that consumers may believe that the different precautionary statements indicate different levels of risk. For example, among parents of children with a history of anaphylaxis, 65 per cent reported that they would ignore the statement ‘Made in the same factory’. However, only 22 per cent of these parents would ignore the statement ‘May be present’. The precautionary labelling statements tested were (from most likely to be ignored to least likely to be ignored):

- Made in the same factory
- Made in the same premises
- Facility that also processes
- Facility that also packages
- Plant which also manufactures
- May contain traces of
- Same production line
- Equipment that makes products containing
- A line that processes
- Shared equipment
- Same equipment
- May contain
- May be present¹⁷.

The survey conducted by Anaphylaxis Australia Inc. (2003) showed a similar gradient for different precautionary labelling statements, see Table 13. As with the Zurzolo et al. (2013) research, precautionary labelling statements that indicated the food was made or packaged in the same facility as a food allergen were most likely to be ‘sometimes’ given to allergic individuals to consume. Also, ‘may contain’ was unlikely to be ignored, with 80 per cent of respondents indicating that they would never give a food carrying this statement to the allergic individual.

Unlike the other statements in Table 13, ‘Contains allergen’ and ‘Contains allergen ingredients’ are not precautionary labelling statements. Rather, they are allergen summary statements that are one way food labels can declare the presence of allergens in the food (the other option being to declare the allergen(s) in the ingredient list). Allergen summary statements declare that the allergen definitely *is* in the food product (e.g. it is an ingredient or a component of an ingredient). In contrast, precautionary labelling statements indicate that the allergen *may be present* in the food product. Therefore, it is concerning that even 2 per

¹⁷ ‘May be present’ is the only precautionary statement recommended for use with the Voluntary Incidental Trace Allergen Labelling (VITAL) system (Allergen Bureau 2012). The ‘may be present’ statement is only used in the VITAL system when a certain threshold of contamination risk is met.

cent of the Anaphylaxis Australia Inc. (2003) sample indicated they would sometimes give a food carrying one of these statements to a food allergic individual.

Table 13. How often respondents would purchase a product for an allergic individual to consume if it carried the following phrase

	Never (%)*	Sometimes (%)*	Always (%)*	No response (%)*
Packaged in a facility that also packages products containing allergen	50	42	4	4
Manufactured on a line that processes products containing allergen	76	19	1	4
Manufactured on shared equipment with products containing allergen	79	17	<1	3
Manufactured on the same equipment as products containing allergen	77	19	1	4
Manufactured in a facility that also uses allergen	53	41	3	3
Manufactured in a facility that also processes allergen	51	42	4	1
May contain traces of allergen	57	36	4	3
May contain allergen	80	16	1	2
Contains allergen ingredients	96	2	0	2
Contains allergen	96	2	0	2

Reproduced from: Anaphylaxis Australia Inc. (2003) Survey of members on product labelling, history of reactions and severity. <http://www.allergyfacts.org.au/images/pdf/AAI%20Food%20Labelling%20Survey%202003.pdf>, accessed 3 April 2013

*Total sample N=243. Absolute number of respondents who chose each answer is unknown for this study (not included in AAI's summary).

Henderson et al. (Henderson et al. 2003; Cooper and Warren 2005) also found different responses to different precautionary labelling statements. Respondents with food allergies were least likely to purchase a product if the food carried the statement 'Contains traces of' (95 per cent would not purchase this). This was followed by 'Made on the same equipment as' (89 per cent), and 'may contain' (81 per cent). Respondents were most likely to disregard a 'Made on the same premises as' statement, 28 per cent would purchase a product with this statement and 62 per cent would not.

A qualitative study conducted by Hu et al. (2007) in Australia found that parents of children with food allergies were uncertain as to whether they should avoid giving their children foods which carried precautionary labelling statements.

How do consumers feel about precautionary labelling?

Respondents in Zurzolo et al.'s (2013) survey were asked 'Do you feel that there should be better government regulation imposed upon manufacturers of food products in the way they use precautionary labelling?'. Around 3 in 4 respondents (both those with a child with a history of anaphylaxis and those whose child had a history of mild-moderate reactions) agreed that there should be 'better' government regulation of precautionary labelling.

Limitations in the literature

The main limitations of the available literature on food allergen labelling are the representativeness of participants included in the studies and the shortage of research that specifically relates to Labelling Review Recommendation 47 (on emboldening allergens and including them in a separate list). The issues with representativeness mean that the participants in the studies included in this assessment may be better able to identify foods that are safe for an FAI than the overall population of allergen labelling users.

Representativeness – Medically diagnosed food allergies

Many of the studies identified through the literature search had samples made up exclusively of (or dominated by) individuals with medically diagnosed food allergies¹⁸ (or people responsible for selecting foods for people with medically food diagnosed allergies). In many cases this has occurred because samples are drawn from allergy clinics (NFO Donovan Research 2004; Swain 2006; Hu et al. 2007; TNS Social Research 2009; Zurzolo et al. 2013). People with medically diagnosed food allergies are an important group to include in food allergen labelling research; however they are a subset of those who use allergen labelling. This is because many users of allergen labelling have a food allergy but do not have a medical diagnosis. People who use food allergen labelling and who do not have a diagnosis may differ from those who do. For example, they may be less likely to have received education or information on identifying allergens on food labels (e.g. from a doctor or a dietitian). Therefore actual levels of understanding of food allergen labelling could be overstated in these studies and, conversely, problems with food allergen labelling may be understated.

Representativeness – Education levels

Many of the studies also showed a bias towards people with higher levels of education, i.e. the proportion of participants with a tertiary qualification was higher than for the general population. Examples of these studies include the FSANZ benchmark and follow-on food allergen labelling studies (NFO Donovan Research 2004; TNS Social Research 2009) and Hu et al. (2007). As with the bias towards participants with a medically diagnosed food allergy, this may mean that participants had better than average abilities to identify allergens on food labels.

Representativeness – Caregivers

Seven of the included studies had samples that were dominated by people caring for a person with a food allergy (Anaphylaxis Australia Inc 2003; Henderson 2003; NFO Donovan Research 2004; Swain 2006; Hu et al. 2007; TNS Social Research 2009; Zurzolo et al. 2013). This means that FAI who buy food for themselves were under represented in the studies.

The focus on caregivers also means that the participants are predominantly in the 25-44 years age bracket (the most common ages of people with young children). Food allergen labelling users in other age brackets may have different issues. For example, FAI who are teenagers may be less risk averse than older FAI and therefore potentially less likely to carefully check labels (COI Communications 2005). Elderly FAI, in contrast, may have more difficulty reading writing on labels in small print (such as ingredient lists).

¹⁸ People who believe they have food allergies may not receive a medical diagnosis for a range of reasons. For example, due to difficulties in accessing allergy specialists (Hu et al. 2007; Allen et al. 2009; Health Workforce Australia 2012).

In addition, the focus on caregivers meant that the majority of the caregivers included in the research were women. For example, in the FSANZ follow-on research (TNS Social Research 2009) 91 per cent of respondents were women. More general food labelling research has previously found that women use food labelling more often than men (Nayga, Jr. 2000; Drichoutis et al. 2006). This may mean the research participants were more experienced with reading food labels than the general population, and therefore may have had greater familiarity with them and fewer problems.

For these reasons, the focus on caregivers in the studies included in this literature search may mean some issues or problems are overstated while others are understated.

Lack of information on boldening and the use of a separate allergen summary statement

The studies identified in the literature search contained relatively little information on the effects of boldening allergens on food labels or of including them in a separate list. For example, none of the research tested whether food allergens declared in bold type were more likely to be noticed on food labels than those in normal type.

However, respondents in the FSANZ benchmark and follow-on studies did mention a number of format-related issues with current labelling or improvements that could be made. For example, some respondents mentioned having difficulties locating the ingredient list or allergen declaration, while others said that the writing was too small or illegible. These issues also arose in the section on suggested improvements, with some respondents suggesting 'ensure labels are readable and easy to access' and that allergens should be boldened. These suggestions indicate that some users of food allergen labelling encounter difficulties in identifying appropriate foods as a result of allergen label format or presentation. It is possible boldening and/or the use of a separate allergen summary statement may assist with identification.

The AFGC's 'Food Industry Guide to Allergen Management and Labelling' recommends both the boldening of allergens in the ingredient list, and the use of allergen summary statements (also in bold). It is possible that since its launch, in 2007, that manufacturers may have increased the use of boldening and/or allergen summary statements. However, the last FSANZ consumer allergen labelling survey was conducted in 2008, and it is possible that this would have been too early to pick up changes made in response to the Guide.

References

- Allen KJ, Koplin JJ, Gould C, Osborne NJ (2009) Prevalence of self-reported allergies to food in Australia as assessed by Internet-based questionnaires. *Medical Journal of Australia* 190(1):46–47
- Allergen Bureau (2012) Food Industry Guide to the Voluntary Incidental Trace Allergen Labelling (VITAL) Program. version 2.0, 23 April 2012.
<http://www.allergenbureau.net/downloads/vital/VITAL-Guidance-document-15-May-2012.pdf>, accessed 24 February 2014
- Anaphylaxis Australia Inc (2003) Survey of members on product labelling, history of reactions and severity.
<http://www.allergyfacts.org.au/images/pdf/AAI%20Food%20Labelling%20Survey%202003.pdf>, accessed 3 April 2013
- Barnett J, Leftwich J, Muncer K, Grimshaw K, Shepherd R, Raats MM, Gowland MH, Lucas JS (2011) How do peanut and nut-allergic consumers use information on the packaging to avoid allergens? *Allergy* 66(7):696–978
- Ben-Shoshan M, Sheth SS, Harrington DW, Soller L, Fragapane J, Joseph L, St.Pierre Y, La Vieille S, Elliott SJ, Wasserman S, Alizadehfar R, Harada L, Allen M, Allen M, Clarke AE (2012) Effect of precautionary statements on the purchasing practices of Canadians directly and indirectly affected by food allergies. *Journal of Allergy and Clinical Immunology* 129(5):1401–1404
- Chow, Bonnie Y. L. (2011) 'Everybody else got to have this cookie': the effects of food allergen labels on the well-being of Canadians. A thesis submitted to the School of Graduate Studies in partial fulfillment of the requirements for the degree Master of Arts (Geography), McMaster University, Ontario, Canada.
<http://digitalcommons.mcmaster.ca/opendissertations/6075/>, accessed 11 July 2014.
- COI Communications (2005) Qualitative research into the information needs of teenagers with food allergy and intolerance. United Kingdom Food Standards Agency, London, United Kingdom.
<http://www.food.gov.uk/6304C197-C474-4C34-A178-EBE8395FAECA/FinalDownload/DownloadId-2C043D136762FA65976E6A87433DB3A4/6304C197-C474-4C34-A178-EBE8395FAECA/multimedia/pdfs/foodinfoteens.pdf>, accessed 2 August 2013
- Cooper J, Warren L (2005) Food allergen labelling: an industry perspective. *Heinz Sight* 71:1–4
- Drichoutis AC, Lazaridis P, Nayga RM, Jr. (2006) Consumers' use of nutritional labels: a review of research studies and issues. *Academy of Marketing Science Review* 10(No.9)
- Fleming F, Grinter K, Leighton K, Norman K, Preston C, Said M (2010) The challenges of precautionary labeling. Ch 16 In: Boye JI, Godefroy SB (eds) *Allergen management in the food industry*. John Wiley & Sons, Inc., Hoboken, N.J., USA, p. 453–472
- Food Standards Australia New Zealand (2004) Food label monitoring survey, July 2002-December 2003. Phase 1 pilot report. Evaluation Report Series No. 10.
<http://www.foodstandards.gov.au/publications/pages/evaluationreportseries/foodlabelmonitoringsurvey10/Default.aspx>, accessed 22 July 2014

Food Standards Australia New Zealand (2008) Consumer attitudes survey 2007: a benchmark survey of consumers' attitudes to food issues. Food Standards Australia New Zealand, Australia.
<http://www.foodstandards.gov.au/publications/Pages/consumerattitudes/Default.aspx>, accessed 22 May 2014

Food Standards Australia New Zealand (2010) Review of the regulatory management of food allergens.
<http://www.foodstandards.gov.au/consumer/foodallergies/review/documents/Review%20of%20the%20Regulatory%20Management%20of%20Food%20Allergens-FSANZ%20Dec%202010.pdf>, accessed 21 November 2014

Gallagher M, Worth A, Sheikh A (2009) Clinical allergy has much to gain from engagement with qualitative research. *Allergy* 64(8):1117–1119

Health Workforce Australia (2012) Health workforce 2025: Medical specialties Volume 3. http://www.hwa.gov.au/sites/uploads/HW2025_V3_FinalReport20121109.pdf, accessed 2 October 2014

Henderson J, Mann NJ, Cooper J (2003) The impact of FSANZ labelling changes on knowledge of nutrition and allergens by consumers, health professionals and allergen sufferers. *Asia Pacific Journal of Clinical Nutrition* 12(Suppl S16):31

Henderson, Johanna (2003) The impact of FSANZ labelling changes (unpublished). Thesis, kindly provided by HJ Heinz Co Australia Ltd,

Hu W, Grbich C, Kemp A (2007) Parental food allergy information needs: a qualitative study. *Archives of Disease in Childhood* 92(9):771–775

Koplin JJ, Osborne NJ, Allen KJ (2010) Prevalence of allergen avoidance advisory statements on packaged processed foods in a supermarket. *Medical Journal of Australia* 193(7):426–427

Koplin JJ, Dharmage SC, Gurrin LC, Osborne NJ, Tang MLK, Allen KJ (2012) Are mothers of infants aware of the peanut and egg allergen content of foods? *Journal of Food Allergy* 1(1):20–27

Liebert, Susan (2008) The effect of the Food Allergen Labeling and Consumer Protection Act (FALCPA) on the accidental food allergen ingestion rate in adults with self-reported food allergies. Master of Science (Human Nutrition), Department of Health and Human Services, Eastern Michigan University, Ypsilanti, Michigan, United States.
<http://commons.emich.edu/theses/214/>, accessed 4 April 2013.

Miles S, Crevel R, Chryssochoidis G, Frewer L, Grimshaw K, Riera AG, Gowland H, Knibb R, Koch P, Madson C, Mills C, Palkonen S, Pfaff S, Roccaldo R, Scholderer J, Ueland O, Valovirta E, Verbeke W (2006) Communication needs and food allergy: an analysis of stakeholder views. Ch 18 In: Gilissen LJEJ, Wichers HJ, Savelkoul HFJ, and Bogers RJ (eds) *Allergy matters: new approaches to allergy prevention and management*. Springer,

Mills ENC, Valovirta E, Madsen C, Taylor L, Vieths S, Anklam E, Baumgartner S, Koch P, Crevel RWR, Frewer LJ (2004) Information provision for allergic consumers - where are we going with food allergen labelling? *Allergy* 59(12):1262–1268

Nayga RM, Jr. (2000) Nutrition knowledge, gender, and food label use. *Journal of Consumer Affairs* 34(1):97–112

NFO Donovan Research (2003) Quantitative research with consumers. Food Standards Australia New Zealand, Evaluation Report Series No. 4, Canberra.
<http://www.foodstandards.gov.au/publications/pages/evaluationreportseries/foodlabellingissuesquantitative/Default.aspx>, accessed 18 July 2014

NFO Donovan Research (2004) Quantitative consumer survey on allergen labelling: Benchmark survey. Food Standards Australia New Zealand, Evaluation Report Series No. 7.
<http://www.foodstandards.gov.au/publications/pages/evaluationreportseries/allergensurveyno7/Default.aspx>, accessed 18 July 2014

Pape SB (2009) "May contain" labelling: adequate consumer warning or unnecessarily defensive manufacturer behaviour? *Journal of Consumer Policy* 32(2):165–188

Population Research Laboratory (2009) Summary of results: report for participants. Exploring attitudes towards nutritional information on food packaging. Australian Health and Social Science (AHSS) Project. Population Research Laboratory, Institute for Health and Social Science Research, CQUniversity Australia,

Said M, Weiner JM (2004) "May contain traces of...": hidden food allergens in Australia (editorial). *Medical Journal of Australia* 181(4):183–184

Sharma, Kanchan M. (2011) A study of food allergy awareness and knowledge among owners and managers of Wellington eating-houses. Masters of Technology in Food Technology, Massey University, Wellington, New Zealand.
<http://muir.massey.ac.nz/handle/10179/3229>, accessed 11 July 2014.

Swain A (2006) Food Allergy - the issues of dietary management. Royal Prince Alfred Hospital Allergy Unit.
http://www.allergenbureau.net/downloads/news/RPAH_Presentation_Feb_06.pdf, accessed 5 April 2013

TNS Social Research (2009) Consumer study on food allergen labelling: Follow-on survey 2008-09. Food Standards Australia New Zealand, Evaluation Report Series No. 20.
<http://www.foodstandards.gov.au/publications/pages/evaluationreportseries/consumerstudyonfooda4610.aspx>, accessed 28 July 2014

Zurzolo GA, Mathai ML, Koplin JJ, Allen KJ (2012) Hidden allergens in foods and implications for labelling and clinical care of food allergic patients. *Current Allergy and Asthma Reports* 12(4):292–296

Zurzolo GA, Koplin JJ, Mathai ML, Tang MKL, Allen KJ (2013) Perceptions of precautionary labelling among parents of children with food allergy and anaphylaxis. *Medical Journal of Australia* 198(11):621–623

Appendix 1: Protocol for the rapid evidence assessment of consumer response to allergen labelling

Background

FSANZ currently has two separate projects dealing with food allergen labelling. These are:

- Recommendation 6 from 'Labelling Logic: Review of Food Labelling Law and Policy'¹⁹ (the Labelling Review): "That the food safety elements on the foods label be reviewed with the aim to maximise the effectiveness of food safety communication". This was referred to FSANZ for technical evaluation and advice by the COAG Legislative and Governance Forum on Food Regulation (the Forum)²⁰.
- Recommendation 47 from the Labelling Review: "That warning and advisory statements be emboldened and allergens emboldened in the ingredients list and in a separate list". This was also referred to FSANZ for technical evaluation and advice by the Forum.

Both of these projects include considering how consumers with food allergies (or people who select foods for those with allergies) identify and avoid foods containing allergens.

Objectives

This rapid evidence assessment has two main objectives:

Objective 1: To investigate and characterise the issues associated with consumer understanding, attitudes and behaviour with respect to allergen labelling of food, taking into account:

- a) format and presentation
- b) wording

Objective 2: To investigate the impact on consumers of making it mandatory for food allergens to be declared in bold type both in the ingredient list and in a separate list.

The main objective of this project is to provide the social science evidence base to support:

- FSANZ technical advice on Recommendation 47
- Part of the FSANZ technical advice on Recommendation 6

These objectives were addressed by identifying studies which explored Australian and New Zealand consumers' responses to and understanding of the labelling of allergens on food products. This was done through searches of online research databases and using professional networks. Detail on the inclusion and exclusion criteria; keywords searched; and databases searched follow.

Methods

This project is a rapid evidence assessment of available literature.

Inclusion criteria for studies

Studies were only included if they explored peoples' responses to and understanding of the

¹⁹ Labelling Logic: Review of Food Labelling Law and Policy, 2011. Prepared by the independent Panel for the Review of Food Labelling Law and Policy, commissioned by the Australia and New Zealand Food Regulation Ministerial Council.

<http://www.foodlabellingreview.gov.au/internet/foodlabelling/publishing.nsf/content/labelling-logic>

²⁰ Formerly the Australia and New Zealand Food Regulation Ministerial Council

labelling of allergens on food products. This could include both mandatory aspects (e.g. declaration of common allergens on food labels) and voluntary aspects (e.g. manufacturers following Australian Food and Grocery Council allergen labelling recommendations²¹). While ingredient lists and advisory statements are likely to be the main sources of allergen information, other label elements may be relevant to food allergic consumers. For example, allergic consumers may use manufacturers' contact information to call and verify the allergen content of foods. Therefore studies did not necessarily need to deal with consumers' use of ingredient lists or advisory statements to be considered relevant to the review.

Studies only dealing with food allergies in the food service industry (i.e. what precautions allergic consumers take when eating out) and which did not include food labels were excluded. Studies which examined label reading in the food service industry (i.e. food servers checking labels for allergens on behalf of consumers) were eligible for inclusion

Eligible studies could be any of the following types:

- surveys
- focus groups
- interviews
- experiments
- observational studies
- summaries or reviews of previous primary research (where the original research paper is not available).

Inclusion criteria for participants

Participants could include any of the following:

- consumers with food allergies
- consumers responsible for selecting/buying food for individuals with food allergies (e.g. caregivers)
- those serving food to consumers with food allergies (e.g. restaurants)
- general consumers (where they are asked about allergen labelling).

Participants had to be from either Australia or New Zealand.

Types of outcome measure

Types of outcomes reported on could include participants':

- food allergen labelling preferences (e.g. whether they would prefer to have an allergen declaration separate from the ingredient list)
- understanding of food allergen labelling (e.g. being able to correctly identify allergens in the ingredient list)
- use of food allergen labelling (e.g. would they purchase a food with a may contain statement?)
- awareness of food labelling regulations related to allergens (e.g. that allergens in compound ingredients must be declared).
- trust in allergen labelling (e.g. whether consumers are confident that foods not declaring a particular allergen will not contain that allergen).

Data synthesis

The literature findings were grouped and discussed based on the following topics:

- use of labels by people who buy food for food allergic individuals

²¹ AFGC Allergen Management and Labelling Guide
<http://www.afgc.org.au/doc-library/category/5-public-tools-and-guides.html?download=42%3Aallergen-labelling-guide>

- the ease of using allergen labelling of foods
- ability to use ingredient lists to identify appropriate foods
- uncertainty and trust in food allergen labelling
- allergic reactions attributed to unlabelled / incorrectly labelled food
- problems encountered in identify suitable foods
- changes noticed in food allergen labelling
- potential improvements to food allergen labelling
- precautionary labelling.

Literature searching methodology

The following process was used to identify articles or reports on consumer responses to and understanding of food allergen labelling. Details of all identified articles on this subject were recorded in reference managing software. However, only those which included Australian or New Zealand consumers were used in the assessment.

1. Literature database search

The following databases were searched for relevant articles:

- Medline
- Food Science Source
- Food Science and Technology Abstracts
- Nutrition Abstracts and Reviews
- Health Source: Nursing/Academic Edition
- Business Source Premier

The search terms varied by database as they were adapted based on the number of results returned:

- Medline - Allergy and Immunology (a MeSH search phrase) AND label
- allergy AND food
- Food Science Source – allergy AND food
- Food Science and Technology Abstracts – allergy AND food
- Nutrition Abstracts and Reviews – food AND label; food allergies/food allergens AND label
- Health Source: Nursing/Academic Edition – allerg* AND label
- Business Source Premier – allerg* AND label

2. Forward searching using identified articles

Articles identified in the literature databases were recorded in reference managing software. Forward searching was conducted for articles citing each of these using Google.

3. Backwards searching using reference lists

Citations found in steps 1 and 2 were examined to identify those which:

- contained a literature review section on consumer responses to food allergen labelling
- were conducted with Australian or New Zealand participants

The full text of these citations was then obtained, and the reference lists searched for relevant articles they had cited. The reference lists of the following papers were checked: (Mills et al. 2004; Miles et al. 2006; Hu et al. 2007; Liebert 2008; Gallagher et al. 2009; Pape 2009; Fleming et al. 2010; Barnett et al. 2011; Chow 2011; Sharma 2011; Ben-Shoshan et al. 2012; Koplín et al. 2012; Zurzolo et al. 2012).

4. Specific website searches

The following websites were searched for citations:

- Allergy and Anaphylaxis Australia website (<http://www.allergyfacts.org.au>)
- Allergy New Zealand website (<http://www.allergy.org.nz>)
- Australasian Society of Clinical Immunology and Allergy website (<http://www.allergy.org.au>)
- Allergen Bureau (an initiative of the Australian Food & Grocery Council Allergen Forum) website (<http://www.allergenbureau.net>)

5. FSANZ literature database

A literature database maintained by FSANZ, which contains citation details for articles on consumers and food, was searched for relevant articles.

6. Google search

In addition, when searching for full text copies of articles using Google, other similar titles which appeared in results were recorded where they appeared to be relevant. Brief searches were made of Google using the following phrases:

- allergen label
- food allergen consumer

Table 14 shows the sources of articles on allergen labelling.

Table 14. Papers identified by search process

Step	Number of papers identified
1. Literature database search	16
2. Forward searching using identified articles	24
3. Backwards searching using reference lists	13
4. Specific website searches	3
5. FSANZ literature database	10
6. Google search	5
TOTAL	71

From the 71 total articles on consumers' responses to and understanding of food allergen labelling, 17 were articles or reports from Australia or New Zealand (Anaphylaxis Australia Inc 2003; NFO Donovan Research 2003; Henderson et al. 2003; NFO Donovan Research 2004; Said and Weiner 2004; Cooper and Warren 2005; Swain 2006; Hu et al. 2007; Food Standards Australia New Zealand 2008; Population Research Laboratory 2009; TNS Social Research 2009; Fleming et al. 2010; Koplin et al. 2010; Sharma 2011; Koplin et al. 2012; Zurzolo et al. 2012; Zurzolo et al. 2013). However, some of these were excluded from the assessment because they were editorials, reviews or overviews relating to food allergen labelling and the effects on consumers (Said and Weiner 2004; Fleming et al. 2010; Zurzolo et al. 2012). The articles by Koplin et al. (Koplin et al. 2010; Koplin et al. 2012) were excluded because one was a label survey of food products (2010), and the other dealt with consumers' knowledge of which products and dishes generally contain peanuts and eggs, but did not examine label use (2012). The survey by Sharma (2011) was also excluded because it did not deal with label use.

This left eleven papers or reports remaining (Anaphylaxis Australia Inc 2003; NFO Donovan Research 2003; Henderson et al. 2003; NFO Donovan Research 2004; Cooper and Warren 2005; Swain 2006; Hu et al. 2007; Food Standards Australia New Zealand 2008; Population Research Laboratory 2009; TNS Social Research 2009; Zurzolo et al. 2013). Information on methodology and results was sparse for some of these (Anaphylaxis Australia Inc 2003;

Henderson et al. 2003; Cooper and Warren 2005; Swain 2006), but they were still included in the assessment and their quality noted in the summary table in Appendix 2. The Henderson et al. (2003) reference was only an abstract, but some of the results were reported briefly in a newsletter by Cooper and Warren (2005). Through contacting one of the authors, FSANZ was able to obtain a thesis (unpublished) in which the research was written up (Henderson 2003). This was used in place of Henderson et al. (2003) and Cooper and Warren (2005) as it provided a more comprehensive description of the study and its findings.

Research review process

Each study was reviewed for quality. This review took into account factors such as, the sample size, the age of the study, the sampling methodology (and how likely it was to introduce bias to the sample), information provided on the sample (where bias was likely to have been introduced) and the relevance of the questions examined. Using these criteria, studies were categorised as low, medium and high quality. Appendix 2 includes the summary of the studies included in this rapid evidence assessment.

The limitations of the literature (as a whole) are also discussed in the rapid evidence assessment.

Appendix 2: Summary of studies included in the rapid evidence assessment

Authors	Country	Study type	Sample	Sample size	Stimuli used	Relevant outcome measure(s)	Sampling technique	Quality
Anaphylaxis Australia Inc. (2003)	AU	Survey	FAI and family members of FAI	N = 243		Ease of understanding ingredient labels Whether respondents would purchase a food without an ingredient label Whether they would purchase a food for the allergic individual which contained the allergen Whether they would purchase a food for the allergic individual which carried precautionary labelling How they would respond to a food which contained allergen oil Whether the food allergic individual has had an allergic reaction to a food which did not mention the allergen in ingredients Whether food labels have improved over time Qualitative responses regarding may contain statements, boldening	Sampled Anaphylaxis Australia Inc. members	Low (little information provided on sample, unrepresentative sample, no ability to estimate sampling bias)
Food Standards Australia New Zealand (2008)	AU NZ	Online survey	Online research panel	AU = 1202 NZ = 800		% Who indicated that allergen information is looked for when purchasing a product for the first time % Who report food allergies as a reason for seeking label information	Research consultant's online panel	Medium (online panel with unrepresentative sample but weighting was undertaken)
Henderson (2003) [in place of Henderson et al. (2003) and Cooper and Warren (2005)]	AU	Survey	FAI recruited through Anaphylaxis Australia	FAI (and those who buy for FAI) N = 107	Ingredient lists with a variety of formats	Changes noticed in labels, perceptions of changes noticed, preferred format for declaration of allergens in ingredient list, perceptions of precautionary labelling, perceptions of current allergen labelling	Sampled members of Anaphylaxis Australia	Medium (small sample size, unrepresentative sample)
Hu et al. (2007)	AU	In-depth semi-structure interviews and focus group discussions (qualitative)	Parents with an FAI child	N=84		What types of information regarding food labels parents need	Recruited through three NSW allergy clinics and through Anaphylaxis Australia Inc.	Medium (unrepresentative sample, one geographic area)
NFO Donovan (2003)	AU NZ	Door-to-door survey	People over 18 years old main cities	AU=1259 NZ=681	Show cards with images of food products	% Who use allergen declarations Clarity of allergen declarations % Who think precautionary labelling is useful	Random drawing of start points for door-to-door interviewing	High (large sample, only sampled in major cities but sampling method used was fairly robust except for this)
NFO Donovan (2004)	AU NZ	Mail survey	Joint/main grocery buyers who have the most serious food allergy in their household or who have an FAI child	AU = 416 NZ = 97		Use of labels, interpretation of labels, changes in labels noticed, suggested improvements in labels, problems experienced in using labels, perceptions of labels	Respondents contacted through public-hospital based allergy clinics, private clinics and allergy support groups. In addition a free call number was set up to allow people to self-select into the sample.	Medium (large but unrepresentative sample)
Population Research Laboratory (2009)	AU	Online survey	Randomly selected national panel of participants	N=1435		Proportion of respondents looking for allergens in ingredient lists Proportion of respondents looking for nut-free, lactose-free, gluten-free labelling	Sampled from a randomly selected national panel that is recruited via telephone.	Medium (online panel used which is established using a representative CATI method, did not examine understanding)
Swain (2006)	AU	Survey	Parents and children recruited through an allergy clinic	N=94	Commercially available food products	Time taken to categorise the food as free or not free of target allergen	Respondents were sampled from the Royal Prince Alfred Hospital Allergy Clinic	Low (small sample size, unrepresentative sample, little information provided on sample, not clear whether differences are statistically significant, little information provided on methods)
TNS Social Research (2009)	AU NZ	Mail and online Survey	Joint/main grocery buyers who have the most serious food allergy in their household or who have an FAI child	AU = 893 NZ = 135	Ingredient lists	Use of labels, interpretation of labels, changes in labels noticed, suggested improvements in labels, problems experienced in using labels, perceptions of labels	Respondents contacted through public-hospital based allergy clinics, private clinics and allergy support groups	Medium (large but unrepresentative sample)

Authors	Country	Study type	Sample	Sample size	Stimuli used	Relevant outcome measure(s)	Sampling technique	Quality
Zurzolo et al. (2013)	AU	Survey	Parents of FAI children recruited through an allergy clinic	N = 246		<p>Which parts of labels are used to identify allergens (ingredient list, or precautionary labelling)</p> <p>Ease of understanding and using the ingredient list</p> <p>Whether respondents would purchase a food with precautionary labelling</p> <p>How frequently respondents use precautionary labelling</p> <p>Trust in precautionary labelling</p> <p>Whether respondents feel that there should be more government regulation of precautionary labelling</p> <p>How respondents interpret precautionary labelling</p>	Parents of children with a medically diagnosed food allergy who attended the Department of Allergy and Immunology at the Royal Children's Hospital were recruited. A consecutive series of 497 parents were asked to participate.	Medium (unrepresentative sample, one geographic location)

Appendix 3: Findings from the food labelling monitoring survey

The findings below are summarised from:

Food Standards Australia New Zealand (2004) Food label monitoring survey, July 2002-December 2003. Phase 1 pilot report. Evaluation Report Series No. 10.

<http://www.foodstandards.gov.au/publications/pages/evaluationreportseries/foodlabelmonitoringsurvey10/Default.aspx>, accessed 22 July 2014

Changes in allergen declarations on packaged food products in response to the 2002 Code

FSANZ commissioned label monitoring research to examine changes to food labels (Food Standards Australia New Zealand 2004). This research was conducted in two stages (in 2002 and 2003) to examine how food labels were changed by manufacturers to shift from complying with the old Food Standards Code to the new Code. The changes found in the research provide information on the changes survey respondents may have been noticing in food labels in the 2003 research.

The main changes over time were:

- an increase in the proportion of food labels which declared one or more food allergens in the ingredient list²²
- an increase in the proportion of food labels with allergen summary statements (e.g. 'Contains milk, soy')
- an increase in the proportion of food labels with 'may contain allergen' statements²³
- an increase in the use of common names instead of technical ingredient names when declaring allergens in ingredient lists
- an apparent drop in the proportion of allergen summary statements and precautionary statements which were displayed in bold.

As shown below, in Table 15, the proportion of food labels which declared allergens either in the ingredient list or in an allergen summary statement (e.g. 'Contains milk, soy') increased between Stage 1 (conducted July-December 2002) and Stage 2 (conducted December 2003). The proportion of labels carrying 'may contain allergen' statements also increased.

Table 15. Changes in the prevalence of allergen declarations on packaged food products between 2002 and 2003

	Stage 1 (% of all labels) N=448	Stage 2 (% of all labels) N=1153
Allergens declared in ingredient list	57	63
Allergen summary statements	7	14
Precautionary labelling	12	20

The food categories in which the proportion of products carrying allergen summary statements increased the most were: mixed foods (from 6 per cent to 26 per cent); edible

²² NB: The survey assessed the presence or absence of allergen declarations in the ingredient list and allergen summary statements (e.g. 'Contains milk, soy'). It was not able to examine what proportion of food labels fully complied with allergen labelling requirements.

²³ NB: It is not clear from the labelling survey report whether this category of statements included other precautionary statements (e.g. 'made in a plant that also produces products containing sesame seeds') or only 'may contain allergen' statements.

For official use only

oils and oil emulsions (from 0 per cent to 17 per cent); and ice creams and edible ices (from 0 per cent to 12 per cent). Declarations of sulphites showed the largest increase (from 0 per cent of allergen summary statements at Stage 1 to 10 per cent in Stage 2).

The food categories in which the proportion of products declaring one or more allergens in the ingredient list increased the most were: ice cream and edible ices (from 71 per cent to 82 per cent); edible oils and emulsions (from 44 per cent to 52 per cent); and confectionery (from 78 per cent to 83 per cent). Declarations of soybeans showed the largest increase, from being declared on 33 per cent of all labels which declared an allergen in the ingredient list in Stage 1 up to 41 per cent in Stage 2.

Of the ingredient lists which included an allergen declaration, the proportion which used a common name rather than a technical ingredient name rose from 59 per cent at Stage 1 to 82 per cent at Stage 2. As an example, 'whey protein concentrate' would be classified as a technical ingredient name, while 'milk protein' would be a common name that could be used to describe the same ingredient. The proportion using a combination of a common name and a technical ingredient name (e.g. 'casein (milk)') increased from 5 per cent at Stage 1 to 15 per cent at Stage 2.

Of the labels which declared one or more allergens in the ingredient list, the proportion which emboldened the allergen(s) remained low between Stage 1 (7 per cent) and Stage 2 (9 per cent).

In contrast to allergen declarations in ingredient lists, allergen summary statements were more likely to be displayed in bold. However, the proportion of these displayed in bold dropped between Stage 1 (63 per cent) and Stage 2 (44 per cent).

A similar trend was found with 'may contain allergen' statements. Of all labels carrying these, 39 per cent emboldened them in Stage 1, but this dropped to 28 per cent in Stage 2.

The positioning of allergen summary statements and 'may contain allergen' statements relative to the ingredient list remained the same between Stage 1 and Stage 2. At Stage 1, 87 per cent of all allergen summary statements were placed near the ingredient list compared with 88 per cent at Stage 2. Similarly, 83 per cent of all 'may contain allergen' statements were placed near the ingredient list in Stage 1, compared to 89 per cent in Stage 2.

Ingredient lists were also assessed for whether they met compound ingredient declaration requirements. Compound ingredients are those ingredients which are themselves comprised of two or more ingredients. For example, a ready-made meal may contain Worcestershire sauce which itself is comprised of various ingredients, such as vinegar, sugar and anchovies. Food labels must declare the ingredients of compound ingredients if they include food additives or allergens that have mandatory declaration requirements, even if the proportion of the compound ingredient in the final product is less than 5 per cent²⁴. For example, a ready-made meal containing Worcestershire sauce (containing anchovies) would need to declare all of the ingredients of the Worcestershire sauce as anchovies are fish and therefore must be declared. This would be the case even if the Worcestershire sauce comprised less than 5 per cent of the final product.

Between Stage 1 and Stage 2, of all labels declaring a compound ingredient in the ingredient list, the proportion which were consistent with the requirements remained stable.

²⁴ Compound ingredients which comprise less than 5 per cent of the final product only have to declare the ingredients of the compound ingredient if they include an allergen with mandatory declaration requirements or a food additive which performs a technological function.

For official use only

In Stage 1, 71 per cent were assessed as consistent with requirements, 6 per cent indeterminable and 23 per cent inconsistent. In Stage 2, 70 per cent were consistent, 27 per cent indeterminable and 3 per cent inconsistent.

In summary, FAI and those who buy groceries for FAI may have noticed an increase in the proportion of food labels which declared one or more allergens between 2002 and 2003. These declarations included both allergen summary statements and declarations in the ingredient list. They may have also noticed an increase in the prevalence of 'may contain allergen' statements. In addition, the increased usage of common names for declared allergens, and decline in the use of emboldening for allergen summary statements and 'may contain allergen' statements may have been noticed.