

**Attachment 1 – W1070 Plain English Allergen Labelling**

# **Qualitative Survey of Allergen Labelling**

# Executive Summary

A food allergy is an adverse health effect arising from a specific immune response that occurs reproducibly on exposure to a given food. These effects can be severe, including potential fatal consequences such as anaphylaxis. Unlike food allergies, food intolerances are not an immune reaction to proteins in food, but may result in symptoms such as gastrointestinal upset, rash or migraine. Food allergy prevalence appears to be increasing. The potential adverse effects, including death, indicate the importance of labelling food products appropriately with their allergen contents so consumers can make informed decisions about their food choices.

## Purpose

*Standard 1.2.3 – Mandatory Warnings and Advisory Statements and Declarations* of the *Australia New Zealand Food Standards Code* requires the declaration of the presence of certain substances on food labels. However, Standard 1.2.3 does not mandate the terminology to be used for the declarations, or how the declarations should be made.

There are reports that consumers are confused by the terminology used for allergen declarations on food labels, especially when the terms do not use or refer to the allergen themselves (e.g. naming an ingredient ‘ovalbumin’ without reference to ‘egg’). As a consequence, food-allergic consumers may be at risk of incorrectly choosing a product and exposing themselves to a food allergen.

The purpose of this qualitative study is to review the terminology used for allergen declarations on the labels of food sold in New Zealand. This study will help to identify whether terms are commonly used that consumers may not be able to readily recognise as being the food allergens listed in Standard 1.2.3. This study also aims to identify the terms used for the labelling of fish and seafood, and specifically investigate whether the term ‘fish’ is being used when molluscs are present in the food.

## Methods

The survey of food labels was conducted during September and October 2015, using data from the New Zealand NutriWeb database (2015 dataset). Information on all 2227 food products in four food categories (biscuits, breakfast cereals, fish, and seafood, convenience foods) were exported from the database. 1514 product labels were excluded from the analysis, primarily because they did not declare any allergens. The remaining 713 were examined to assess the terminology used for each allergen declaration. Specific terms that did not refer to an allergen (as named in Standard 1.2.3), and may be perceived as confusing to consumers, were then identified.

## Results

Of the 425 different terms used for allergen declarations on the food labels that were analysed (full list in Appendix 1), there were only a small number of terms that did not refer to allergens as they are described in Standard 1.2.3. However, problems relating to the declarations for gluten-containing cereals, crustacea/molluscs, and milk were identified:

- The labels of many cereal products were found to use ‘gluten’ in the ‘contains’ statement instead of ‘gluten-containing cereals’ or the actual cereal name as recommended by the Australian Food and Grocery Council. This may be confusing for those consumers who have an allergy from cereals, such as wheat, that is not related to gluten content, even when the name of the cereal is included in the ingredient list.

- It was found that products containing crustacea or molluscs were being declared in 'contains' statements as 'fish'. This may cause consumers to unnecessarily restrict products, or consume products that contain the relevant seafood allergen, even when the name of the fish species is included in the ingredient list.
- There were a number of terms used for the declaration of milk that could potentially be considered as confusing or unclear, including rennet, whey and caseinate. Although it is not mandatory to declare these ingredients using the word 'milk' (Standard 1.2.3), it is possible that some consumers would not recognise them as being derived from milk, and thereby make inappropriate product choices.

## **Conclusion**

This study indicates that there does not appear to be an overall significant problem in the terminology used to declare allergens on a sample of New Zealand food labels. There are however, potential issues relating to the terminology used for declaring the presence of fish, crustacea and molluscs, and cereals containing gluten. Some of the terms used to declare the presence of milk may also be unrecognisable by consumers, although the results from this study are uncertain on this outcome. Further investigation into 'milk' declaration terminology may assist in clarifying these findings.

FSANZ has previously received stakeholder feedback on potential problems with the terminology for fish and wheat/gluten declarations. This study therefore reinforces this feedback, and highlights the need for further research on how consumers understand and respond to the use of different terms for declaring the presence of cereal and fish allergens.

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# 1. Introduction

*Standard 1.2.3 – Mandatory Warnings and Advisory Statements and Declarations* of the *Australia New Zealand Food Standards Code (Code)* requires the declaration of certain substances on food labels. Food Standards Australia New Zealand (FSANZ) is reviewing the terminology used on food labels to declare the presence of allergens as listed in the table to clause 4 of Standard 1.2.3. There are reports that consumers are confused by the terminology used to describe allergens on food labels, especially when the terms do not use or refer to the allergen themselves (e.g. naming an ingredient ‘ovalbumin’ without reference to ‘egg’). As a consequence, food-allergic consumers may be at risk of incorrectly choosing a product and exposing themselves to a food allergen.

The purpose of this qualitative study is to review the terminology used for allergen declarations on the labels of food sold in New Zealand. This study will help to identify whether terms are commonly used that consumers may not be able to readily recognise as being the food allergens listed in Standard 1.2.3. This study also aims to identify the terms used for the labelling of fish and seafood, and specifically investigate whether the term ‘fish’ is being used when molluscs are present in the food.

## 2. Background

### 2.1 Food allergies and intolerances

A food allergy is defined as “an adverse health effect arising from a specific immune response that occurs reproducibly on exposure to a given food” (Boyce 2010). According to the Australasian Society of Clinical Immunology and Allergy (ASCIA), 4.1 million Australians (19.6%) have at least one allergy. Allergy figures are considered estimates and need to be used with caution as most are derived from self-report studies, thus overestimation can occur (Savage & Johns 2015). There is a need for increased resources for the management of allergies at a population level due to the increasing prevalence and potential for fatality (Boyce 2010). The most commonly reported food allergies in Australia and New Zealand include: milk, egg, peanut, tree nut, soy, wheat, sesame, fish and crustacea (Savage & Johns 2015). These allergies may have onset at infancy or adulthood and may be out-grown during the course of a person’s lifespan (Savage & Johns 2015).

The process for identifying food allergies is to completely avoid the food containing the allergen followed by a food challenge with the allergen under professional medical guidance (Sicherer 2011). Treatment consists of total allergen avoidance, which can be difficult, especially when selecting food products that contain many potentially allergenic ingredients and many terms are used for describing these ingredients (Savage & Johns 2015). Thus it is essential for food-allergic consumers to be able to understand allergen labelling in order to identify potential allergens that may cause adverse health outcomes.

Food intolerances are conditions that may affect an individual’s choice to select certain products on the market. Unlike food allergies, food intolerances are not an immune reaction to proteins in food, and result in symptoms such as gastrointestinal upset, rash or migraines (Boyce 2010). Although not fatal, these intolerances vary in severity and can cause undesirable effects for the individual (Boyce 2010).

Due to the prevalence of both food allergies and food intolerances it is essential for food products to have clear labelling of ingredients and allergens so that consumers can make informed decisions. Many countries including Australia, New Zealand and the United States of America have policies and standards regarding the labelling of allergens on food, however confusion about terms used in allergen labelling still remains (Pieretti 2009).

## 2.2 Regulation of food allergen labelling

Food standards for allergy labelling in Australia and New Zealand are developed by FSANZ. Standard 1.2.3 requires the presence of the following substances to be declared on the food label:

- Added sulphites in concentration of 10mg/kg or more
- Cereals containing gluten (including barley, rye, wheat, spelt and their hybrid strains)
- Egg and egg products
- Fish and fish products
- Milk and milk products
- Peanuts and peanut products
- Sesame seed and sesame seed products
- Soybean and soybean products
- Tree nut and tree nut products other than coconut from the fruit of the palm *Cocos nucifera*.

Food manufacturers often declare allergens in the ingredient list, although it is not essential for them to do so as long as it is declared elsewhere on the label of packaged food. Some manufacturers use a 'contains' statement (e.g. 'contains: allergen X, allergen Y' etc.). Standard 1.2.3 does not mandate the terminology used on food labels for allergens, and the use of terms that may not be readily understood by consumers could cause confusion when attempting to select products appropriate for an allergy or intolerance.

The Australian Food and Grocery Council (AFGC) has developed a *Food Industry Guide to Allergen Management and Labelling (2007)* (the AFGC Guideline). This a voluntary guide that recommends food packages declare allergens consistent with Standard 1.2.3. It also suggests that if an allergen name (as listed in Standard 1.2.3) is not bracketed in an ingredient list, then it should be listed in a 'contains' statement. In the case where the ingredient list contains the names of multiple gluten-containing cereals, the guide recommends that the 'contains' statement can use the phrase 'gluten-containing cereals'.

## 3. Methods

The survey of food labels was conducted during September and October 2015, using data from the New Zealand NutriWeb database (2015 dataset). NutriWeb is a web-based user interface providing access to a database containing package, nutrient, and ingredient information for packaged foods available for sale from the two main New Zealand supermarket retailers in Auckland. Foodstuffs (54% grocery market share) and Progressive Enterprises (38% market share) provide the largest range of products (Euromonitor PLC 2014). NutriWeb is a partnership between The Ministry for Primary Industries, and The National Institute for Health Innovation at the University of Auckland.

Information about 2227 food products was extracted from the New Zealand NutriWeb database (2015 dataset). Four food categories (Fish and Seafood, Biscuits, Breakfast cereals and Convenience foods) were selected based on the high probability that allergen declarations would be made on most of these foods, and that the foods would include all the substances that need to be declared according to Standard 1.2.3. The following information for foods in each of the four categories was transferred to an excel spreadsheet:

- Name of food
- Brand name
- Manufacturer
- Ingredient list
- Allergens in the 'contains' statement

For each food category, foods were excluded and information on the allergens were categorised and coded according to the process illustrated in Figure 1. The reasons for the exclusions are given in Figure 1. Information about the excluded foods was transferred to an excel spreadsheet with the reason for exclusion noted. A total of 1514 foods were excluded, leaving 713 foods remaining (350 biscuits, 122 breakfast cereals, 86 fish and fish products and 155 convenience foods).

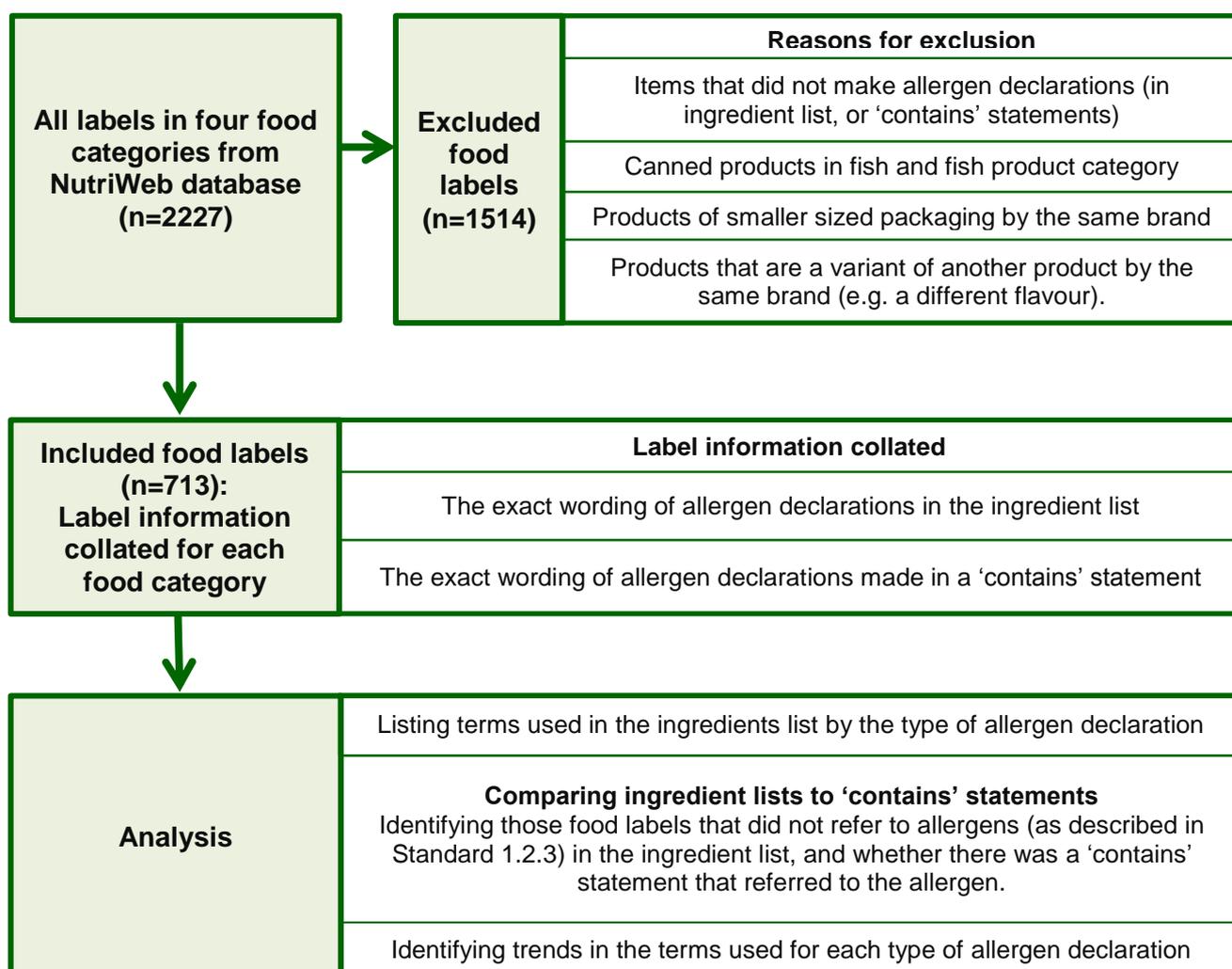


Figure 1: Methodological process to sort and analyse data on four food categories from the New Zealand NutriWeb database.

Terminology used for each substance listed in the table to clause 4 of Standard 1.2.3 was identified in the ingredient list, compiled into a list, and common terms noted. The data were then categorised into whether the food label displayed a 'contains' statement or not, and if so, what terms were used for the declaration of allergens in the 'contains' statement. From the ingredient list and 'contains' statement information, specific terms that did not refer to the allergens as they are described in Standard 1.2.3 (wheat, rye, barley, oats, spelt, egg, milk,

crustacea, fish, peanuts, 'tree nuts', soy or sulphites) were listed. Terms that did not directly include the names of hybrid cereal strains were also identified.

The data were then reviewed to obtain the following:

- The variety of terms used in the ingredient list against food types and types of allergy declarations
- Whether labels that had allergen declarations in the ingredient list and did not refer to the allergen as described in Standard 1.2.3 (either in the ingredient name or in brackets next to the name) referred to the allergen in a 'contains' statement or not.
- Any further observations with the terms used for allergen declarations that could make it difficult for consumers to recognise the presence of an allergen.

Another FSANZ staff member chose approximately 10% of foods at random from each food category, to check how foods had been excluded from the survey and how allergens in the ingredient list had been identified. This checking process was undertaken to minimise errors in the data.

## 4. Results

The number of food labels examined in this survey is summarised in Table 1. A total of 713 products were included for further analysis after exclusions. 425 terms were identified as being used to describe ingredients containing the substances listed in Standard 1.2.3 (Appendix 1).

**Table 1: Number of products examined from the NutriWeb database and excluded from the analysis.**

Food Product Category	Number of foods examined	Number of foods excluded	Total number
Biscuits	350	294	644
Breakfast Cereals	122	231	353
Convenience foods	155	582	737
Fish and fish products	86	407	493
Total number	713	1514	2227

### 4.1 Terms used in the ingredient list that do not refer to allergens as described in Standard 1.2.3

The terms used in the ingredient list that did not refer to allergens (as they are described in Standard 1.2.3) can be viewed in Table 2 below (a total of 45 terms). This information was compared against whether the 'contains' statement referred to these allergens or not.

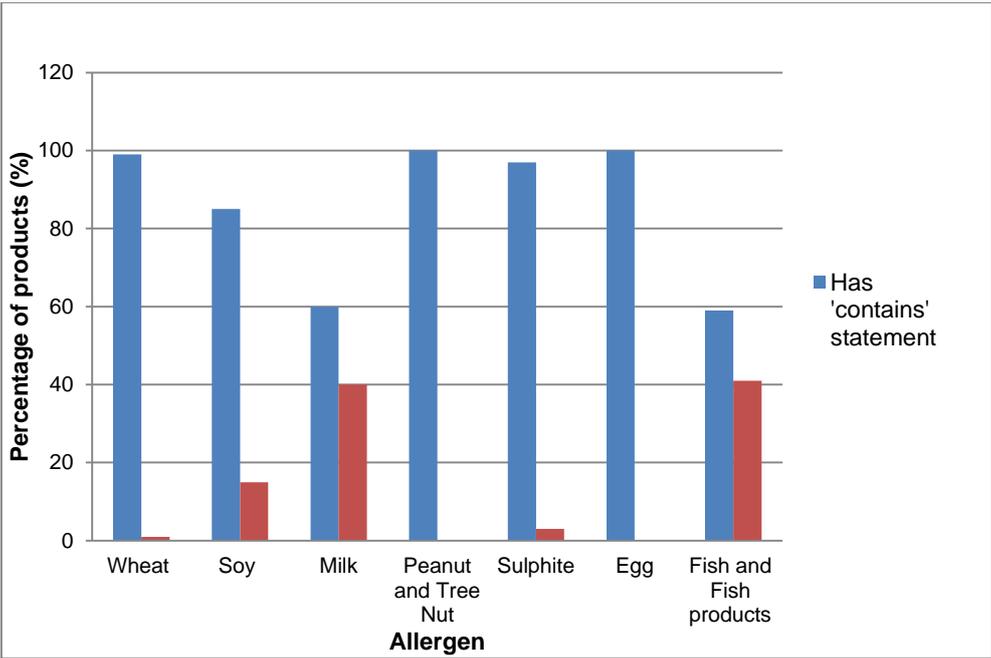
**Table 2: Terms for allergenic ingredients that did not include words that describes an allergen, with and without the use of these words in a ‘contains’ statement.**

Food product category	Terms used in the ingredient list that do not include words that describes an allergen* <b>AND</b> the ‘contains’ statement <u>did</u> use words that describe an allergen*	Terms used in the ingredient list that do not include words that describes an allergen* <b>AND</b> the ‘contains’ statement <u>did not</u> use words that describe an allergen*, or the label had no ‘contains’ statement
Biscuits	Antioxidant (307, 306, 307b), Bran, Buttermilk, Cereals, Dairy, Flour, Gluten, Guar Gum, Hazelnuts, Preservative (223).	Albumin, Antioxidant (307, 306, 307b), Butter, Caramel, cheese, cut squid, Emulsifier 322, Guar Gum, Japanese anchovy, Lactose, Malt extract, Preservative (223), rennet, whey.
Breakfast Cereals	Caramel III, Gluten, Preservatives (223).	-
Convenience foods	Bonito powder, Butter, Caramel, Caseinate, Cheese, Clam, Cream, Cod, Dairy, Durum flour, Durum Semolina, Durum wheat flour, Gluten, Mussels, Pasta, Prawn, Preservative (223), Salmon, Shrimp, Squid, Whey protein, Tuna, Yoghurt, Worcestershire Sauce.	Antioxidant (306), barley, butter, Caramel III, cheese, cream, cheese, green curry paste, Guar gum, Lactose, Pasta, Pizza base, Prawn, rennet, shrimp.
Fish and fish products	Anchovies, Clam, Guar gum, Hoki, Mussel, Oyster, Prawn, Salmon, Scallop, Squid, Trevally.	Anchovies, Antioxidant (307), Clam, Hoki, Mussel, Oyster, Prawn, Salmon, Scallop, Shrimp, Squid, Trevally.

\* ‘Words that describe an allergen’ means use of the words wheat, rye, barley, oats, spelt, egg, milk, crustacea, fish, peanuts, ‘tree nuts’ (generic term only), soy or sulphites.

**4.2 Use of the ‘contains’ statement for allergen declarations**

The percentage of products that displayed an allergen declaration, and either did or did not carry a ‘contains’ statement, was determined for each allergen (Figure 2). The majority of products containing wheat, soy, peanut or tree nut, sulphite and egg allergens had ‘contains’ statements. ‘Contains’ statements were used less often for those products containing milk and fish/fish product allergens.



**Figure 2: Percentage of products with a ‘contains’ statement, by type of allergen**

### 4.3 Further observations from the analysis of data

The products in each of the four food categories were further analysed to identify the manner that terms did not refer to an allergen (as described in Standard 1.2.3). A full list of this analysis of the data, reported by the type of allergen, is at Appendix 2. Notable observations from this analysis are as follows:

- For cereal declarations, 'contains' statements referred 'gluten', not 'gluten-containing cereals' or the name of the cereal itself (e.g. wheat, barley, rye, oats)
- Antioxidants (306, 307 and 307b) were most often not identified as being derived from 'soy' (no reference on the label in either the ingredient list or 'contains' statement)
- Terms used for milk (i.e. whey, rennet) were not identified as 'milk' in the ingredient list and/or 'contains' statement
- Preservatives known to contain sulphites (preservative 223- sodium disulphite) were not identified as sulphite-containing either in the ingredient list and/or 'contains' statement
- For crustacea declarations, the 'contains' statement referred to 'fish' and not 'crustacea'.
- For mollusc ingredients, the term 'mollusc' was not used as part of the ingredient name or in the 'contains' statement (if present). In some instances, the 'contains' statement used the word 'fish'.

## 5. Discussion

### 5.1 Recognising and identifying allergens

Food labels can potentially be confusing and difficult to interpret by consumers trying to avoid allergens due to the number of different terms used (Appendix 1) and inconsistencies in allergen declarations (Puglisi & Frieri 2007). However, as shown in Table 2 and Figure 2, the analysis of food label data from the NutriWeb database indicates that of the 425 different terms used for all allergen declarations on the food labels, only a small proportion (45) did not refer to the allergen when present in the ingredient list (if the ingredient was not clearly an allergen) or in a 'contains' statement.

Therefore, the main finding is that this study did not identify a widespread practice of declaring allergens with terminology that has the potential to be confusing or be misunderstood by consumers. Often the allergen was identified, either in the ingredient list or in the 'contains' statement. However, there were several specific cases identified from further analysis of the data (see Appendix 2) where the terminology used for allergen declarations could potentially cause consumer confusion. These situations are detailed below in respect to cereal, soy, milk and fish declarations (issues were not identified for the other allergens that must be declared on food labels).

### 5.2 Cereal declarations

The results indicate that most foods with gluten containing cereals had a 'contains' statement (Figure 2). However, in nearly all cases the declarations in the 'contains' statements of these products used the word 'gluten' rather than the phrase 'gluten-containing cereals' or the cereal name. The use of 'gluten' in the 'contains' statement occurred mostly with the declaration of wheat, as this was the most common cereal declared in this study's sample. The reference to 'gluten' in the 'contains' statement was also identified with other cereal declarations such as barley, rye and oats, although much less frequently.

The majority of ingredients included reference to the name of the cereal in the ingredient name (e.g. wheat flour). However, in some cases, there was no reference to the name of the cereal in the ingredient list e.g. 'multigrain flakes', 'puff pastry', and 'malt extract'

The AFGC Guideline recommends that 'if there is more than one gluten derived ingredient in the product then the 'contains' statement can be declared by naming each of the source grains or by using the general term 'gluten containing cereals'. If only one gluten derived ingredient is declared in the ingredient list then the 'contains' statement should include the specific name of the source grain' (AFGC 2007). This guideline tended not to be implemented for the products containing cereals that were sampled in this study. Instead products were labelled only with 'gluten' in the 'contains' statement for all gluten-containing cereals present.

The above use of 'gluten' for declarations could be a potential issue for consumers sensitive to specific cereals, as those allergies and gluten-intolerances are two different medical issues. Coeliac disease is a chronic condition that causes a reaction to the gluten protein in wheat, namely gliadin, causing destruction to villi in the small intestine (Hischenhuber et al 2005). Other individuals may also be affected by gluten intolerance due to other medical reasons such as crohn's disease or irritable bowel syndrome (Hischenhuber et al 2005, FARE 2015). Gluten is found in wheat based products, but also in other grains such as barley, rye and potentially oats (Allergen Bureau 2011).

Cereal specific allergies, such as a wheat allergy, are an immune reaction to IgE antibodies specific for that cereal (typical symptoms are respiratory distress, rash, angioedema, gastrointestinal symptoms and anaphylaxis) (Scibilia et al 2006). Thus individuals with an allergy to a specific cereal are able to consume other gluten-containing cereals without a reaction. Products that do not clearly identify specific cereals (e.g. wheat, barley, rye and oats) may be a risk to those who are allergic to these cereals.

The results of this study show that products in the categories evaluated were often declaring gluten-containing cereals with 'contains gluten' instead of the specific cereal (most often wheat). This use of 'gluten' may be misleading to consumers, as a gluten declaration indicates that there could be any gluten-containing grain in the product, which may or may not be the cereal of concern to a cereal-allergic consumer. The cereal-allergic consumer would need to thoroughly read and understand a food label to determine if a product with a 'gluten' declaration in the 'contains' statement was in fact suitable for consumption.

### **5.3 Soy declarations**

A soy allergy is an allergic response to the protein and usually manifests in children who commonly grow out of it over time (Savage et al 2009). Symptoms of a reaction are typical of all allergic reactions.

The study indicated that the term 'soy' was not being used anywhere on the label on products that declared certain antioxidants (306 natural tocopherol rich extract, 307 alpha tocopherol, and 307b mixed tocopherol concentrate) in the ingredient list (Table 2). However, this may not necessarily represent a problem, as there is evidence to suggest that these antioxidants are usually refined to the point where the soy protein is not present (EFSA 2007a, EFSA 2007b). Because the protein may not be present, FSANZ has been assessing whether tocopherols derived from soy can be exempt from the allergen declaration requirements in Standard 1.2.3. This process is currently underway as part of Proposal P1031 – Allergen Labelling Exemptions.

## 5.4 Milk declarations

A number of products were identified that declared ingredients that may be milk-based without using the term 'milk' in or as part of the ingredient name. Additionally, none of these food products displayed a 'contains' statement, or declared 'milk' in a 'contains' statement if it was present on the label. It is therefore possible that milk-allergic consumers would be unable to identify these foods as potentially containing milk proteins. However, it is not possible to determine from label information whether in fact the ingredients were milk-based. Observations made about milk allergen declarations on the foods sampled in this study are as follows:

- Of those foods that displayed a 'contains' statement, most used the word 'dairy' instead of 'milk'. Milk-allergic consumers would, however, likely recognise this term as indicating the presence of milk.
- It was noted that some of the names for milk-based ingredients would be recognised as common terms for milk-based ingredients. These include butter, buttermilk, cheese and cream.
- There were a number of terms identified that may not be easily recognisable as having a milk origin, specifically 'caramel', 'caseinate', 'rennet', 'ghee', 'lactose' and 'whey'.
  - 'Caramel' and 'lactose' were the most common of these ingredient names, and often occurred on labels that did not include further reference to 'milk' (or dairy).
  - Caramel ingredients may or may not be derived from milk. Likewise, the term 'lactose' may be referring to an ingredient that does not contain any milk proteins, especially given that it could be referring to a pure form of the sugar.
  - The other terms (caseinate, rennet, ghee, whey) were identified only on a few labels that did not include further reference to 'milk' (or dairy).

Given the above, it is likely from the terminology used for milk declarations that most consumers would be able to identify that a food contained milk. What is unclear is whether the terms 'caramel' and 'lactose' pose a potential problem for identifying the presence of milk in a food, as it is uncertain whether these terms are referring to ingredients that contain milk protein. Further research beyond this study would be needed to clarify this uncertainty.

## 5.5 Fish, crustacea and mollusc declarations

Fish and shellfish are the leading cause of IgE-mediated reactions, which often result in severe complications such as anaphylaxis. They are some of the most common allergies affecting both children and adults. Finfish contain different allergens to those found in other seafood products such as crustacea and molluscs, therefore it is essential for food labels to identify each of these allergens correctly in order to ensure that consumers with allergies to these substances can make correct food choices (Wild & Lehrer 2005).

The analysis of the labels with 'fish' declarations showed that while the names of individual crustacean species were used in the ingredient list ('shrimp' and 'prawns'), the label did not also identify that the food contained 'crustacea' (either alongside the ingredient name, or in a 'contains' statement) as the AFGC Guideline suggests. Likewise, different terms were used for various mollusc ingredients without use of the term 'mollusc'. The terms used for mollusc included: squid, clam, mussel, oyster and scallop. Although Standard 1.2.3 does not specifically state that the term 'molluscs' or 'crustacea' must be used on a label, it is possible that some of the names of individual species of mollusc or crustacea may not be recognised by consumers without further identification of 'mollusc' or 'crustacea' on the label. However, consumer behaviour research would be needed to determine whether consumers can recognise individual species names as being of mollusc or crustacean origin.

The results also identified that in some instances the presence of crustacea was being declared as 'fish' in the 'contains' statement. This may be potentially problematic for food allergic consumers when deciding to purchase these products, especially if a consumer does not read the ingredient list and only sees that a product has a 'contains' statement declaring 'fish', when it in fact contains crustacea. In addition, individuals may be allergic to fish allergens, but not to crustacea (or mollusc) allergens, causing them to unnecessarily avoid a product due to the declaration of fish in the 'contains' statement when fish is not actually present in the product. The findings from this allergen category therefore illustrate a potential problem with the declaration of fish and fish products, although the extent of the potential problem is unknown.

## **5.6 Limitations to this study**

- Human error- human error could occur with transcribing the data from NutriWeb, and with the identification and categorisation of allergen declarations. The analysis was therefore reviewed by a FSANZ staff member, who selected approximately 10% of products at random to check for errors.
- Only foods from four product categories were analysed, and therefore we cannot extrapolate our findings to the whole food supply or determine the extent of the terminology issues found in this study. The findings cannot be used to provide quantitative information.
- This is a qualitative study. It is therefore not possible to definitely determine whether there is an issue with the declaration of allergens on the labels of all food sold in New Zealand.
- It may be possible that the findings could apply to Australia given that there is significant commonality between Australian and New Zealand markets. However this study cannot be extrapolated without some degree of uncertainty.

## **6. Conclusion and future implications**

FSANZ established Standard 1.2.3 to improve the declaration of allergens and other substances on food labels. The results from a sample of New Zealand foods indicate that that overall there does not appear to be an overall significant problem in the terminology used to declare allergens.

This research has, however, identified some specific issues with the terminology used for cereal and fish declarations that may negatively impact on how well a food-allergic consumer can identify these allergens in food products. Some of the terms used to declare the presence of milk may also be unrecognisable by consumers, although the results from this study are uncertain on this outcome. Further investigation into 'milk' declaration terminology may assist in clarifying these findings.

FSANZ has previously received stakeholder feedback on potential problems with the terminology for fish and wheat/gluten declarations. This study therefore reinforces this feedback, and highlights the need for further research on how consumers understand and respond to the use of different terms for declaring the presence of cereal and fish allergens.

# Acknowledgements

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## Appendix 1

### Names of ingredients identified as containing substances listed in table to clause 4 of Standard 1.2.3

(713 foods from four food categories in the Nutriweb database (2015 data))

Substance listed in Standard 1.2.3	Names of ingredients containing substances listed in Standard 1.2.3
Cereals containing gluten and their products, namely wheat, rye, barley, oats and spelt and their hybridised strains	xanthan gum, malted wheat seeds, cheese powder, flavour*, maltodextrin, guar gum, parmesan cheese powder, glucose syrup*, Cocoa Powder*Organic Cocoa Powder*,Low Fat Cocoa Powder* ,Soy Sauce Powder, Soya Sauce Powder,Tamari Soy Sauce, Wheat Flour, Rolled Oats, Malt Extract, Kibbled Purple Wheat ,Wholegrain Otago Oats, Dried Gluten, Wheat Starch, Bran Barley Malt Syrup, Wholemeal Flour, Wheaten Cornflour, Wheat Bran, Wheat Flour (Gluten), Flour, Organic Wheat Flour, Kibbled Wheat, Malt Flour, Enriched Wheat Flour, Wholegrain Oats, Barley Malt Extract, Wholegrain Rye Flour, Kibbled Wheat, Meal, Unbleached Wheat Flour, Rye Flavour, Malt Syrup , Dextrose, Oats, Rye Meal, Barley, Wheat Germ, Flavour {Wheat(Gluten), Soy}, Wheat Gluten, Wheat Dextrose, Crunchy Cereals, Cereals, Rye Flour, Wheat Flour Filling, Wholegrain Cereals (Malted Rye Flakes, Oat Flakes). Kibbled Rye, Malt Extract (From Barley), Flaked Wheat, Pearled Barley , Kibbled Red Wheat, Wheat Meal, Malted Barley Syrup, Soft Wheat, Barley Meal, Spelt Meal, Malted Rye Flakes, Batter Mix (Wheat Flour), Flavour (Wheat), Breadcrumbs, Toasted Wheat Grains, Wheat Fibre, Modified Wheat Starch, Flaked Red Wheat, Wholegrain Rolled Barley Flakes, Wholegrain Oat Clusters, Muesli Bites (Oats), Puffed Wheat, Cereal Cereal, Grains Multigrain Flakes, Wheat Flakes, Berry Flakes (Wheat), Rolled Rye Oat Fibre ,Puffed Spelt, Milo, Whole Red Wheat, Vanilla Oat Clusters, Wheat Fibre Wholegrain, Oat Flour, Wholegrain Barley Flour, Worcestershire Sauce, Puff Pastry, Curry Sauce (Skimmed Milk, Wheat), Parmesan Crumb, Soy Sauce, Dried Pearled Barley, Malt Vinegar (From Barley), Gluten Wheat Flour, Durum Semolina, Unbleached Wheat Flour, Pizza Base, Flour Tortillas, Organic Macaroni, Pasta Noodle, Wheat-Gluten Bread Wheat Noodles Cooked Pasta Spiral Pasta Durum Wheat Semolina Bulgur Wheat Wheat Noodles Coconut Milk (Maltodextrin), Pasta, Soba Noodles, Wheaten Cornflour Spices (Wheat), Yeast Extract (Barley), Pennette Pasta, Cheese Tortellini, Wheat Semolina, Caramelised Sugar (Wheat), Glucose Syrup (Wheat), Cereal Solids (Wheat), Kibbled Purple Wheat.
Crustacea and their products	Shrimp Powder, Prawns, Shrimp, Raw Prawn, Crab Extract, Cooked Shrimp, Crab Meat, Crab Flavour (Crustacea, Fish, Soy), Red Curry Paste (Shrimp, Fish), Green Curry paste (Contains Shrimp), Shrimp Paste, Bonito Extract, Granule Seafood (Fish), Shrimp Mayonnaise*
Egg and egg products	Egg, whole egg powder, egg white, whole liquid egg, pasteurised egg, albumin, emulsifier*, antioxidant*, flavour*, guar gum, whole egg, dried egg white, egg powder, egg yolk powder, egg white powder, egg yolk, mayonnaise, free range egg, hollandaise, egg lasagne, traces of egg, mushroom extract
Fish and fish products	Hydrolysed Animal Protein (Fish), Dried Japanese Anchovy, Salmon, Pacific Chinook Salmon, Trevally, White Fish, Anchovies, Cod, Hake, Hoki, Herring Fillets (Fish), Deep Sea Hoki, Fillet Portions, Flat Fillets of Anchovies, Snapper, King Salmon, Smoked Salmon, Pieces Native Manuka Chinook, Fish Mince, Pollock, Fish Fillet, Smoked Mackerel, Southern Blue Whiting, Atlantic Salmon, Smoked Herring, Capelin Caviar, Salted White Fish (Dory), Hoki Joined Fillet, Surimi, Crumb Crab Flavour (Crustacea, Fish, Soy), Orange Roughy, White Fish Crumb, Smooth Dory Fish Fillet, Raw Mussel Meat, Red Curry Paste (Shrimp, Fish), Fish Sauce, Seafood and Fish Extract, Tuna Cooked Fish, Worcestershire Sauce, Hot Smoked Kahawai Fish, Bonito Stock, Bonito Powder, Smoked Fish, Powdered Mackerel, Cut Squid, Mussel Meat, Naturally Smoked Oyster, Squid Corbicula, Clam, Oyster Extract, Smoked Greenshell Mussels, Mussels, Scallops, Smoked Mussel, Squid Crumb, NZ Arrow Squid Ring, Clam Meat, Seafood (Mussels)

Substance listed in Standard 1.2.3	Names of ingredients containing substances listed in Standard 1.2.3
Milk and milk products	Condensed Milk, Milk Solids, Chocolate (Milk Solids), Butter, Whey Powder, Yoghurt Compound (Whey Powder), Compound Milk Chocolate, Whey Permeate, Milk Fat, Lactose, Dark/White Compound chocolate (Milk Solids), Cheese Powder (Cheddar Cheese), Cream, Caramel, Sour Cream, Yoghurt Compound Coating (Milk Powder), Milk Proteins, White Chocolate, Toffee Caramel, Dried Milk, Caramel Colour, Compound Milk Chocolate Chips (Milk Solids), Skim Milk Powder, Milk Powder, Whole Milk Powder, Parmesan Cheese, Powder Caramel Colour, Milk Decoration, M&M Milk Chocolate Baking Bits, Milk Paste, Tasty Cheese (Cow's milk, Rennet), Dried Milk Products, Non Fat Milk Solids, Butter Syrup, Pasteurised Milk, Whey, Sweetened Condensed Milk, Dried Whey Cheese (Milk, Rennet), Rennet, Caramel III , Chocolate Compound, Chocolate Buttons, Dried Skim Milk, Buttermilk Powder, Dark Chocolate Chips, Microbial Rennet, Whole Milk, Sour Cream Powder, Coconut Milk*- May Contain Casein, Cheese , Yoghurt Powder, Full Cream Milk Powder, Flavour (Milk), Butter, Flavour, Caramel Flavour, Caramel I, Milo* (Milk Solids), Milk Protein Concentrate, Butter Sauce, Cheese Cubes, Parmesan Cheese , Mozzarella Cheese, Ghee, White Sauce, Puff Pastry, Curry Sauce (Skimmed Milk, Wheat), Parmesan Crumb, Hollandaise Sauce, Milk, Cream, Creamer Sodium Caseinate, Ricotta Cheese, Edam Cheese, Clarified Butter, Topping Cheese, Aged Cheddar Cheese, Creamy Garlic Sauce, Low Fat Milk, Beverage Whitener, Organic Whole Milk, Custard Powder, Cheese Flavour, Cheese Culture, Caramel IV, Dairy Cultures, Processed Cheese, Cheese Tortellini, Double Cream.
Peanuts and peanut products	Flavour*, Unhydrogenated Vegetable Oil*, Roasted Peanuts, Peanut Butter, Peanut Powder, Vegetable Oil (Peanut), Ginger Paste (Peanut)
Sesame seeds and sesame seed products	Vegetable Oil*, Black Sesame Seed, Sesame Oil, White Sesame Seed, Breadcrumbs*
Soybeans and soybean products	Xanthan Gum Food Acid (330)*, Flavour*, Guar Gum, Cocoa Powder*, Organic Cocoa, Low Fat Cocoa Powder*, Emulsifier (Soy Lecithin, 476, 322), Soy Sauce Powder, Tamari Soy Sauce, Soy Flour, Soybeans, Vegetable Oils (Palm, Soy), Hydrolysed Vegetable Protein (Soy), Soy Lecithin, Antioxidant (307b, 307, 306 (Soy), Kibbled Soya, Soybean Flour, Flavour {Wheat (Gluten), Soy}, Potato Flakes, Kibbled Soybean, Miso Powder (Soy), Vegetable Emulsifier (Soy Lecithin), Vegetable Gum*, Edible Vegetable Oil, Lecithin, Soybean Lecithin, Soy Protein, Crab Flavour (Crustacea, Fish, Soy), Vitamin E,* Soy Oil, Natural Honey Flavour (Soy Lecithin), Canola Oil (Soy), Palm Oil (Contains Soy), Soybean Paste, Miso Paste, Beverage Whitener, Chicken Flavour (Soy), Textured Soy Protein, Powdered Miso, Soya Bean Paste, Beef Stock (Soy Protein), Hoisin Sauce.
Tree nuts and tree nut products	Walnuts, Roasted Hazelnuts, Almond, Macadamia, Almond Flour, Hazelnut, Hazelnut Paste, Mixed Nuts (Hazelnuts, Walnuts, Brazil Nuts, Almonds), Ground Almonds, Certified Organic Almonds, Macadamia Oil, Cashew, Roasted Cashews, Pecans, Sliced Almonds, Almond Flakes, Chestnuts, Pinenuts
Added sulphites in concentrations of 10 mg/kg or more	Sulphites, Potato Flake (Contains Sulphites), Preservative 222 (Sulphite), Papaya, Pineapple- Preservative 220, 223 (Sulphites), Coconut (Sulphites), White Wine*, Preservatives 200, 202 (Sulphites), Maize Cornflour (Sulphites), Maltodextrin (Sulphites), Onion Powder (Sulphites), Garlic Powder (Sulphites).

\* Ingredients with an asterisk may or may not be derived from an allergen.

## Terminology used for allergen declarations

Table A2.1: Terminology used for allergen declarations on foods with gluten-containing cereals

Observation	Number of labels	Does the ingredient list refer to the name of the allergen?	Does it have a 'contains' declaration	If has a contains statement, does this refer to the allergen?
'Gluten' declared in the contains statement instead of the cereal name or 'gluten containing cereals' (the ingredient list uses the terms wheat, barley, oats or rye)	194	Yes	Yes	No- Gluten is declared
The term 'cereals' is declared on the 'contains' statement instead of wheat (whereby the ingredient list has ingredients with the term 'wheat')	1	Yes	Yes	No- Gluten is declared
Cereal ingredient is declared in the ingredient list without reference to the allergen, and there is also no reference to the allergen in a 'contains' statement.	1	No - bran/flour	No	
	10	No - pasta, pizza base, malt extract.	Yes	No – Gluten is declared
Cereal ingredient is declared in the ingredient list without reference to the allergen. The 'contains' statement refers to the name of the cereal.	2	No – pasta.	Yes	Yes
The 'contains' statement declares a cereal (wheat), but the allergenic ingredient could not be identified in the ingredient list.	3	No – could not identify 'wheat' ingredient	Yes	Yes
'Soy sauce' is declared in the ingredient list without reference to a cereal allergen <sup>#</sup> , and there is also no reference to a cereal allergen in a 'contains' statement.	3	No	No	
	3	No	Yes	No – Gluten is declared

# Some soy sauces can contain wheat ingredients, although this is not always the case. For the purposes of this analysis, all 'soy sauce' ingredients were assumed to be containing wheat. Readers should therefore be mindful of this assumption in respect to these results.

**Table A2.2: Terminology used for allergen declarations on foods declaring soy**

Observation	Number of labels	Does the ingredient list refer to the name of the allergen?	Does it have a 'contains' declaration	If has a contains statement, does this refer to the allergen?
'Guar gum' is declared in the ingredient list but without reference to 'soy', and there is also no reference to the allergen in a 'contains' statement.	4	No	No	
	2	No	Yes	No declaration made
Antioxidants (306, 307, 307b) are declared in the ingredient list but without reference to 'soy', and there is also no reference to the allergen in a 'contains' statement.	8	No	No	
	26	No	Yes	No declaration made
'Emulsifier (322)' is declared in the in the ingredient list but without reference to 'soy', and there is also no reference to the allergen in a 'contains' statement.	1	No	Yes	No declaration made
An antioxidant (306) and emulsifiers (320, 322, 470, 472) were mentioned in the ingredient list. However the 'contains' statement uses the word 'soy'.	5	No	Yes	Yes

**Table A2.3: Terminology used for allergen declarations on foods declaring milk**

Observation	Number of labels	Does the ingredient list refer to the name of the allergen?#	Does it have a 'contains' declaration	If has a contains statement, does this refer to the allergen?
Milk-derived ingredients declared in the ingredient list without reference to the allergen, and there is also no reference to the allergen in a 'contains' statement.	15	No – butter, caramel, caramel flavour, cheese, rennet, lactose, whey	No	
	4	No – butter, cream, whey, cheese	Yes	No – declared 'dairy'
Milk-derived ingredients declared in the ingredient list without reference to the allergen. The 'contains' statement includes the word 'milk'.	9	No – butter, cheese, ghee, cream	Yes	Yes
Dairy is declared in the 'contains' statement instead of 'milk'.	5	No – butter, cream, cheese, yoghurt	Yes	No – declares 'dairy'
	9	Yes	Yes	No – declares 'dairy'
Dairy declared in 'contains' statement, but the allergenic ingredient could not be identified in the ingredient list	1	No – could not identify 'dairy' ingredient	Yes	No – declares dairy

# Note that some of the ingredients are likely to be recognised by consumers as common products derived from milk (e.g. butter, cream), and others may not (e.g. whey, ghee).

**Table A2.4: Terminology used for allergen declarations on foods declaring tree nuts**

Observation	Number of labels	Does the ingredient list refer to the name of the allergen?	Does it have a 'contains' declaration	If has a contains statement, does this refer to the allergen?
Tree Nut declared in 'contains' statement, but the allergenic ingredient could not be identified in the ingredient list	6	No – could not identify the tree nut ingredient	Yes	Yes – some used 'nut'

**Table A2.5: Terminology used for allergen declarations on foods declaring sulphites**

Observation	Number of labels	Does the ingredient list refer to the name of the allergen?	Does it have a 'contains' declaration	If has a contains statement, does this refer to the allergen?
A 'preservative' (220, 223) is declared in the ingredient list but without reference to 'sulphites', and there is also no reference to the allergen in a 'contains' statement.	1	No	No	No
'Sulphites' is declared in 'contains' statement, but the allergenic ingredient could not be identified in the ingredient list	12	No – could not identify 'sulphite' ingredient	Yes	Yes
A 'preservative' (220, 223) is declared in the ingredient list but without reference to 'sulphites'. The 'contains' statement includes the word 'sulphites'.	18	No	Yes	Yes

**Table A2.6: Terminology used for allergen declarations on foods declaring egg**

Observation	Number of labels	Does the ingredient list refer to the name of the allergen?	Does it have a 'contains' declaration	If has a contains statement, does this refer to the allergen?
'Albumin' is declared in the ingredient list but without reference to 'egg', and there is also no reference to egg in a 'contains' statement.	1	Yes	Yes	No
Egg declared in 'contains' statement, but the allergenic ingredient could not be identified in the ingredient list	2	No – could not identify the egg ingredient	Yes	Yes

**Table A2.7: Terminology used for allergen declarations on foods declaring fish**

Observation	Number of labels	Does the ingredient list refer to the name of the allergen?	Does it have a 'contains' declaration	If has a contains statement, does this refer to the allergen?
The name of a fin fish is declared in the ingredient list without reference to 'fish', and there is also no reference to 'fish' in a 'contains' statement.	13	No – anchovy, caviar, hoki, mackerel, salmon, trevally	No	
The name of a fin fish is declared in the ingredient list without reference to 'fish'. However there is reference to 'fish' in a 'contains' statement.	27	No – anchovy, bonito, bonito extract granule, bonito powder, cod, herring, hoki, orange roughly, salmon, snapper	Yes	Yes
The name of a crustacean is declared in the ingredient list without reference to 'crustacea', and there is also no reference to 'crustacea' in a 'contains' statement.	5	No – prawn, shrimp, shrimp paste.	No	
	16	No – prawn, prawn meat, shrimp, shrimp paste, shrimp powder, shrimp mayonnaise, green curry paste (shrimp)	Yes	No – shrimp or prawn used, or no mention in statement
The name of a crustacean is declared in the ingredient list without reference to 'crustacea'. However, there is reference to 'crustacea' in a 'contains' statement.	6	No – prawn, shrimp, shrimp powder, shrimp paste	Yes	Yes
The name of a mollusc is declared in the ingredient list without reference to 'mollusc', and there is also no reference to 'mollusc' in a 'contains' statement.	11	No – clam, clam meat, squid, squid crumb, squid ring, mussel, mussel meat, oysters	No	
	1	No – scallop	Yes	No – uses the word 'scallop'
The name of a mollusc is declared in the ingredient list without reference to 'mollusc'. The ingredient list uses 'fish' in the 'contains' statement.	2	No – clam, squid	Yes	No – uses the word 'fish'
The name of a mollusc is declared in the ingredient list without reference to 'mollusc'. The ingredient list uses 'crustacea' in the 'contains' statement.	7	No – clam, mussel	Yes	No – uses the word 'crustacea'