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IDENTIFICATION OF LABELLING ERRORS AND CONCERNS ON SPECIFIC CATEGORIES OF SOUTH AFRICAN PROCESSED FOOD PRODUCTS THAT MAY IMPACT CONSUMER HEALTH

by

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ABSTRACT

Labels are the source of information about the contents of food products and must be correct so that consumers are not misled and can make informed product choices. However, food label information is often incorrect, misleading or just insufficient. The aim of this study was to determine the labelling errors and concerns that occurred in specific categories of the South African processed food market.

Randomly selected food product labels (N=246) were evaluated that represented the selected categories of processed foods (N=7), namely: breakfast cereal (9%), savoury snacks (13%), sweet snacks (29%), non-refrigerated meals (7%), refrigerated meals (9%), soups and sauces (25%) and convenience desserts and baked goods (8%). A pre-tested labelling checklist was used to evaluate each food label according to the food labelling areas that could impact consumer health considering the current South African labelling regulations published in 1993, the draft of these regulations published in 2002, and the further new proposed draft regulations.

Labelling errors found included the use of prohibited statements and not identifying compound ingredients (19% and 12% of the products respectively). A labelling concern was also the lack of identification of the fats/oils used (61% of the products). Further concerns identified included the lack of additive-free and allergen-free claims. For example, significant differences ($p<0.05$) were found between the number of products claiming to be additive-free and those that could have made such claims but did not. A real concern was the listing of ingredients of unknown origin with allergenicity potential (80% of the products). The breakfast cereal category contained the most energy and nutrient claims and nutritional education information, with most errors identified in the categories refrigerated meals and soups and sauces, and most concerns in the category savoury snacks. There is scope for food labelling improvement, specifically in the areas of ingredient and allergen identification, additive-free claims and health-related information provision.

DECLARATION

I, Maritza van Dyk, declare that the contents of this thesis represent my own unaided work, and that the thesis has not previously been submitted for academic examination towards any qualification. Furthermore, it represents my own opinions and not necessarily those of the Cape Peninsula University of Technology.

M van Dyk
Signed

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Date

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LIST OF OPERATIONAL TERMS AND CONCEPTS

Term	Definition / Description
Codex Alimentarius	A food code that provides an opportunity for all countries to join the international community in food formulation and harmonising food standards (DFST, 2005:88).
Consumer health	Consumer health encompasses all aspects of the health marketplace that are related to consumer decision-making in the purchase of products for their wellbeing. This includes health promotion resources that target consumers (Health Canada, 2006).
Consumer information	Information given to consumers to increase their awareness of products and services (DFST, 2005:93).
Food labelling	Process of attaching labels to items to make them identifiable, or the information included on the labels such as compositional and nutritional details, and warnings relating to specific ingredients (DFST, 2005:212).
Food labelling concerns	For the purpose of this study: Labelling information on the selected food labels not directly addressed in the current food labelling regulations or only addressed in the draft or new proposed draft regulations which may affect consumer health and wellbeing.
Food labelling errors	For the purpose of this study: Current food labelling regulations that may affect consumer health and are not applied to the selected food labels.
Public health	Threats to the overall health of a community based on population health analysis. The United Nations defines health as: "A state of complete physical, mental and social well-being and not merely the absence of disease or infirmity." Other components included in an individual's health are the nutritional, spiritual, and intellectual (Wikipedia, 2006).

CHAPTER 1

INTRODUCTION

Labels can range from simple tags attached to products to complex graphics on product packaging. Labels perform several functions, such as to identify the product or brand, and to indicate who made it, where it was made, when it was made and its contents. Labels are also used to promote products (Kotler & Armstrong, 2001:12). Labelling information should also reflect the needs of consumers. Certain consumers, such as those suffering from diabetes, kidney disease, heart disease and food allergies, are very aware of their intake of food, and food labels are their only source of information on the contents of food products (Chan, 2003:1).

South Africa's food labelling regulations, which are taken up as part of the Foodstuffs Act, date back to the early 1970s (South Africa, 1993:1). The regulations currently used in the food industry are still those that form part of the Foodstuffs, Cosmetics and Disinfectants Act of 1972 (Act No. 54 of 1972). These food labelling regulations were revised and a new proposed draft of the regulations was published in the *Government Gazette* in August 2002. Many manufacturers are already working within these new parameters (Neall, 2003:33). These new food labelling regulations are more informative than the current regulations and will provide the consumer with detailed nutrition information. This will enable consumers to determine whether the food products they purchase and consume comply with recommendations for a healthy diet, particularly in terms of the fat, free sugar and sodium contents. The aim of these regulations is to further minimise misleading food, health and nutrition claims on food product labels (Steyn *et al.*, 2006:39).

However, these new draft food labelling regulations are currently still being revised by the South African Department of Health. Furthermore, even with the current food labelling regulations being in place, there are still errors, such as compound ingredients not being identified (Van Dyk, 2004:51), and concerns, like the lack of identification of allergen-derived ingredients (Van Dyk, 2004:56) on our food labels. With the South African labelling regulations not yet finalised, many loopholes are available to food manufacturers, creating food labelling errors and concerns that may affect consumer health.

Issues regarding food labelling continue to be a major source of frustration, not just for the food industry, but also for consumers. Consumers have difficulties with the interpretation of food labels and never-ending concerns about improperly or incompletely labelled foods. The issue of consumer label interpretation is significant, as misinterpretation is a huge problem. Theoretically it is possible to teach consumers to read and accurately interpret even the most confusing label. The major concerns are in fact that labels are not just difficult to interpret, but that they are often wrong! Incompletely or improperly labelled foods are especially an obstacle for those individuals having to avoid certain ingredients or products for health-related reasons, such as those suffering from food allergies and/or intolerances (Wood, 2002:920).

Labels can mislead customers, fail to display needed safety warnings, or fail to describe important ingredients (Kotler & Armstrong, 2001:312). Simple terms should be used on food labels to identify ingredients, especially those containing allergens. Consumers should not have to search for the meaning of an ingredient. All ingredients, including compound ingredients, making up the contents of food, should be indicated. Nutrition labelling, including nutrition and health claims, should also assist consumers in making informed choices, and can also be used to educate the public on nutrition issues.

Some errors made on food labels might be considered minor and they might not even have an effect on a consumer, but some errors can have lethal consequences in relation to consumer health. A mistake on a food label can lead to clinical reactions in a food-allergic consumer. Some errors might lead to an unnecessary restriction in an individual's diet, such as sometimes seen in a soy-allergic child's diet, where there is an avoidance of soybean oil (Ring *et al.*, 2001:8).

Approximately 45% of South African adults and 20% of South African children under the age of six are overweight. Research indicates that overweight children are likely to grow into overweight adults, putting them at increased risk of heart disease, diabetes, hypertension, kidney disease and cancer. South Africa already has one the highest rates of heart disease in the world, with some of the contributing factors being smoking, high blood pressure, diet, a lack of exercise, obesity and diabetes. These factors are all prevalent in South Africa, with about 25% of the population suffering from hypertension and about 20% at risk of being obese (Neall, 2005:73). In the year 2000 in South Africa, cardiovascular disease and diabetes together accounted for 19% of total deaths, and cancers

accounted for a further 7.5%. Nutritional deficiencies related to undernutrition accounted for 1.2% of the deaths. Hypertensive heart disease and diabetes accounted for 68 per 100 000 and 54 per 100 000 deaths respectively (Steyn *et al.*, 2006:34). South Africans therefore need to make informed and more appropriate food choices which emphasise reading food product labels that do not carry labelling errors and concerns that may impact consumer health.

With diet playing a huge role in the maintenance of health and disease prevention, the aim of this study was to determine the errors made on food labels that may affect consumer health. Food-labelling information provided on food labels that did not comply with the current South African food-labelling regulations was considered an error. The identification of food-labelling concerns was also included as part of the study aim. Food-labelling concerns were considered as food-labelling information present on labels, or that could have been indicated on the food labels, that may also affect consumer health. This food labelling information is not necessarily directly addressed in the current South African food-labelling regulations. It was assumed that the ingredients, nutrients and other data indicated on the food label was correct because it was beyond the scope of this study to determine if a label correctly reflected the actual ingredients used or ingredient and nutrient levels present in the product. For the purpose of this study, a number of specific categories of processed foods manufactured in South Africa were selected for the food-labelling evaluation. This study could serve as motivation for the food industry to expend greater efforts on their product labelling.

CHAPTER 2

LITERATURE STUDY

The public have the right to know exactly what they are eating, down to the last milligram of sodium and gram of polyunsaturated fat. As consumers, they are bombarded with food products claiming to be "low fat" or "vitamin enriched", and "cholesterol free" with "no added sugar" (Joseph, 2005:30). The question that has to be asked, according to Joseph (2005:30) is whether all this information means that consumers are eating a healthier diet, or whether the labels simply fool them into buying such labelled food products? It has been found that it is most often the nutrition labelling on food products that have errors (Lipka, 2001:1), errors that can have detrimental effects, such as for food-allergic individuals (Wood, 2002:920). With diet playing a huge role in public health, the aim of this study was to determine labelling errors and concerns that may impact consumer health on the labels of a number of specific categories of processed foods manufactured in South Africa.

2.1 Food labelling

Labels can be simple (tags attached to products) or complex (graphics on product packaging). Either format performs several functions. One of the main functions is to identify the product or brand. The label might also describe several things about the product, i.e., who made it, where it was made, when it was made and its contents. Through attractive graphics, the label can also promote the product (Kotler & Armstong, 2001:312).

Concerns about packaging and labels have a long history (Kotler & Armstong, 2001:312). Evidence from the earliest historical writings indicate that governing authorities were already concerned with implementing rules to protect consumers against dishonest practices with regard to the sale of food. Assyrian tablets describe how food grains had to be weighed and measured, and the labelling of certain foods is described on Egyptian scrolls (Joint FAO/WHO Codex Alimentarius Commission, 1999:5).

Issues regarding food manufacturing and labelling continue to be a major source of frustration for both consumers and manufacturers (Wood, 2002:920). A high level of consumer scepticism exists about all aspects of information on food labels and concern is often expressed over manufacturers

using claims just as a sales tool (Williams, 2005:262). In the past few years the labelling of foods has received considerable attention because of consumer demand in a number of countries (Mills *et al.*, 2004:1263). Nowadays it is common practice for consumers to demand that their governments implement regulations to ensure safe and good quality food. Consumers and governments are therefore like-mindedly becoming more aware of food quality and safety (Silverglade *et al.*, 1998:1). Consumers also want to be better informed (Mills *et al.*, 2004:1263). To accomplish this consumer's need more complete and accurate information about the food they eat (Silverglade *et al.*, 1998:1;Joint FAO/WHO Codex Alimentarius Commission, 1999:8). Coupled with increasingly complex food production methods, this means that comprehensive labelling of the composition of foodstuffs is now necessary (Mills *et al.*, 2004:1263). It is well known that adequate information on food products holds the key to long-term confidence in a food manufacturer. It also enables consumers to make the right decisions as to price, product choice, and product quality (Chan, 2003:10).

The three basic consumer rights with regard to product information are:

- The right to safety. The consumer has the right to be protected against hazardous products, production processes and services.
- The right to information. Consumers must be given the facts needed to make an informed choice, and to be protected against misleading advertising and labelling.
- The right to choose. Consumers should be able to select from a range of products and services offered at competitive prices and satisfactory quality (Chan, 2003:1).

Consumers are bombarded with information, especially related to food and health (Anon, 2002b). The role of nutrition in maintaining and improving health has been well documented. Food labels that include ingredient and nutrition information are the most efficient way to communicate such product facts to consumers (American Diabetes Association, 2000:94). By providing information to consumers, nutrition labels and health claims on foods have the potential to contribute to the achievement of public health objectives. Nutrition labels provide consumers with information about the nutritional properties of a food, and health claims provide information to consumers about the nutritional and health advantages of particular foods or nutrients. Health claims are also a marketing technique used by food companies (Hawkes, 2004:1).

Information provided on labels should be truthful, understandable and should not mislead consumers (American Diabetes Association, 2000:94; Van den Wijngaart, 2002:S68). The nutrition

labelling information should, for example, accurately and clearly describe the nutrient content of the food and guide the consumer in food selection. Consumers should be able to make the best use of the information provided on food labels. This information will, however, be more useful to consumers if they have enough basic knowledge of nutrition to make an informed choice and to identify misleading information (Van den Wijngaart, 2002:S68). However, the industry needs to distinguish between information, and knowledge based on fact (Anon, 2002b).

Information must not be misleading (American Diabetes Association, 2000:94). Labelling may be misleading not only because of what it says, but also because of what it does not say (Turner *et al.*, 2005:24). The issue of misleading claims and marketing messages, such as claiming "MSG-free" makes it even more difficult for consumers to eat healthily. Many food products naturally contain monosodium glutamate (MSG) and not only as a food additive (Food Navigator, 2004a).

Concise labelling can play a key role in winning and maintaining consumer confidence in products (Anon, 2002b). The food industry is pressurised from different bodies to give more attention to labelling. The United Kingdom (UK) Consumers' Association is urging the food industry to provide consumers with consistent and user-friendly information on food labels. It feels that consumers need easy ways to identify foods that are low in fat, salt and sugar, and that it is not the duty of consumers to determine the fat, salt or sugar content of a product (Food Navigator, 2004a). This also highlights the call for harmonisation between food labelling regulations from different countries. Food labelling should be used as a tool to improve consumer decision-making in the market place and to provide incentives to improve product quality (Silverglade *et al.*, 1998:56).

2.1.1 South African regulations

South Africa has food labelling regulations which are taken up as part of the Foodstuffs Act, dating back to the early 1970s (South Africa, 1993:1). The regulations that are currently used in the food industry are those that form part of the Foodstuffs, Cosmetics and Disinfectants Act of 1972 (Act No. 54 of 1972). These food labelling regulations are currently being revised. A few years ago, a working group referred to as the Food Labelling Advisory Group (FLAG) took on the task of re-examining the South African food legislation. At that time South Africa became a member of the Codex Alimentarius Commission (in 1994) and since then has therefore based most of its food labelling regulations on the guidelines as set out by the above commission. A new proposed draft of the regulations was published in the *Government Gazette* in August 2002. Many manufacturers are already working within these new parameters (Neall, 2003:33). However, this draft is also

being revised. Only some of the proposed changes to be incorporated through this further revision have been made available to the food industry. One of the reasons why the current food labelling regulations must be replaced is that the food industry uses certain loopholes in the regulations to their advantage (De Bruin, 2005:8).

2.1.1.1 Current regulations

In the current South African food labelling regulations it is stated that if a nutritional claim is made on a product, such as a nutritive value or specific nutrient claim, the label must contain nutrition information. In such a case the label should contain the heading "Nutrition information" and a declaration provided of the amounts of the nutrient(s) and/or energy per 100 gram (g) or 100 millilitre (ml) of the foodstuff when packed. The total amount of proteins, carbohydrates, fats and dietary fibre in grams and sodium in milligrams (mg) present in a serving and per 100 g or 100 ml must be indicated in the nutrition information. The percentage of the recommended dietary allowance (RDA) of proteins represented per serving must also be indicated. A list of nutrients can also be indicated in the nutrition information, as per serving of the product. The amounts, as well as what percentages of the RDA each of the nutrients provides, must be listed when the nutrient amount represents more than 15% of the RDA. The nutrients that must be listed include: vitamin A; vitamin D; vitamin E; vitamin C; vitamin B1 or thiamin; vitamin B2 or riboflavin; nicotinic acid, nicotinamide or niacin; vitamin B6 or pyridoxine; folic acid or folacin; vitamin B12 or cyanocobalamine; biotin; pantothenic acid; calcium; phosphorus; iron; magnesium; zinc; iodine (South Africa, 1993:13).

Nutrition information becomes voluntary if no nutritional claim is made on a product label; however, the voluntary nutrition information format is prescribed in the regulations. The label must contain the heading "Nutrition information" and a declaration must be provided of the amounts of the nutrient(s) and/or energy per 100 g or 100 ml of the food. The label can also contain the following information: an indication of the mass or volume of a serving; the amount(s) of nutrient(s) and/or energy present per serving; and what percentage of the RDA the nutrients present per 100 g or 100 ml or in a serving (South Africa, 1993:14).

Regulations pertaining to the identification of certain ingredients used in a food product are also included and can be summarised as follows:

- If a compound ingredient is used in a product, the names of the ingredients making up the compound ingredient must be identified in the ingredient list. The ingredients must be listed in close proximity to the compound ingredient or the individual ingredients can be listed instead of the compound ingredient (South Africa, 1993:9).

- If a preservative is used in a product it must be indicated in the ingredient list by the common chemical name of the preservative, either followed or preceded by the word "preservative" (South Africa, 1993:11).

- When the colourant, tartrazine is used in a food product, it must be indicated by name in the ingredient list (South Africa, 1993:11).

- If an ingredient derived from egg or milk is used in a product, it must be indicated in the ingredient list. The words "egg" or "milk" must be indicated in parenthesis behind the name of the ingredient or they can form part of the name of the ingredient (South Africa, 1993:12).

- No claim can be made on a product if all other products in the same category are free from that substance (South Africa, 1993:7).

The regulations also stipulate certain terms and/or words that may not be used on food labels, as they could be misleading to the consumer. Such terms and/or words and their use include the following:

- The words "health", "healthy", "heal", "cure" or "restorative" or other words or symbols implying that a foodstuff has health-giving properties may not form part of a food product name or description (South Africa, 1993:7).

- The word "natural" may not be used on the label of a foodstuff if the product has been processed in any form. It may not form part of the name or be used to qualify the name or trade name of the product. The word "natural" may therefore not be used to describe a foodstuff which contains any ingredient not present in the natural form or if an ingredient has been removed from the original product. It may also further not be used to describe a mixture of ingredients if all ingredients are not present in their natural forms (South Africa, 1993:12).

2.1.1.2 Draft regulations

In 2002 the food labelling regulations were revised and a new draft of these regulations published for comments. According to the South African draft food labelling regulations a food product label means "any tag, brand, mark, pictorial or other descriptive matter, written, printed, stencilled, marked, embossed or impressed upon, or attached to a container of a foodstuff." It also states that in relation to a foodstuff or nutrient supplement, a claim means "any written, pictorial, visual or other descriptive matter or verbal statement, communication, representation or reference brought to the attention of the public in any manner including a trade name or brand name and referring to the characteristics of a product, in particular to its nature, identity, nutritional properties, composition, quality, durability, origin or method of manufacture or production" (South Africa. Department of Health, 2002:3).

The South African draft food labelling regulations also prohibit the use of certain words as part of the name or description of a product, such as "healthy", "nutritious" or "wholesome" or symbols implying that a foodstuff is "health-giving", "natural" or "nature's". Slogans used on a label should also not mislead the consumer in any way (South Africa. Department of Health, 2002:17; De Bruin, 2005:8). An example is "buttered (food)", with the product not even containing real butter, as it is logic that consumers will assume that the product contains butter. A product label may also not state that the product is free from a particular substance if all foods in the same class or category are free from the particular substance. Baby foods are an example that may not make a preservative-free claim, as all baby foods must be preservative free. No claim may further be made that a food product is suitable for diabetics as it is more than the sugar content of a product that could affect a diabetic and these product criteria must still be decided (South Africa. Department of Health, 2002:18).

Allergen labelling is also more widely defined in this proposed draft than in the current food labelling regulations. In addition to egg and milk that must be identified, ingredients derived from *Crustacea* and *Molluscs*, fish, peanuts, soybeans, or tree-nuts and the *Triticum* specie must be identified or if derivatives of these are added to a foodstuff, they must be identified. A limit is also set on "gluten free" claims on products. The gluten content of the product may not exceed 200 parts per million (South Africa. Department of Health, 2002:14).

Allergen advisory statements are also provided for in the regulations. Where a product which contains an allergen and a product which does not contain an allergen are manufactured on the

same production line or in the same facility and the possibility of cross-contamination does exist, the warning: "May contain traces of.... (name the allergen)", should be indicated on the label. No claims may be made on a product that it is "hypoallergenic" or "nonallergenic" unless the foodstuff is modified by chemical or genetic means to reduce the quantity of endogenous allergens in such a way that it is not possible to detect the presence of any possible allergen (South Africa. Department of Health, 2002:26-27).

Regulations regarding the identification of fats and oils have been added and require that the class name or origin of all refined fats and oils, which have been used in a product, must be identified in the list of ingredients with the describing term "vegetable", "animal" or "marine". It must also be identified if the oil or fat is "hydrogenated" or "partially hydrogenated", or "interesterified" or "partially interesterified" or is a combination of the aforementioned (South Africa. Department of Health, 2002:21). However, if the oil is derived from an allergen (e.g. soy beans), it must be indicated as such on the ingredient list as per the new proposed allergen labelling regulations (indicated on the previous page).

In addition to the identification of preservatives and tartrazine on labels as stipulated by the current regulations, the new draft proposes that glutamates must also be identified, e.g. MSG (South Africa. Department of Health, 2002:13). This could be due to the fact that some individuals have shown sensitivity to MSG, as with some preservatives and tartrazine. Such sensitivity can cause headaches, flushes, numbness, weakness and cramps and has been termed the MSG symptom complex (United States Food and Drug Administration, 1996:1).

More guidelines and information are provided with regard to any claim made on a product, such as health, nutrition and comparative claims, and include the following:

- Conditions are set out for a product to comply with before a nutrient content claim can be made. Appendix A indicates these draft food labelling conditions (South Africa. Department of Health, 2002:17).

- If a product contains mono- and disaccharides and/or sugar alcohols the following claims may not be made: "no sugar added" or "no added sugar" or "sugar free". No other words with a similar meaning may be used on the label, unless it falls in the category of a low glycaemic index (GI) product (South Africa. Department of Health, 2002:19).

- Conditions are described for making a GI claim on a product. These draft food labelling conditions are indicated in Table 2.1. The method for determining the GI content of a product is also included in the regulations (South Africa. Department of Health, 2002:19).

Table 2.1: South African food labelling glycaemic index claim conditions (obtained from South Africa. Department of Health, 2002:19)

GI* CATEGORY CLAIM	CONDITION
Low GI	GI value: 0 to 55
Intermediate GI	GI value: 56 to 69
High GI	GI value: 70 and more

* Glycaemic Index

- "Comparative claims" compare the nutrient level(s) and/or energy value of two or more similar foodstuffs. Such comparative claims can include terms like "reduced", "less than", "fewer", "increased", "more than", "light", and "lite". If such a claim is made it has to comply with certain further guidelines which are as follows:
  - "The products compared should be different versions of the same category foodstuffs.
  - The foodstuffs being compared should be clearly identified in close proximity to the comparative claim as well as identifying the amount of difference in the energy value or nutrient content, expressed as a percentage.
  - The comparison should be based on a relative difference of at least 25% in the energy value or nutrient content of an equivalent mass or volume.
  - The product must have the prescribed nutrition information declaration,
  - including the nutrition information relevant to the claim.
  - The foodstuff must have the same properties as the foodstuff it is being compared with" (South Africa. Department of Health, 2002:19).

- A "nutrient function claim", for example, "vitamin C helps with the prevention of flu", will only be allowed if the efficacy and functionality of the nutrient or ingredient has been documented in scientific literature (South Africa. Department of Health, 2002:20).

- "Enhanced function claims", will be permitted for which "the efficacy and functionality of the nutrient, non-nutrient or ingredient has been proven in a specific foodstuff and published in peer-reviewed clinical studies and which has premarket approval from the Director-General of Health" (South Africa. Department of Health, 2002:20).

- A few "reductions of disease risk claims" will be allowed, but have to comply with certain conditions, such as that the wording of the claims is prescribed and may not be changed as indicated in Appendix B. The product must in the case of such claims provide the accompanying mandatory nutrition information (South Africa. Department of Health, 2002:20).

- Probiotic claims are also allowed on food labels, but have to comply with strict regulations. These draft food labelling regulations for making probiotic claims are included in Appendix C. "The label must identify the viable, colony forming unit probiotic microbials per gram end product at the end of the shelf life period and the probiotic microbial specie(s) must be identified by their full scientific name." The prescribed nutrition information must be indicated on the label as well as the instruction "KEEP REFRIGERATED" or "KEEP FROZEN" (South Africa. Department of Health, 2002:23).

- Claims that a foodstuff is suitable for vegetarians should specify the category of vegetarian and therefore one or a combination of the following prefixes must be added to the word "vegetarian":
  - "Lacto (milk)" – means milk and milk products are included but excludes products in which animal rennet is used during preparation.
  - "Ovo (egg)" – means unfertilised eggs (preferably free-range) and egg products are included.
  - "Honey" – means honey is included.
  - "Strict" – means all ingredients and additives derived from animal origin are excluded; the term "vegan" may be used instead of "strict vegetarian" (South Africa. Department of Health, 2002:27; Sizer & Whitney, 2000:204).

2.1.1.3 New proposed draft regulations

Since the draft food labelling regulations were published in 2002, amendments have been made to these regulations. This resulted from the worldwide trend to eat healthier foods (De Bruin, 2005:8). According to Joseph (2005:31) the new food labelling regulations will be drawing on best international practice and will leave little room for compromise or vagueness. These new proposed draft regulations have been pending for months, but a few proposed amendments have been made available to the food industry. Some of the major amendments that were made include: use of prohibited statements; labelling of herbs and spices greater than two percent by mass; identification of compound ingredients; origin of fats and oils; declaration of all added glutamates, not only MSG; exemption for declaration of certain preservatives under a certain level; extension

of the list of potential allergens; extension of misleading descriptions; and the mandatory nutrition information format (Booyzen, 2005a).

These amendments indicated above can be described as follows:

- Misleading claims, such as "no cholesterol" on certain plant oils will also not be allowed. The claim is true, but unnecessary, since cholesterol is not present in any plant-derived oil. This fact is not commonly known and might cause consumers to choose a "cholesterol-free" plant oil, believing it to be a healthier option (Joseph, 2005:31). Claims such as "95% fat free" will also not be allowed, as a fat content of five percent in any food product is not considered low fat (De Bruin, 2005:8).

- When it comes to prohibited statements, the following were added: "contains live AB cultures"; "sustained energy" – unless it is a low GI product; "suitable for diabetics"; false description of water (bottled water containing any additives may not be called water) and "low carbohydrates" or "low carbohydrate claims" (Booyzen, 2005a).

- The origin of oils and fats must be indicated, such as in the 2002 draft regulations. However, when a hydrogenated or partially hydrogenated fat is used, mandatory nutrition labelling of all fatty acid components is required (Booyzen, 2005a).

- With the identification of allergens, natural flavourants were added to the list that must be identified in the ingredient list (Booyzen, 2005a).

- To make a gluten-free claim, the product must not contain any prolamins and the gluten level must be less than 20ppm. Testing must be done on the final product and the records kept (Booyzen, 2005a).

- With allergen advisory statements, drastic changes were made and stricter regulations are to be applied. For cross-contamination, the following warning can be used: "May contain traces of .....(name of allergen)" or "Not suitable for ..... (name of allergen) allergic consumers" provided Good Manufacturing Practices (GMP) based on Hazard Analysis and Critical Control Points (HACCP) are in place and/or ELISA testing is done on a regular basis. If this can't be done or due diligence can't be shown, the following statement must be used on labels: "Unavoidably contaminated with ... (name of allergen)" (Booyzen, 2005a; Booyzen, 2005b:21).

- For the nutrition information provision there will be new formats for both mandatory and voluntary information. Nutrition information is voluntary, but when a claim is made,

nutritional information is mandatory. If a claim is not made, but nutrition information is provided, it must comply with the format stipulated in the regulations. For voluntary nutrition information (where no health or nutrition claim is made) the following nutrient information must be provided in g or ml, whatever is appropriate, per 100 g/ml, per serving and the percentage RDA provided: energy (kJ); protein; carbohydrates; total fat; total dietary fibre; sodium (mg) and any other nutrient as wished (Booyzen, 2005a).

- When it comes to claims on products, the regulations will be much stricter. All claims are defined and their conditions stipulated in detail. A "claim" in relation to a foodstuff means: "Any written, pictorial, visual or other descriptive matter or verbal statement, communication, representation or reference brought to the attention of the public in any manner including a trade name or brand and referring to the characteristics of a product, in particular to its nature, identity, nutritional properties, composition, quality, durability, origin or method of manufacture of production" (Booyzen, 2005a). When a claim is made, nutrition information becomes mandatory and nutrient values must be obtained from a laboratory and accreditation of each analytical method will be mandatory. No claim will be evaluated or approved if the laboratory report cannot be produced to substantiate the claim and reports must be available upon request within 24 hours (Booyzen, 2005b:21).

  - If a nutrient content claim is made, the following words may be used, "low", "free or virtually free", "source" or "high". It will be prohibited to use any other wording. It will also be prohibited to claim that a product is "enriched". It can however be stated that it is "rich in" (Booyzen, 2005a).

  - Reduction of disease risk claims are currently prohibited, but 17 specific claims have been identified. The wording of the claims will be stipulated and may not be deviated from and in these cases nutrition information declarations are mandatory (Booyzen, 2005a).

All food labelling regulations are also relevant for food product advertising and according to the draft, all claims made in an advertisement should also be indicated on the label. No person may advertise a foodstuff in an advertisement which contains any information, claim, or declaration not permitted on the label in accordance with the regulations. Any person will be guilty of an offence if he/she "publishes a false or misleading advertisement of any food, or for the purpose of sale, describes any foodstuff in a manner that is false or misleading with regard to its origin, nature, substance, composition, quality, strength, nutritive value or other properties" (Booyzen, 2005a).

2.1.2 Codex Alimentarius Commission

In 1962 the World Health Organization (WHO) and the United Nations' Food and Agriculture Organization (FAO) established the Codex Alimentarius Commission owing to the identified need for a body to guide international food standards to safeguard consumer health and to ensure fair food-trade practices (Bennion & Scheule, 2000:91). The outlined aims of the Commission are to protect consumer health and encourage fair practice in international food trade (Hawkes, 2004:1). Over the past few decades, Codex Alimentarius has dealt with a range of important aspects of food. These aspects range from the protection of consumer health to fair-trade practices and the encouragement of food-related scientific and technological research, as well as discussion. Since the establishment of Codex Alimentarius it has drawn worldwide attention to food safety and quality. Codex Alimentarius has become the most important international reference point for developments associated with food standards (Joint FAO/WHO Codex Alimentarius Commission, 1999:20).

Although the implementation of the Codex Alimentarius food standards is voluntary, the World Trade Organization has recognised it as a reference in international trade and trade disputes (Hawkes, 2004:21). It is, however, difficult for many countries to implement these standards, as there are, for example, differences in legal and administrative systems. However, there is an increasing need for harmonisation as the desire for international food trade is increasing. An increasing number of countries are aligning their national food standards, or parts of these, with those of the Codex Alimentarius (Joint FAO/WHO Codex Alimentarius Commission,1999:23).

The international Codex Alimentarius guidelines on nutrition labelling play an important role to provide guidance to member countries when they want to develop or update their national regulations. They also encourage harmonisation of national standards with international standards (Van den Wijngaart, 2002:S68). Codex Alimentarius usually takes the initiative in developing procedures or regulations with regard to food labelling (Hey & Luedemann, 2001:340). As a result, the Commission provides guidance to member countries on various labelling aspects, such as health claims. They have set recommendations to assist governments with their evaluation of health claims used by the food industry. The recommendations are concerned with the nature and quality of the scientific evidence to support these claims (CCNFSDU, 2003:6). The Process for the Assessment of Scientific Support for Claims on Foods (PASSCLAIM) has been established. The objectives of PASSCLAIM are to produce a generic tool for assessing the scientific support for health-related claims, to evaluate existing schemes that assess the substantiation of claims and select criteria on how claims should be identified and validated (Richardson *et al.*, 2003:97).

Another example of this nature is the procedure to use food labelling as preventive protection for allergic persons (Hey & Luedemann, 2001:340). Their guidelines are based on the principle that no food should be described or presented in a manner that is false, misleading or deceptive (Van den Wijngaart, 2002:S68).

The Codex Alimentarius has a well-established reputation as an international reference. Therefore, health authorities, government food control officials, food manufacturers, food scientists and consumer advocates first consider what Codex Alimentarius dictates about a specific topic (Joint FAO/WHO Codex Alimentarius Commission, 1999:8). It is thus evident that Codex Alimentarius has a major role to fulfil in the food industry, worldwide. Thus, it should take the lead to ensure that nations learn from one another and that food labelling standards are upgraded to world-class levels. These standards must include the best consumer protection requirements from around the world (Silverglade *et al.*, 1998:56).

2.1.3 Worldwide regulations

For many years the following food labelling information was required by many countries: the name of the food, the product ingredients, the net quantity of contents, and the name and location of the manufacturer. More recently, some countries began considering new requirements for additional information pertaining to ingredients, product quality, nutrient content, production methods, and more information about substances that may cause adverse health effects. However, there is no single country which requires food labels to disclose complete information in all of these areas (Silverglade *et al.*, 1998:6).

Each country has its own unique set of labelling regulations, although some countries fall under one regulatory body. In the United States of America (USA) the Food and Drug Administration (FDA) control the labelling regulations and Canada has its own food regulator. Most countries in the UK, except Wales, Scotland and Northern Ireland, follow the same regulations. Wales, Scotland and Northern Ireland have their own Food Regulatory Bodies (Jukes, 2004). The European Union (EU) is a unique economic and political entity (South Africa. Department of Health, 2002:1). Agreed EU-wide controls on food labelling were introduced with Directive 79/112 in 1979 (Jukes, 2004). In 2002 the EU consisted of 15 member states that have agreements on social development and general human welfare, which includes food labelling. The member states are: Belgium, France, Germany, Italy, Luxembourg, The Netherlands, UK, Ireland, Denmark, Greece, Spain, Portugal, Austria, Sweden, and Finland (Hurt, 2002:S77). Additional labelling

controls were added and amendments introduced to produce a complex array of food labelling requirements. In 2000, the original 1979 Directive and its amendments were consolidated into a single new Directive: Directive 2000/13/EC (Jukes, 2004). Several European countries are developing guidelines with regard to health claims. Many of these are still under development. There is an underlying consistency of approach, but there are also some differences (Richardson *et al.*, 2003:96). Australia and New Zealand follow the Australia New Zealand Food Authority, whereas South Africa's labelling laws are determined by the Department of Health (South Africa. Department of Health, 2002:1).

Regulatory bodies in the United States (US) and Europe have mandated that regulations be established to ensure the safety and truthful labelling of commercial food products. In the US, where substantial scientific data are available, they want to inform consumers about the health benefits of foods. The regulations in place for nutrient and health claims are well-accepted as providing a useful service to consumers as well as reducing consumer misinformation. Companies are allowed to advertise the health benefits of their products if the advertisement is truthful, not misleading, and consistent with the applicable regulatory requirements. In Europe, the process is moving more slowly. This has resulted in considerable disagreement about analytical methods, accuracy of information, and its validity in the context of individual diets (Greene *et al.*, 2001:S276).

For many countries in South-East Asia, there are no mandatory nutrition labelling requirements for foods, except for special categories of foods and when nutritional claims are made for fortified or enriched foods. Nevertheless, several food manufacturers do voluntarily label the nutritional content of a number of food products. There is, therefore, increasing interest among authorities in these countries to start formulating regulations for nutrition labelling. The format and requirements for nutrition labelling and claims, however, differ widely for these countries. Some countries, such as Malaysia, closely follow the Codex Alimentarius guidelines on nutrition labelling in terms of format, components to be included and manner of expression. However, some of the other countries, such as the Philippines and Thailand, have drafted nutrition labelling regulations very similar to those of the Nutrition Labelling and Education Act (NLEA) of the USA (Tee *et al.*, 2002:S80).

There is a great concern in these South-East Asian countries that without proper regulations, the food industry may not be certain as to what claims can be made. However, various food products

on the market are already carrying a variety of nutrition and health claims. Consumers may be confused and misled by these excessive and misleading claims made by food manufacturers (Tee *et al.*, 2002:S80). Misleading labels are a major concern for regulatory bodies, as well as for consumers (American Diabetes Association, 2000:94).

When comparing international regulatory approaches, it becomes clear that there is a need for harmonisation. In some countries, such as in the US, the wording for health claims is defined. In other countries, such as the UK, an expert panel of scientists formulate the wording (Joint Health Claims Initiative, 2000:5). The regulations for nutrient and health claims established by the governments of the USA and Europe are well accepted. They provide useful information to consumers and reduce misinformation (Greene *et al.*, 2001:S276). With the passage of the NLEA of 1990, the implementation of the FDA and the US Department of Agriculture Food Safety and Inspection Service (FSIS), food labels in the US are expected to be uniform and truthful (American Diabetes Association, 2000:94). The regulatory framework of different countries must, however, still allow the food industry the flexibility and incentive to conduct research and development, to be able to develop products with a scientifically substantiated health claim and to inform consumers accordingly (Food Navigator, 2004b).

2.2 Nutrition labelling

Nutritional information is increasingly demanded by consumers as they take more responsibility for their own health (Neall, 2003:33). Over the past decades the interest in nutrition has grown rapidly (Evily, 2001:456). Two of the main aims of nutrition labelling are to provide consumers with sufficient information to assist them in making informed food product choices for a balanced diet (at the lowest cost) and to support nutrition education to better manage special diets (Tee *et al.*, 2002:S80; Neall, 2003:33; Venter *et al.*, 2003:118).

Nutrition labelling plays a prominent role in the prevention and reduction of lifestyle diseases. The prevalence of chronic diseases of lifestyle has placed the focus on the relationship between diet and disease, as well as diet and health (Anderson & Coertze, 2001:28; Hurt, 2002:S77). A diet high in saturated fat and trans-fatty acids contributes to high blood cholesterol. Reducing the intake of these fats in the diet can lower blood cholesterol and may reduce the rate of cardiovascular disease (Sizer & Whitney, 2000:144). This highlights the importance of accurate labelling of food products with, amongst other nutrients, the fat contents.

There is a growing public interest in these relationships. In Europe this growing interest, as well as the increase in public health problems, was among the factors which led the European Commission to propose harmonised legislation on nutrition labelling. As in many other countries, these nutrition labelling provisions are voluntary, but become obligatory if the manufacturer decides to make a nutrition health claim. Many food manufacturers see nutrition labelling as a marketing tool and it is generally made available on-pack. However, some think it should be made compulsory, as for example in the US, where nutritional labelling is required unless a product is exempt from it (Hurt, 2002:S77).

The Codex Alimentarius has developed three standards and guidelines relevant to nutrition labelling: the *General Standard for the Labelling of Prepackaged Foods* sets down the fundamental principle that labelling should not be false, deceptive nor misleading; the *Guidelines on Nutrition Labelling* recommend that nutrition labelling be voluntary unless a nutrition claim is made; the *General Standard for the Labelling of and Claims for Prepackaged Foods for Special Dietary Use* recommends that all foods for special dietary uses display a nutrition label. The national regulations of different countries mandate different label formats. Some countries follow the Codex Alimentarius recommendations that energy, fat, protein and carbohydrate are listed on a label where a claim is made, while others require up to 10 nutrients (Hawkes, 2004:11).

Several countries in South-East Asia have no mandatory nutrition labelling requirements except for special categories of foods and when nutrition claims are made for fortified or enriched foods. Nevertheless, several food manufacturers do voluntarily label the nutritional content of a number of food products. There is, therefore, increasing interest among authorities in countries in the region to start formulating regulations for nutrition labelling for a wider variety of foods. Malaysia has proposed new regulations to make it mandatory to label a number of foodstuffs with the four core nutrients, namely protein, carbohydrate, fat and energy. Some countries, such as Malaysia, closely follow the Codex Alimentarius guidelines on nutrition labelling in terms of format, components to be included and mode of expression. Other countries, such as the Philippines and Thailand, have drafted nutrition labelling regulations very similar to those of the NLEA of the USA (Tee *et al.*, 2002:S80).

Appendix D provides a detailed outline of the nutrition claims allowed per country. Countries can be characterised as having one of the four types of regulatory environments with regard to nutrition labelling described below:

- Mandatory nutrition labelling on all pre-packaged food products.
- Voluntary nutrition labelling, which becomes mandatory on foods where a nutrition claim is made (most countries also mandate labelling on foods with special dietary uses).
- Voluntary nutrition labelling, which becomes mandatory on foods with special dietary uses.
- No regulations on nutrition labelling (Hawkes, 2004:11).

In South Africa, the labelling of nutrition information is voluntary, but it becomes mandatory when a nutrition claim is made on a food product label. When voluntary nutrition information is provided, the following nutrient information must be indicated: energy, protein, carbohydrate, total fat, total dietary fibre and sodium contents of the product. The information must be provided per 100 g/ml and per serving as indicated in Table 2.2. In addition, the label can contain any other nutrition information of the manufacturer's choice per serving and per 100 g/ml, provided the information can be substantiated by either a nutrient analysis report from a reputable laboratory or a calculation from the national food composition tables (South Africa. Department of Health, 2002:29).

Table 2.2: South African food labelling prescribed voluntary nutrition information declaration (obtained from South Africa. Department of Health, 2002: Annexure 2)

Nutrient	Unit of measurement	Per 100 g/ml	Per serving	%RDA*
Energy	KJ			
Protein	g			
Carbohydrate	g			
Total fat	g			
** ** (etc) ***	g			
Total dietary fibre	g			
Sodium	mg			
(Insert any other nutrient or food component to be declared according to these Regulations here or as appropriate under the relevant main nutrient heading in g, mg, mcg, or other units as appropriate)				

*RDA = Recommended Dietary Allowance for individuals older than 13 years

**Place for a sub-group nutrient

***Place to insert cholesterol where cholesterol information is given

There should possibly be requirements for complete disclosure of all relevant nutrients in a product to prevent consumer deception. Consumers may be misled about a food's overall nutritional value if food manufacturers are allowed to list only selected nutrients and are not required to list the amount of other important nutrients. Such regulations allow food manufacturers to list the nutrients that make the food appear healthy, but are not required to disclose the fact that the food may be high in undesirable nutrients. A label might state that the product is low in fat and a good vitamin source, but it might not indicate that the product is, for example, high in sodium. This information is very important for individuals following a sodium-restricted diet as well as for individuals following a healthy diet (Silverglade *et al.*, 1998:17).

Nutrition labelling should be easy to understand and should provide the necessary information to consumers. A study conducted in South Africa to determine the attitude and knowledge of consumers on nutrition labelling found that many of the participants had little nutrition labelling knowledge, indicating that they don't understand the information provided on food labels. However, most of them had a positive attitude towards nutrition labelling. It is thus apparent that consumers in South Africa need a nutrition labelling education programme (Anderson & Coertze, 2001:28). South African consumers believe that nutritional education will assist them in reading food labels, which would in return help them when purchasing food. There is also a need for more nutritional education and nutrition information on food labels, especially among those consumers concerned with their health (Anderson & Coertze, 2001:31). The information provided on the label will therefore be most useful if consumers have enough basic knowledge of nutrition to be able to make an informed choice (Van den Wijngaart, 2002:S70). The use of the indication of the GI value on food labels may be one such area.

Labelling food products with the GI value informs the consumer on how to choose carbohydrate-containing foods or beverages based on physiological effects. The compositional information provided on food labels, in conjunction with the GI value, can be used to guide healthy food choices. Labelling foods with the GI will, for example, eliminate the use of words such as "simple" and "complex" carbohydrate, which is difficult for consumers to understand and is not advised to be used on food labels (Venter *et al.*, 2003:119). However, better education and guidelines are needed in terms of industry and public use of the GI concept, as well as standardised methodology in determining the GI (Venter *et al.*, 2003:118).

Nutrition labelling is equally important to the food industry as labelling provides a means for food manufacturers and retailers to become more aware of the nutritional properties of their products

and to emphasise these properties to consumers (Tee *et al.*, 2002:S80). A number of countries have done cost-benefit analyses of mandatory nutrition labelling regulations. The following results were found:

- The FDA examined the costs and benefits of mandatory nutrition labelling. Costs were calculated as being US $1500 million, which included the cost of administration, nutrition content determination tests, printing and inventory. Benefits were estimated at 35 179 fewer cancer cases, 4024 fewer coronary heart disease (CHD) cases, and 12 902 fewer premature deaths, all over a 20-year period. These health state changes were valued at $4200 million (determined by the amount people are willing to pay for a reduced death risk valued at $3600 million and reduced medical costs at $600 million) (Zarkin *et al.*, 1993:722).

- Australia and New Zealand conducted a cost-benefit analysis while preparing their mandatory nutrition labelling regulations. The analysis estimated the costs of a one-year delay in implementing mandatory labelling. It was estimated that between 320 to 460 deaths would be lost for every year that mandatory labelling was delayed, with costs to the health system of between $47 to $67 million, and a lowered value of life by $341 to $486 million (Hawkes, 2004:48).

2.3 Health and nutrition claims

For many years the primary role of the diet was to provide individuals with sufficient nutrients for their metabolic requirements, as well as to provide a feeling of satisfaction. However, nowadays more attention is given to specific foods which can play a role in reducing disease risks. Therefore, more attention is being given to health and nutritional claims (Hasler *et al.*, 2004:814). As a result there must be clear communication of the health benefits of certain foods to consumers and the importance between diet and health must be emphasised (Richardson *et al.*, 2003:97).

There have been several approaches around the world, with regard to the use of these claims. The common theme all around is that nutrition and health claims will require scientific validation and substantiation (Hasler *et al.*, 2004:815). The Codex Alimentarius general guidelines on claims states that:

- No food should be described or presented in a manner that is false, misleading or deceptive or is likely to create an erroneous impression regarding its character in any respect.

- Clear, easily understandable and suitable information to consumers should be provided on health claims.
- Health claims should have a scientific justification, based on sufficient and adequate evidence.
- Claims should not imply that a balanced diet or ordinary foods couldn't supply adequate amounts of all nutrients (CCNFSDU, 2003:2).

The European Food Safety Authority (EFSA) is currently busy drawing up a list of claims. The EFSA holds the opinion that consumers should be able to make food choices based on clear and accurate information. All vague claims, such as "preserves youth", would be prohibited under the new rules (Food Navigator, 2004b). Any claim that implies that a food product can prevent or treat human disease is prohibited in the advertising or labelling of food products in current EU legislation (Coppens *et al.*, 2001:140).

In some countries, such as in South-East Asia, food manufacturers have been making claims on their products for a long time, without regulations being in place. There is, however, the concern that without proper regulations, the food industry may not be certain as to what claims can be made. Excessive and misleading claims made by irresponsible manufacturers would only serve to confuse and mislead the consumer. Malaysia is one of the countries in the process of gazetting regulations to clearly stipulate the permitted nutrition claims and the conditions required to make these claims along the guidelines of Codex Alimentarius. Only two countries in the region permit health claims to be made – Indonesia and the Philippines. Other countries in the region are following the developments in Codex Alimentarius and examining the need for allowing these claims (Tee *et al.*, 2002:S80).

There is a need for uniform descriptions and terminology in the different types of health and nutrition claims (Richardson *et al.*, 2003:96). This will aid with the communication and presentation of the concepts, especially with the type and extent of scientific justification that will be required (Richardson *et al.*, 2003:99). To use any health claim, a high quality of scientific justification is compulsory. The scientific justification must be sufficient to support the claim being used (CCNFSDU, 2003:1). The descriptions about health and nutritional claims developed by Codex Alimentarius are likely to be the most appropriate to use. The concepts developed by the European Commission Concerted Action on Functional Food Science in Europe (FUFOSE) project, as well as the guidelines on scientific substantiation of health-related claims for functional

foods issued by the Council of Europe, can provide guidance to the food industry (Richardson *et al.*, 2003:99).

Consensus is further needed among academia, government, and industry for appropriate food labelling claims. This action will help individuals to make healthy food selections (Greene *et al.*, 2001:S276). Regulating claims on food products will provide protection to consumers by ensuring the claims are scientifically proven. It will allow for educated food selections and could potentially promote consumer health and wellness (Hasler *et al.*, 2004:819).

2.3.1 Nutrition claims

Dramatic changes in lifestyle have resulted in an epidemic of obesity and chronic disease (Van den Wijngaart, 2002:S71). Consumers are consuming more and more processed foods, which are high in fat, energy and sodium (Chan, 2003:1). Diets high in calories, fat, and sodium are associated with the increased prevalence of heart disease, diabetes, obesity, hypertension, and some cancers (Sizer & Whitney, 2000:410). Thus, diet-related diseases are widespread in many developed countries. As a result many consumers are following specific diets in which certain foods or food components are restricted or avoided (Chan, 2003:1).

As the worldwide health consciousness trend, which resulted from this epidemic, continues to grow, the food industry can play a significant role in the identification and development of foods and ingredients important for health promotion and disease prevention (Van den Wijngaart, 2002:S71). In this age of increased health awareness, consumers are concerned about what they eat and how it will affect their health and well-being and they are willing to pay a premium for wholesome products (Lewis, 2001:10; Anon, 2003). Advertising claims about the nutritional health qualities of foods furthers the opportunity for wide coverage and expansion (Van den Wijngaart, 2002:S70). Labelling information on fat and sodium levels is, for example, important for consumers suffering from diabetes and heart disease. Without appropriate labelling, these consumers may be facing serious consequences through making the wrong food choices (Chan, 2003:1). These nutritional claims, for example, "low fat" and "fat free", must, however, be strictly regulated and procedures to enforce standards be in place (Van den Wijngaart, 2002:S70). Government health agencies and the food industry must also work together to increase public awareness of the impact that food has on health through educational programmes (Van den Wijngaart, 2002:S71).

A nutritional claim relates to what the product contains. A nutritional claim, according to Codex Alimentarius, means "any representation which states, suggest or implies that a food has particular nutritional properties including, but not limited, to the energy value and to the content of protein, fat and carbohydrates, as well as the content of vitamins and minerals" (CCNFSDU, 2003:6). Codex Alimentarius has set out guidelines for the use of nutrition claims. These guidelines are summarised in Table 2.3 below:

Table 2.3: Summary of key clauses in the Codex Alimentarius Guidelines for Use of Nutrition Claims (obtained from Hawkes, 2004:9)

- Nutrient claims should be consistent with national nutrition policy and support that policy.
- Nutrient claims are permitted for energy, protein, carbohydrate and fat and their components, and fiber, sodium, vitamins and minerals. Foods can be claimed as being low in, free of, high in, or a source of specified nutrients only if in accordance with nutrient reference values.
- Claims related to dietary guidelines or healthy diets must be consistent with dietary guidelines.
- Foods should not be described as "healthy" or be represented in a manner that implies a food in and of itself will impart health.
- Any food with a nutrition claim should bear a nutrition label.

2.3.1.1 Fat and trans-fatty acids

High fat intakes have been associated with many serious and life-threatening diseases, such as obesity, cardiovascular disease and some types of cancer (Sizer & Whitney, 2000:144). A low-fat diet is often recommended for those with high blood cholesterol, also for those with high blood pressure, gallstones, pancreatitis, cystic fibrosis or for overweight individuals (Anderson & Deskins, 1995:112). Many chronic disease sufferers or individuals on slimming diets may be avoiding foods high in fat, but most importantly, many consumers are avoiding high fat products for basic good health reasons, to improve their health or as a disease preventative measure (Sizer & Whitney, 2000:144).

The American Heart Foundation identified obesity, high blood pressure and high blood cholesterol as some of the major risk factors for developing cardiovascular disease. Many consumers are thus informed to adapt their diets accordingly. This means consuming less fat, less saturated fat, less cholesterol and less salt. A diet high in saturated fat and trans-fatty acids contributes to high blood cholesterol. Reducing the intake of these fats in the diet can lower blood cholesterol and may reduce the rate of cardiovascular disease. "Fat free" or "low fat" products form part of these therapeutic and many other diets. It is thus important that products claiming to be "fat free", "cholesterol free" or "low fat" actually comply with these regulations set out by national

governments. As mentioned before, obesity is one of the risk factors for cardiovascular disease. Many consumers are therefore using "reduced fat" products as part of a calorie-restricted diet to lose weight. Obesity can also increase the risk of developing many other diseases, such as diabetes (Sizer & Whitney, 2000:144).

Unlike other fats, most trans-fat is formed when food manufacturers turn liquid oils into solid fats, like producing shortening and hard margarine (Hawkes, 2004:37). Trans-fatty acids are formed when manufacturers add hydrogen to vegetable oil, a process called hydrogenation. Hydrogenation increases the shelf life and flavour stability of foods containing these fats. Trans-fat can be found in vegetable shortenings, some margarines, crackers, cookies, snack foods, and other foods made with or fried in partially hydrogenated oils (United States Food and Drug Administration. FDA Office of Public Affairs, 2003:20; Moore, 2003:40). A small amount of trans-fat is found naturally, primarily in dairy products, some meat, and other animal-based foods. Trans-fat, like saturated fat and dietary cholesterol, raises the low-density lipoprotein (LDL) cholesterol that increases the risk of CHD (United States Food and Drug Administration. FDA Office of Public Affairs, 2003:20). The Codex Alimentarius Commission guidelines recommend that national governments should decide whether trans-fatty acids should be labelled. Fortunately, more countries are now choosing the option to label trans-fatty acids (Hawkes, 2004:37).

In 2004 the FDA classified obesity as a national epidemic. The rising obesity rates and mounting evidence linking obesity to conditions such as diabetes, heart disease and death prompted the FDA to increase its efforts to better educate the public on the basics of healthy nutrition. The onus was placed on food companies to be more specific with their nutrition labels (Cosgrove, 2005:14). The FDA has required that saturated fat and dietary cholesterol be listed on food labels since 1993. Starting January 1, 2006, listing of trans-fat was required as well. With trans-fat added to the nutrition information panel, consumers will know for the first time how much of all three, saturatedfat, trans-fat, and cholesterol are in the foods they choose (United States Food and Drug Administration. FDA Office of Public Affairs, 2003:20). With this new labelling regulation it is hoped that consumers will be able to make better buying decisions, since they will receive more information on the fat composition of each food item (Wan, 2003:1). In South Africa, the proposed nutrition labelling regulation states that manufacturers must indicate the trans-fatty acid content of a food product (South Africa, Department of Health, 2002:55).

Identifying the saturated fat, trans-fat, and cholesterol contents on food labels provides consumers with the information they need to make food choices that help reduce the risk of CHD (United

States Food and Drug Administration. FDA Office of Public Affairs, 2003:20; Moore, 2003:40). This revised label will be of particular interest to people concerned about high blood cholesterol and heart disease (United States Food and Drug Administration. FDA Office of Public Affairs, 2003:20). The disclosure will prompt food manufacturers to examine the healthfulness of their ingredients, and possibly re-formulate their recipes. Whether through changes in consumers' food selections or changes in ingredient use and food manufacturing practices, consumers' health should benefit from these changes as consumers will need to change their eating habits to limit the amounts of trans-fat consumed in foods that are not re-formulated. Hopefully, food manufacturers will recognise the advantages of re-formulating their products utilising more healthy ingredients and cooking methods. Changes are already evident. Manufacturers already are taking steps to re-formulate products, changing the types of fat used in processing to ones that contain little or no trans- and saturated fats. Products with "trans-fat free" on the label are already appearing on supermarket shelves (Moore, 2003:40).

2.3.1.2 Sugar

Diabetes is a chronic disease characterised by elevated blood glucose concentrations. Some complications associated with diabetes are blindness, heart and kidney disease and even premature death. Individuals suffering from diabetes are often on a strict diet to control their blood glucose levels (Anderson & Deskins, 1995:109; Sizer & Whitney, 2000:112). These diets are most often low in concentrated sugars and saturated fats (Sizer & Whitney, 2000:112). Thus, these individuals might buy products labelled as "sugar free" or "saturated fat free".

2.3.1.3 Sodium

Chronic high blood pressure or hypertension is one of the most prevalent risks for cardiovascular disease. The risk of heart disease is higher the more above normal the blood pressure is. Consumers with hypertension or high blood pressure might be following a low sodium diet, as there is evidence indicating that a high salt intake will lead to high blood pressure. A reduction in salt/sodium intake can lead to a reduction in blood pressure and the intake may be restricted to 1000 to 2000 mg a day (Anderson & Deskins, 1995:45; Sizer & Whitney, 2000:407). These individuals are a target market for products claiming to be "sodium free" or "low sodium". If a label therefore indicates wrongly that a product is "sodium free" it can cause a rise in blood pressure in salt-sensitive individuals suffering from hypertension. Therefore, it is important that all claims made on products must not be misleading and should be substantiated with scientific evidence. Products

must be tested to determine if they correspond with regulations set out for a specific health or nutrition claim.

2.3.2 Health claims

Health claims are related to health and well being. According to the Codex Alimentarius general guidelines on claims, a "health claim" means "any representation that states, suggests, or implies that a relationship exists between a food or a constituent of that food and health" (Codex Alimentarius Commission, 2003:40).

Internationally the regulation of health claims is in a developmental stage and varies widely between countries. The compilation of the regulations is complicated by the fact that there are different types of health claims. The Codex Alimentarius draft guidelines would allow for the inclusion of "nutrient function", "other function", and "reduction of disease-risk" claims. Among the countries reviewed, the greatest proportion has no regulations specific to health claims, followed closely by countries that prohibit any reference to disease in a claim. A small number of countries permit specified "disease risk-reduction" claims or "product-specific" health claims, while a larger number allow "nutrient function" or "other function" claims (Hawkes, 2004:4). A list of the countries that allows the above-mentioned claims is included as Appendix E.

Health claims as described by the Codex Alimentarius Commission include the following:

- Nutrient function claim – Such a claim describes the physiological role of the nutrient in growth, development and normal functions of the body.
- Other function claims – "These claims concern specific beneficial effects of the consumption of foods or their constituents, in the context of the total diet on normal functions or biological activities of the body. Such claims relate to a positive contribution to health or to the improvement of a function or to modifying or preserving health."
- Reduction of disease risk claim – "Claims relating the consumption of a food or food constituent, in the context of the total diet, to the reduced risk of developing a disease or health-related condition" (Codex Alimentarius Commission, 2003:40). (Appendix B indicates the proposed South African reduction of disease risk claims.)

These sub-categories of health claims are closely related, and provision is also made for generic claims and product specific claims. A generic claim relates to "diets, broad food categories, and food components including nutrients". A generic claim is based on generally accepted scientific evidence and/or recommendations from national or international health bodies. A product-specific

claim relates to "specific food products". If a product itself has a health-promoting effect, a claim can be made on the product, but it must provide a specific and documented effect. These two approaches have been applied in the Swedish, UK, Canadian and Australian/New Zealand claims (Richardson *et al.*, 2003:101).

Advertising health benefits is generally allowed if the advertisement is truthful, not misleading, and consistent with the applicable regulatory requirements (Greene *et al.*, 2001:S276; Richardson *et al.*, 2003:102;Food Navigator, 2004b). The draft Codex Alimentarius guidelines state that health claims should only be permitted if they are consistent with the country's national health policy, supported by scientific evidence, do not imply disease prevention, do not encourage bad dietary practice and are made in the context of the total diet (Hawkes, 2004:4) (Refer to Table 2.4 for additional information.)

Table 2.4: Conditions under which health claims would be permitted by draft Codex Alimentarius guidelines (as at March 2003)
(obtained from Codex Alimentarius Commission, 2003:40)

- Health claims should be consistent with national health policy and support such policies where applicable.
- Health claims must be supported by scientific evidence.
- The presentation of risk-reduction claims must ensure by, for example, use of appropriate language and reference to other risk factors, that consumers do not interpret them as prevention claims (because diseases have multiple risk factors and altering one of these risk factors may or may not have beneficial effects).
- Health claims must be made in the context of the total diet.
- Health claims must not encourage or condone bad dietary practice.
- The claimed benefit should only arise from the consumption of a reasonable amount of the labelled food.
- Health claims must be accepted and acceptable to the competent authorities in the country in which the food is being sold.
- Health claims should have a clear regulatory framework with qualifying or disqualifying conditions for eligibility to use the specific claim.
- Claims that relate to "healthy diets" should remain true to dietary guidelines and foods should not be described as "healthy" in a way that implies that they will impart health.
- Any food product with a health claim should bear a nutrition label in accordance with the guidelines.

Health claims, such as disease risk reduction claims, reflect that foods with health claims are aimed at healthy individuals. Through the wording of the health claims, individuals should realise that the cause of a disease depends on many factors, such as environmental and genetic factors and that the certain dietary component (present in a health claim) cannot ensure that a disease will

not develop. Individuals should also, however, realise that the food or food component may reduce the likelihood of developing the disease (Richardson *et al.*, 2003:97-98). Any such claim made must be supported by sound scientific evidence (Greene *et al.*, 2001:S277; Food Navigator, 2004b).

Codex Alimentarius states the following about the substantiation of health claims: "To use any health claim, a high quality of scientific justification is compulsory. The scientific justification must be sufficient to support the claim. The scientific evidence includes the results of studies, either conducted by the claimant to substantiate their claim or already published scientific literature. All studies shall be done according to generally recognised scientific procedures and principles. The dossier constituted in order to support the claim must be evaluated scientifically by a group of qualified experts. Health claims shall be re-evaluated after a certain period of time" (CCNFSDU, 2003:6).

The FDA's Task Force on Consumer Health Information for Better Nutrition unveiled a process for them to review health claims better. This process relies on expertise from the Agency for Healthcare Quality Research and other government agencies, joined with enhanced consumer studies, to review health claims before they appear in food labelling. This initiative will better protect consumers from making uninformed or misinformed choices about their diet and nutrition. It will also provide better information to consumers about the effect of their food choices on their health. The FDA also wants to identify the kinds of information known to be misleading to consumers and how to present truthful and non-misleading information to consumers (United States Food and Drug Administration, 2003:1-2).

Commercially, the outcome of the use of health claims has been mixed. Evidence suggests that health claims can increase market share, but there have also been significant marketplace failures for foods with health claims. Health claims may encourage the choice of and consumption of healthy products, but may also have an unintentional effect of encouraging excessive intake of specific products or nutrients (Hawkes, 2004:4). However, the FDA will reward companies that provide healthier products, while more aggressively enforcing the law against companies that appeal to consumers through false and misleading health claims. Over a period of six months in 2003, the FDA issued 73 warning letters to companies making unsubstantiated claims. It also led to the seizure of products worth almost $9,000,000.00 (United States Food and Drug Administration, 2003:5).

The differences in labelling and health claim regulations between countries may require food exporters to change their labels according to the country they are exporting to. As such, nutrition labels and health claims regulations are potentially trade restrictive (Hawkes, 2004:53).

2.4 Food allergy and intolerances

Allergic reactions to foods represent an increasing problem in clinical medicine, as well as for the food industry. The prevalence of food allergy has been estimated to be at least two to five percent in infancy and childhood. Infants often outgrow their food sensitivities. The prevalence of food hypersensitivity in adults is therefore lower, it is estimated to be between one and two percent (Bousquet *et al.*, 1999:2; Ring *et al.*, 2001:4). The British Allergy Foundation (BAF) and the Institute of Food Research (IFR) indicate that between one and two percent of the British population is allergic to at least one food, but that the problem is getting worse. Every year the number of people in the UK suffering from an allergy grows by five percent, and food allergies are growing just as quickly as other non-food allergies (Huddart, 2000:52). The prevalence of adverse reactions to food additives has been estimated at two percent utmost (Ring *et al.*, 2001:4).

All that can currently be offered to individuals suffering from food allergy and conditions of food intolerance is to completely avoid all foods containing the offending allergen. This means that food- allergic and intolerant consumers, together with their families and carers, must adopt a lifestyle of constant vigilance to ensure that the food they buy and eat is free from problematic allergens (Gowland, 2001:118; Mills *et al.*, 2004:1262). The indication of allergenic ingredients on a food product label is the only approach in food legislation to protect individuals against adverse allergic reactions and the only way to identify if a product contains an allergen (Hey & Luedemann, 2001:338; Mills *et al.*, 2004:1262). Through clear indication of the composition of a product on the label, the food industry can help to manage the risk of allergic food reactions (Wood, 2002:921). This is not easy to achieve and has been made worse by the fact that in many countries legislation does not require complete labelling of ingredients contained in processed foodstuffs. This has resulted in the accidental consumption of problem foods (Mills *et al.*, 2004:1262).

Europe has set many new food labelling rules, of which one is the identification of all sub-ingredients of compound ingredients. This means that allergens cannot be hidden. Manufacturers will also be encouraged to include additional information as to why the product is not suitable for

allergic consumers. This will be in the form of a voluntary scheme introduced by the UK's Food Standards Agency (FSA) (Food Navigator, 2003).

The Food Allergy Issues Alliance (FAIA) group of America consists of food trade associations and other organisations that convene to discuss issues related to food allergy. The group encourages all food companies to adopt and adhere to the following labelling guidelines for the major food allergens:

- The major food allergens must be identified. Ingredient panels must list, in English, what, if any, of the eight main food allergens (peanuts, tree-nuts, fish, shellfish, eggs, milk, soy, and wheat) are enclosed in the product.
- Commonly understood terms for the major food allergens must be used within, or in immediate proximity to, the ingredient declaration. This provides clear communication to the allergic consumer.
- Manufacturers must reveal the presence of major food allergens when they are an intentional part of the food, for example when they form part of additives.

Guidelines must further be established for conditions when the use of supplemental allergen statements is appropriate (Ohr, 2001:49).

In similar manner, patient groups such as the European Federation of Allergy and Airways Diseases Patients Associations (EFA) feel that food-allergic and hypersensitive patients have the right to know which foods contain allergic ingredients. The EFA has demanded that:

- Ingredients and substances recognised as causing allergies must be listed and labelled without exception and with clear reference to their common names.
- The list of ingredients and substances recognised as causing allergies should be updated on the basis of new scientific evidence.
- There should be limitations imposed regarding the flexibility with which ingredients which constitute a minor part of the finished product are labelled.
- Exceptions from the need for labelling of compound ingredients are strictly limited (Mills *et al.*, 2004:1263).

A few years ago, the Canadian Food Inspection Agency issued an allergy information letter to all Canadian food manufacturers. The information letter included a list of "foods and their derivatives" that should always be declared on food labels by their specific common names. This list included peanuts, tree-nuts, sesame seeds, milk, eggs, fish, crustaceans, soy, wheat and sulphites. The letter also encouraged manufacturers to identify the plant source of ingredients, such as hydrolysed plant proteins, starches, modified starches and lecithin (e.g., hydrolysed soy protein, wheat starch, modified wheat starch, and soy lecithin). The identification of these ingredients will

assist consumers in making safe food choices. The letter was distributed to encourage the voluntary labelling of food ingredients known to cause serious allergic reactions when present in prepackaged foods, as well as to serve as encouragement to develop allergen prevention plans. The aim of an allergen prevention plan is to prevent cross-contamination and improper labelling (Silverglade *et al.*, 1998:22-23).

Food manufacturers can also produce products free of a specific allergen. Some products already claim to be "free of" a specific allergen. Many countries are in the process of implementing regulations to control the use of such claims. One of the regulations is that an allergen-free claim must be supported by obligatory analysis regarding remaining allergenic properties (Hey & Luedemann, 2001:341). There is no tolerance for allergens. If a product has even a minute trace of a specific allergen, then the product cannot declare the absence of that allergen. These substances / allergens, however, must be at levels of physiological insignificance (e.g., 10 ppm for sulphites) in order to claim the absence of such allergens (Silverglade *et al.*, 1998:29). Testing food products for allergens is the only effective way to ensure that a product is allergen free and safe for consumption.

Through the accurate labelling of food products that clearly indicate their composition, the food industry can help to manage the risk of food allergic reactions. This will allow a consumer sensitive to a certain food or food ingredient to avoid the consumption of the product in question. The food industry needs a scientifically validated list of major food allergens for this approach to be effective (Bousquet *et al.*, 1999:17).

2.5 Food labelling errors

The US FSIS compiled a list of the ten most common errors made on food labels. They are as follows:

I. Ingredient statement problems:

- Ingredients are not listed by common name, e.g., oil declared instead of vegetable oil.
- Component ingredients are not listed by common name.
- Order of predominance in the ingredients statement is incorrect.
- There are ingredients declared in the ingredient list that are not in the formulation and *vice-versa*.

II. The formulation, processing procedure and/or supporting documentation do not agree with information and/or claims on the label, e.g., "thyme, pepper" claim on label but the formulation does not indicate that the spices include thyme and pepper.

III. The entire label or portions of the label are illegible.

IV. The label is incomplete since all required labelling features are not provided.

V. Product standards are not met.

VI. Product name is incorrect according to certain set standards. For example, the word "natural" forms part of the product name, but the product has been processed and contains additives. This will be misleading to the consumer.

VII. Size of words is incorrect.

VIII. There is a geographical claim on the label, but the product is not produced in the claim location.

IX. Nutritional information problems:
- Serving size is incorrect.
- Servings per container are incorrect.
- Wrong format is used.

X. Undefined nutrient content claims are used, e.g., "very low in fat" (United States Department of Agriculture. Food Safety and Inspection Service, 2003).

In the highly competitive food industry, companies want to differentiate their products. Many of these products are based on traditional recipes and productions. In 2002, the UK's FSA issued advice on eight marketing terms used on food labels in the UK, namely "fresh", "pure", "natural", "traditional", "original", "authentic", "home made" and "farmhouse" (Food Navigator, 2004c). The words "natural" and "pure" are principally used as buzzwords on labels and have no actual meaning (Baker, 2000:34). Despite this guidance provided, the UK's food watchdog accused the food industry of misleading consumers by using terms such as "fresh" and "natural" on food labels. The UK FSA conducted a survey of 220 food labels. Forty percent of the samples examined were misleading to the consumer, despite the majority of manufacturers following the best practice guidance issued by the agency (Food Navigator, 2004c).

The two terms used that were the most misleading, were the terms "farmhouse" and "traditional". Guidance for the word "farmhouse" states that this should only be used where the product is made on a farm, or more specifically in the main dwelling of the farmer himself. The FSA examined 24 samples labelled with this term and a massive 75% of the products were actually produced in industrial premises. Over one-third of the samples using the term "traditional", actually used modern ingredients, such as additives and preservatives (Food Navigator, 2004c).

Consumers expect food products displaying terms such as "fresh", "pure", "natural", "traditional", "original", "authentic", "home made" and "farmhouse", to be different in some way to products not displaying these terms. Consumers expect food products labelled as "pure", to have no added ingredients and products labelled as "fresh", not to have a shelf life of four weeks. Consumers also don't expect products labelled as "natural" to contain artificial additives and preservatives (Food Navigator, 2004c).

Other statements made on food labels that might be misleading include the country of origin used in the name of the product, such as Tuscan olive oil that can sometimes mean olives grown in Spain but pressed in Italy and British bacon that may be Danish pork that has been cured in Britain. Bread that is often labelled as "freshly baked" may have been part-baked in a factory, and only given a final browning at the bakery or in the supermarket (Baker, 2000:34).

It is most often the nutrition labelling on food products that is wrong. Some errors are so bad that people following a sugar-free diet are unknowingly eating heaps of sugar (Lipka, 2001:1). The claim "no added sugar" doesn't guarantee that a product is low in sugar (Baker, 2000:34). In America, the Florida Department of Agriculture and Consumer Services laboratory often tests food products to determine if they correlate with the nutrition panel. In one of their studies they found that three out of four diet products tested had been proved to have the wrong information in their "Nutritional Facts" panels or on their labels (Lipka, 2001:1).

During the late 1990s there was an explosion of food products with claimed added health benefits. Many of the claims associated with these products were unsubstantiated (Evily, 2001:456). This is misleading and unethical. In the early nineties, the FDA received complaints about products called "Skinny" treats. Consumers and health-care professionals were concerned about these products and they challenged the products' labelling claims. "Skinny" treats comprised a range of low-fat snacks, which included rolls, carob-iced doughnuts, and white-iced apple doughnuts. All of these

items claimed on their labels to contain one to two grams of fat and between 125 and 165 calories. Customers became suspicious about the good taste of the treats and sent samples to a laboratory to have their nutritional content verified. The samples tested for substantially higher fat and calorie contents than were being declared on the labels. The carob-iced doughnut alone contained 23.5 grams of fat and 411 calories (Lewis, 2001:11). Consumers with certain medical conditions, such as high cholesterol levels and CHD try to avoid certain products and often go for "low fat" or "fat free" food products. Placing misleading claims or incorrect claims on food product labels can jeopardise the health of these consumers (Food Navigator, 2004b).

A study conducted in 1994 in New York indicated that diet foods from local and regional businesses could contain more calories than what the labels stated. The study started because the researchers wondered why overweight patients/consumers on strict diets somehow ended up consuming more calories than what they claimed they were eating. Forty food products, which ranged from candy to lasagne, were evaluated. All these products were labelled as "lite", "reduced-calorie", or "no fat". The item nutrient analysis found that the locally prepared foods contained, on average, 85% more calories per item and that the foods distributed regionally contained, on average, 25% more calories than what the label stated. The labels on foods marketed nationally, were accurate. The survey was only done on a small sample; therefore it is not known if this problem was widespread (Carey & Chen, 1994:14).

The UK-based Coop supermarket chain revealed the link between unhealthy eating, misleading labels and inadequate regulations. They accused their own industry of providing consumers with misleading health claims. Coop published research claiming food companies are making healthy eating claims for products, which can be high in fat, sugar and salt. During their research they found hundreds of examples of products making claims that confuse consumers, including explicit or implied health claims. Unless companies are making a nutrition claim, they do not have to indicate any nutrition information. If they do, they just have to indicate the energy, protein, carbohydrate and fat contents. This denies consumers vital information on sugars, saturated fats and sodium. They may voluntarily indicate sugar, saturated fatty acid, fibre and sodium contents (Anon, 2002a).

In April 2002, the FDA informed a company that one of its pasta sauces contained less vitamin C than advertised. The label for the pasta sauce indicated that the product contained 25% of the recommended daily intake of vitamin C, while laboratory tests by the FDA showed the samples had 5.47%, or 8.33% of the allowance (Anon, 2002b).

The FDA, in partnership with the Departments of Agriculture of Minnesota and Wisconsin, also conducted a series of inspections in food facilities. During these inspections they also studied the accuracy of finished food product labels by comparison of raw ingredients. Twenty-five percent of the facilities inspected were found to have omitted raw ingredients, including peanuts and tree-nuts, from the final labels. Some of the firms had procedures in place to verify label accuracy, and even with procedures in place, 15% of those were found to have label discrepancies (Wood, 2002:920).

The *Sunday Times* conducted a study in 1999 on South African dairy products. They found that "low fat" could mean loaded with fat according to the tests done. Not one of the 12 dairy products labelled "low fat" and "fat free" tested by the South African Bureau of Standards (SABS) passed the international guidelines for these claims. The newspaper commented that South African labelling legislation is so lax that it allowed manufacturers to get away with putting a "low fat" label on products which have up to nine times the fat content allowed by international guidelines. The feedback from food experts and consumer organisations was that South African food labelling legislation is in a shambles and that manufacturers will not comply with international, up-to-date standards until they are forced to do so by law (Anstey, 1999:5). Anstey (1999:5) indicated that there is little to no means of checking whether a food label is correct; consumers mostly have to go on face value and assume that the labels are truthful.

The Department of Food Science at the University of Stellenbosch conducted a study on the contents of products claiming to contain probiotics. Twenty different South African probiotic products were collected and analysed to determine their probiotic contents. These products included 11 different yoghurt brands, eight different probiotic lyophilised preparations in tablet or capsule form and one baby milk formula. Only five out of the 11 (55%) probiotic yoghurts tested contained all the probiotic microbes as indicated on the product label. Although all of these products declared the presence of Bifidobacterium, none of the labels identified it to species level. No Bifidobacterium could be detected in 45% of the yoghurt products that claimed their presence on the product label. The preservative potassium sorbate was found to be present in three of the probiotic yoghurts as was indicated on the product labels. In future, South Africa regulations will not allow a probiotic claim to be made on a food product if the product contains any preservative other than pimaricin, as this may negatively influence the probiotic microbes (Theunissen & Witthuhn, 2004:15). The regulations will also stipulate that the full scientific name of microbial species should be identified on the product label (South Africa. Department of Health, 2002:23).

This study highlighted the serious problems in quality control and labelling of probiotic products. These deficiencies mislead the consumer regarding the health effect of the product.

Some of these labelling errors can lead to products being recalled. Many products recalled in the USA are due to allergen related issues. In 1999, the US FDA recalled 659 food products for containing undeclared allergen(s). The major reasons for the product recalls were ingredient statement omissions or errors and the contamination of products by undeclared allergens through equipment cross-contamination. A totalof 236 food products were recalled because they contained one or more undeclared allergens. Many consumers (n=34) reported allergic reactions, and it was most often consumers who initiated the product recalls through identifying the undeclared allergen(s) (Wood, 2002:920).

In a period of 50 days, stretching from 16 January 2004 to 5 March 2004, 17 food products were recalled in America, owing to undeclared allergens. Eight products contained undeclared peanut, three contained undeclared soy, two contained undeclared egg, one contained undeclared milk, one contained undeclared crab, one contained undeclared almond, one contained undeclared pine nuts and three contained undeclared high levels of sulphites. The products affected included: candy, basil pesto, bread, pastry, desserts, tuna noodle casserole, trail mix, yoghurt raisins and chocolate. The reasons for the recalls varied. Eighty-two percent of the products were recalled because the presence of the allergen was not revealed on the product label. One product was mislabelled with back panels from another variety, not indicating the allergen present in the product. One of the products was packaged in the wrong bag, which was caused by a temporary breakdown in the company's production and packaging procedures. Another packaging problem that occurred was that a supplier packaged raw material in the wrong bags. The New York State Department of Agriculture and Markets' food inspectors discovered most of these problems through routine sampling. Most of these undeclared allergens can cause life-threatening allergic reactions in sensitive individuals (United States Food and Drug Administration, 2004).

According to some statistics, the average cost of a product recall is about $540 000 (R3 780,000). These costs can vary in the range of $10 000 to $7 000 000. This is direct cost and it does not include costs such as the loss of sales or the disruptions to business operations. It has, however, been reported that product recalls are on the increase. Reducing the risk of allergen-related recalls involves preventative measures, accurate testing, and mandatory labelling (Ohr, 2001:48). This highlights the importance of allergen control during food manufacturing and checking the labels of finished products.

2.6 Implications of faulty food labels

Labelling information should take into account the needs of consumers, as certain consumers, such as those suffering from diabetes, kidney disease, heart disease and allergies are extra careful in their intake of food (Chan, 2003:1). Some errors made on food labels might be considered minor and it might not even have an effect on a consumer, but some errors can have lethal consequences. A mistake on a food label can lead to clinical reactions in a food allergic consumer. Some errors might lead to an unnecessary restriction in an individual's diet, such as sometimes seen in a soy allergic child's diet, where there is an avoidance of soybean oil (Ring *et al.*, 2001:8).

2.6.1 Food allergy and intolerances

Food allergy is one of the most problematic issues that food manufacturers must confront. The consumption of specific food proteins by sensitive individuals can cause serious reactions, including death (Huggett & Hischenhuber, 1998:89). It has been estimated that about six people die of a food allergy every year in the UK (Huddart, 2000:54). This is why food allergy must be considered by the food industry and why they need to take special steps to minimise the possibility of food allergy and allergen cross-contamination of food products (Huggett & Hischenhuber, 1998:89; Silverglade *et al.*, 1998:22).

Adverse food reactions include any untoward reaction following the ingestion of food. They can be divided into two major categories, namely food hypersensitivity and food intolerance. Food hypersensitivity includes any abnormal immunologic reaction following the ingestion of a food, such as egg. Food intolerance involves a much larger category of non-immunologic reactions. These reactions follow the ingestion of a food or food additive and they often take on the form of metabolic reactions. Confusing terminology, lack of well-controlled studies and unsubstantiated methodologies cause the inaccurate public perception of food allergy (James & Sampson, 1992:67).

Allergenic foods contain several allergenic structures, which are divided into major and minor allergens. There are eight main food allergens that account for more than 90% of the documented food allergies worldwide, but there is a much longer list of other food ingredients and foods that has been associated with allergic reactions in sensitive individuals (Bousquet *et al.*, 1999:2). When an individual is sensitive to a specific food, an allergic reaction will occur within minutes of consumption (Ring *et al.*, 2001:4). Peanuts, nuts, fish and crustacean cause the most life-

threatening reactions after ingestion. Peanut is one of the most allergenic foods and the cause of many fatal food .anaphylactic reactions (Steinman, 1996:242).

The amount of the allergen ingested, the potency of the allergen to cause a reaction and the sensitivity of the individual to the allergen are some of the factors affecting the risk of an allergic consumer to suffer an allergic reaction (Bousquet *et al.,* 1999:2). The ingestion of minute quantities of food allergens (Huggett & Hischenhuber, 1998:91) and even the inhalation of food allergens carried in air or in cooking fumes (Rumsaeng & Metcalfe, 1998:155) can cause sensitivity or allergic reactions in sensitive individuals (Huggett & Hischenhuber, 1998:91; Rumsaeng & Metcalfe, 1998:155). It has been estimated that the amount of egg allergen needed to induce allergic symptoms may be 10 mg or lower and with peanut allergy the amount is even lower at 0.1 mg to 1 mg (Bousquet *et al.*, 1999:17).

Allergies and adverse reactions affect all age groups and involve multiple target organs. Some reactions are treatable and not that severe, none the less inconvenient, unpleasant and uncomfortable. The clinical symptoms range from itching and swelling of the lips and tongue, contact urticaria, gastrointestinal allergy with nausea, cramping, pain, etc., as well as systemic symptoms in different organs such as skin symptoms (angiodema, eczema). More severe reactions could be respiratory symptoms or anaphylaxis with cardiovascular and gastrointestinal symptoms that can lead to shock. Systemic anaphylaxis after ingestion of a food allergen generally occurs within one to 30 minutes; however, in rare cases it has also occurred hours after ingestion (Ring *et al.*, 2001:4).

There is also an association between food allergy and asthma. The recognition of food-induced asthma and appropriate associated management will help improve asthmatic control and increase the quality of life for some individuals. Many asthmatics believe that food aggravates or triggers their asthma symptoms, and a number restrict their diet, even before a conclusive diagnosis is made. A study revealed that 79% of patients believed that food induced their asthma, and 61% had tried to modify their diet (Woods *et al.*, 1996:508). Acute attacks of asthma may be severe and progress to systemic anaphylaxis and even death. A review of 13 fatal and near fatal anaphylactic reactions to food revealed that all patients had asthma and known food allergies and unknowingly ingested the offending foods (Sampson *et al.,* 1992:380). Respiratory reactions from food allergens, on the other hand, also may be subtle, and at times present only with cough, chronic asthma, or increased bronchial hyperactivity. Not all asthmatics that are food allergic have food-induced asthma (Rumsaeng & Metcalfe, 1998:156).

A number of food additives, especially preservatives, dyes and flavouring agents, can induce a wide range of adverse reactions in sensitive individuals (Rumsaeng & Metcalfe, 1998:157). A growing number of case reports are appearing in the medical literature of urticaria, angiodema, and anaphylactic allergic reactions caused by the ingestion of carmine. Carmine is classified by the FDA as "exempt from certification", which means that carmine is only indicated by its category name, colourant. This makes it difficult for consumers to identify items coloured by carmine (DiCello *et al.,* 1999:381). Another colourant that has been investigated is tartrazine. It is commonly used for the artificial colouring of foods, drinks, pills, and tablets. Tartrazine has been reported to cause urticaria and asthmatic symptoms in a number of sensitive patients (Stevenson *et al.,* 1986:183). Tartrazine is, as a result, one of only a few colourants that must be identified by its name on the ingredient list (South Africa. Department of Health, 2002:24). The identification of additives, such as the colourant carmine, along with tartrazine on product labels, will allow sensitive consumers to make informative product choices.

Food allergy prevention is the combined responsibility of the allergic consumer and the food manufacturer (Huggett & Hischenhuber, 1998:89). Research is ongoing to define threshold levels of allergens able to trigger a reaction together with validated testing methods for the detection of allergens in food. Threshold levels and allergen testing are essential if the food industry wants to implement effective hazard control procedures and address the problems of allergen cross-contamination. This will assist efforts providing the consumer with valuable and trustworthy information on food labels (Mills *et al.,* 2004:1262). If data were available, it would be possible to rank food allergens according to potency and their ability to cause severe reactions. If this were possible, allergens could be identified and they could be tracked during food manufacture and preparation. This would allow for accurate allergen labelling (Bousquet *et al.,* 1999:17-18).

Food-allergic consumers must overcome significant obstacles on a daily basis. These obstacles include difficulties with the interpretation of food labels, as well as the ever-present concerns about improperly or incompletely labelled food products (Wood, 2002:920). In order for an allergic consumer to avoid a specific food allergen, s/he needs sufficient and correct information on the nature and composition of each food product. Food labelling is considered the primary means of food allergy prevention (Huggett & Hischenhuber, 1998:91). The issue of label interpretation is significant, and misinterpretation is undoubtedly a common cause of accidental allergic reactions; however, it is at least theoretically possible to teach patients to read and accurately interpret even the most confusing label (Wood, 2002:920).

There have been reports of deaths in children, adolescents and adults who ingested foods to which they were highly allergic (Sampson *et al.*, 1992:380). These deaths are often caused by a "hidden" ingredient in the food to which the individual is allergic. It has been suggested that in the US, more children and adolescents die annually as a result of food-induced anaphylaxis than as a result of insect stings. The majority of these deaths are due to severe allergy to peanut and nuts (Sampson *et al.*, 1992:383).

Probably the most common reason for sensitive individuals to ingest a hidden allergen is contamination of a safe food. There are many ways for allergens to be hidden in food, of which one is misleading labels (Steinman, 1996:247; Huggett & Hischenhuber, 1998:89). Loopholes in labelling regulations allow allergens to be hidden in a food product. However, more countries are addressing this serious, life-threatening problem (Ring *et al.*, 2001:6). Some examples of hidden allergens are non-dairy creamers or coffee whiteners, which contain skim milk or meat products that contain soy. Margarines, claiming to consist of 100% corn oil, may in fact contain skim milk powder. A drink advertised for "people who cannot drink milk" is actually milk with lactase enzyme for individuals with lactose intolerance, but clearly still contains milk protein (Steinman, 1996:249).

Hidden allergens can also occur in processed food when an ingredient is added for a specific application and it is labelled under its category name or an uncommon name, for example, when egg is used as a binder, protein, or emulsifier (Steinman, 1996:248). Sensitive individuals will not be able to identify the origin of these ingredients and therefore, to be safe, they will not purchase the food product, even though it might be suitable for them to consume the product. Identifying all ingredients, especially those derived from allergens, will assist consumers when making product choices.

Ingredient switching is another source of concern and may happen when manufacturers change ingredients without making this clear on the label. This can occur when a shortage of oil results in substitution with tropical oil (Steinman, 1996:249; Huggett & Hischenhuber, 1998:89). Consumers mistakenly assume that a brand of food that uses similar labels for a range of products has similar formulations, which is not always the situation (Steinman, 1996:250).

Allergens are often part of compound ingredients. The manufacturer receiving this ingredient to use during processing, might not be aware of this, and unknowingly add an allergen to a product.

There must be strict allergen control in all areas of food processing, from the farm to the consumer. A process check must be in place to verify that any known allergens are listed on a product's ingredient list. It must also be verified that the correct label is placed on the product and/or that the product is placed in the appropriately labelled package. If ingredients in the formulation are changed, it must be indicated on the label. This is critical. Consumers allergic to "hidden allergens", such as peanut or milk, have a high risk of inadvertently consuming these substances as they are widely used in food preparations. Consumers must be taught how to read labels thoroughly to avoid sources of hidden food allergens. Declaration regulations must also be improved in order to protect highly sensitised individuals (Ring *et al.*, 2001:6).

It has also been found that the quality and legibility of the allergen risk labelling on products are poor and the risk that the product might carry is not communicated effectively. Common problems include tiny fonts, information hidden under a flap, shiny paper or ink, often illegible colour combinations with allergen risk information printed away from the ingredient list. Allergen risk information is there to stop both children and adults from dying in the next minutes or hours. If an allergen represents a real risk, information must be easy to find, be clear and legible (Gowland, 2001:118).

It is extremely difficult for the food processing industry to be able to guarantee that their purchased raw materials will be free from an allergen (Hey & Luedemann, 2001:341). In the future, the only option to protect allergic customers could be to test all susceptible raw ingredients and final products for hidden allergens.

2.6.2 *Vegetarian and religious diets*

Another group of consumers who will closely evaluate food labels are vegetarians. People choose this diet for many reasons, such as to improve health or to prevent animal cruelty. There are many terms to describe vegetarians, such as lacto-vegetarian and ovo-vegetarian. Lacto-vegetarians do include dairy products in their diets, but not meat, seafood and eggs. Ovo-vegetarians include eggs and exclude meat, seafood and milk products from their diets (Sizer & Whitney, 2000:204). It is therefore important to list all ingredients used in a product as well as its origin. The origin of additives should also be listed, as many consumers would not know that, for example, the colourants cochineal and carmine are derived from an insect and are not suitable for vegetarians (DiCello *et al.*, 1999:377). Another example is emulsifiers, which could be an egg derivative. The identification of the origin of all ingredients will assist vegetarians when making food choices.

People also make their food choices based on their religious beliefs. Two of the most familiar religious diets are the kosher and halal diets. Jewish individuals follow a kosher diet, which forbids them to consume pork and pork products, shellfish, insects, some types of fish, and birds of prey. All meat products must be slaughtered in a specified way. Moslems follow the halal diet, which forbids the consumption of pork and pork products, shellfish and eel. A Moslem must also slaughter all meat products in a prescribed way. Other religious practices include the Hindu diet that is based on vegetarian eating habits, and the diet of the Seventh-day Adventists who are generally ovo-lacto vegetarians (Kinton *et al.*, 1999:42). Individuals following one of these religious diets will strongly rely on food labels to assist them in making their food choices. With adequate labelling they might be able to choose from a wider range of food products. With unclear labelling, when ingredients can't be identified, many food products are avoided and excluded from the diet.

2.6.3 Genetically modified food

The method of food production used, such as irradiation or genetic modification (GM), must be indicated on the product label. This will allow consumers to select or avoid a particular food on the basis of production (Silverglade *et al.*, 1998:35). Genetic engineering / GM involves the direct, intentional manipulation of the genetic material of living things in order to obtain some desirable trait not present in the original organism. The technique allows an organism to make proteins native to some other living thing. There are three areas of research in GM that are the most relevant to the food industry. Firstly, new strains of agricultural crops and animals offer new desired traits, such as improved resistance to diseases or insect pests. Secondly, strains of microorganisms have been engineered to produce substances that occur in only small amounts or not at all in nature. Thirdly, agricultural crops have been developed that resist destruction by herbicides. Researchers are also striving to create fruit and vegetables genetically some time in the future with the ability to grow valuable pharmaceutical products in their tissues (Sizer & Whitney, 2000:541).

The definition of a GM food includes three different categories:

- Foods that contain genetically modified organisms (GMOs).
- Foods that contain GM-genetic material/protein, for example, uncooked maize meal.
- Foods obtained through genetic modification but not containing any genetic material/protein, for example glucose from processed maize (South Africa. Department of Health, 2005).

Many consumers are concerned about these modified foods. They are concerned that the safety of these products is not yet fully understood (Sizer & Whitney, 2000:539). The evaluation of the allergenicity risk of GM foods is becoming increasingly important, because it is possible that by gene technological modification, allergy relevant changes in food proteins may occur (Ring *et al.*, 2001:5). One fear is that genetic material from a source to which some people are allergic, such as nuts, may be added to another product, such as soybeans. Unless the products made from the soybeans are labelled, people who are allergic to proteins in nuts may unknowingly consume them in the altered soybeans. Secondly, people with religious objections to particular foods may be unable to avoid consuming genes of prohibited organisms that have been added to permitted foods. For example, someone following a kosher diet may unsuspectingly purchase a food product containing genes normally found in pork (Sizer & Whitney, 2000:543; Chan, 2003:1).

There are, however, mandatory labelling regulations with regard to GM food. The South African labelling regulation requires that "a GM food must be labelled as such if it differs significantly in composition, nutritional value, or mode of storage, preparation or cooking from that of the corresponding existing foodstuff". The label must indicate the likelihood of allergenicity if the novel gene is derived from any of the following donor organisms: crustaceans, eggs, fish, groundnuts, milk, molluscs, soybeans, tree-nuts or wheat. It is also required that the food "must be labelled as such if a plant-derived food contains genetic material derived from a human or from an animal, or if animal-derived food contains genetic material derived from a human or from a different taxonomic animal family" (South Africa. Department of Health, 2005).

It is prohibited under Codex Alimentarius and the South African labelling regulations to make a claim where no other food contains this specific substance. By claiming the word "free" on a product consumers understand completely free. Such a claim could be misleading. A claim such as GM-free carrots implies that all other carrots contain GM-material, which is not correct since no GM carrots are commercially grown (South Africa. Department of Health, 2005).

Since 1995 there has not been any consensus among Codex Alimentarius member countries with regard to the labelling of GM foods. In the meantime, individual countries have regulated labelling to different degrees. European countries label all categories of GM foods/feeds, whereas the US labels only indicate improved/changed characteristics. It remains to be seen whether Codex Alimentarius members will ever reach consensus (South Africa. Department of Health, 2005).

2.7 Food and other industry actions to support consumer health

In recent years, health has becomethe new benchmark for the global food industry. Food companies will have to have a clear strategy to make their products healthier, by reducing fat, salt and sugar contents or introducing healthier alternatives to existing lines. It has been said that "wellness" will be to the food business what "convenience" was over the last 15 years (Mellentin, 2005:16).

The obesity pandemic has led to the food industry's searching for a unified, simple, and front-of-pack indication system to encourage consumers to choose healthier foods. South Africa has considered launching a traffic-light food labelling initiative. A group of business executives and dieticians discussed "The Health Robot", which will inform consumers of the "health colour" of a product. There will be an option of three different coloured stickers, red, green and amber, that could be placed on products, depending on certain criteria. The sticker definition of red (3450 kJ/serving – use cautiously), amber (2150 kJ/serving – use moderately) and green (1150 kJ/serving – use freely) has been scientifically determined by health factors, such as obesity, heart disease, and cholesterol, and food content factors, such as saturated and trans-fat, total fibre and energy per serving. However, the concept has been rejected elsewhere in the world or is still under investigation as some believe that it hasn't been researched thoroughly enough. It is still a step in the right direction, making consumers and the industry more aware of the health benefits of proper food labelling. The system is aimed at informing, warning and educating consumers about their food choices and it will also help manufacturers and retailers to prepare proactively for legislation. Companies that support "The Health Robot" will benefit by an improved social responsibility image and customer loyalty (Fitchet, 2005:44).

Unilever, an international food manufacturing company, recently launched their "Choices" front-of-pack logo, which will be displayed on all their food and drink products to assist with healthier food choices. During their research, they found that there was no global method to assess nutritional composition. However, international bodies have issued guidelines for healthy diets which recommend that most people should reduce the amount they eat of trans-fats, saturated fats, salt and sugar to improve diet and health (Unilever, 2006). There is strong scientific evidence to show reductions in these nutrients can benefit public health (Unilever Food and Health Research Institute, 2006:1).

Unilever analysed all of these guidelines and then developed benchmarks for the four substances (Unilever, 2006). These generic benchmarks are the foundation of the system and can be used for most product categories and are internationally applicable. The benchmarks are energy-based translations of international and national dietary guidelines for trans-fat, saturated fat, sodium and sugars. For trans-fat, saturated fat, and sugars the dietary recommendations can be directly applied to the food. The unit of measure is then percentage of energy. A second group of benchmarks was developed for products that require higher amounts of sodium and/or sugar that are essential for taste or structure (Unilever Food and Health Research Institute, 2006:2). Foods and beverages that meet all four of the benchmarks qualify for the Choices stamp. It is a simple logo that will assist consumers in identifying products that meet benchmarks internationally for trans-fat, saturated fat, sodium and sugars. Unilever is sharing the methodology and benchmarks with scientists and nutritionists around the world and the "Choices" stamp is available for use by other companies and organisations; however, their products must be inline with these regulations to use the stamp (Unilever, 2006). Table 2.5 indicates the guidelines and benchmarks to qualify for the Choices logo.

Table 2.5: Guidelines and benchmarks to qualify for the Choices logo (obtained from Unilever Food a Health Research Institute, 2006:2)

Nutrients	International dietary guidelines	Generic product benchmarks[1]	Product category specific benchmarks[2]	
Trans-fat	1-2% of energy	<2% of energy – insignificant levels ≤ 0.2 g/100g		
Saturated fat	8-15% of energy	≤5% of energy ≤33% of total fat – insignificant levels ≤ 0.2 g/100g	Cheese	≤15 g/100g
Sodium	0.9-1.6 mg/kcal[3] (based on daily energy uptake of 2,250 kcal)	≤1.6mg/kcal – insignificant levels ≤ 100 mg/100g	Soups Meal sauces Table sauces, dressings Spreads Meal replacements Cheese	≤360 mg/100g ≤540 mg/100g ≤1080 mg/100g ≤720 mg/100g ≤2.4 mg/kcal ≤900 mg/100g
Total sugars Added sugars	10-25% of energy	≤ 5% of energy ≤7 mg/100g	Edible ice	≤17 g/100g

[1] Based on international dietary guidelines

[2] When needed for technical or taste reasons, based on available food standards

[3] kcal = kilocalories

Tesco, a large retail company in the UK, is planning to label the front of its own label packs with the key nutritional information customers need to choose a balanced diet. The amount of salt, fat, saturated fat, sugar and calories in a serving of each product will be stated in grams. Labels will also state how much of the recommended daily allowance this makes up. It is believed that this will assist consumers in monitoring some or all of the areas they are concerned about, depending on the individual, e.g., salt, in the case of high blood pressure. Tesco was also the first supermarket to label food products with the glycaemic index in 2004 (Nutrition Horizon, 2005).

PepsiCo has started a complete renovation on its entire product portfolio. The aim is to reduce the levels of fat, salt and sugars in its products. Its latest initiative is "Smart Spot", a programme designed to help American consumers identify more than 100 of the company's food and beverage choices that contribute to healthier lifestyles. Kellogg also introduced "One-third Less Sugar" versions of some its leading breakfast cereal brands. General Mills also reduced the sugar content of some of its cereals by 75%. The company also announced re-formulation of all own brands with whole grains (Anon, 2002a).

Years ago, food companies started to consider the health benefits of foods, and in 2000, Tropicana petitioned the FDA to allow them to use a health claim linking the potassium content of orange juice with reduced risk of stroke. Since 1995, the Ocean Spray company has communicated the scientifically-validated benefits of its cranberry juice in eliminating urinary tract infections. Heinz has also been communicating the benefits of consuming tomatoes in reducing the risk of prostate cancer, owing to the content of lycopene. They have been mentioning the lycopene content on the labels of their processed tomato products since 1998. What these foods have in common is that their health benefits are inherent to the products. No bioactive ingredients have been added (Mellentin, 2005:17).

The FDA demands the disclosure of trans-fat and saturated fat on all processed food labels. The FDA's trans-fat label ruling came into effect in January 2006 in the US (United States Food and Drug Administration. FDA Office of Public Affairs, 2003:20). However several companies, such as Unilever Bestfoods and Tyson, had already started to eliminate trans-fats from their foods, replacing them with healthier oils (Cosgrove, 2005:16) before this ruling.

2.8 Consumers and food labelling

A survey was conducted in 2004 by the European Food Standards Agency to determine consumers' view of food labelling. Over 3000 European consumers were interviewed and it was determined that 72% of consumers looked at the "general" information on labels when making food choices. The general information includes sell-by-dates, country of origin and cooking instructions. About 64% of consumers looked at the nutritional information on food labels when buying a product. This shows a three percent increase from a survey done in 2002. The salt content of a product is the information most looked for in the nutritional table, with 36% of consumers looking for this information. The survey also found that women are more likely to look for different types of information on food labels than men, namely nutritional content, claims, cooking instructions and information about ingredients. About half of the respondents (52%) felt that labels contained the right amount of information, with 29% feeling that they could provide more information. There is clear interest in information about issues such as the amount of fat, salt or sugar in food (Food Standards Agency & COI Communications, 2004:70). This highlights that consumers do read food labels, but that they still do not consider all the labelling aspects indicated.

In 1997 a survey conducted in the US determined that 54% of American consumers almost always read the nutrition label when buying a food for the first time. Twenty-eight percent of those reading the nutrition label said they stopped buying a food product because of something they read on the label, whereas 25% of consumers started buying and using a certain item after examining the label (Silverglade *et al.*, 1998:12). American consumers use nutritional labels largely to compare different food items, and to obtain information about certain perceived, negative food attributes, most commonly fat, calories and sodium (Hawkes, 2004:41). It was also determined that younger women with a higher level of education and people with previous nutrition knowledge and concerns about food safety are most likely to read labels (Byrd-Bredbenner *et al.*, 2000:318).

In an online consumer opinion survey done by AC Nielsen, they polled over 21 100 respondents from Europe, Asia Pacific, North America, Latin America and South Africa. The study asked consumers around the world whether they understood food labelling, when they would check labels and what they checked for as they did their grocery shopping. Approximately half the world's consumers indicated understanding the nutritional labels on food packaging, but only parts of it. Sixty percent of Asia Pacific's citizens were found to lack understanding of food labels, followed by the Europeans (50%) and Latin Americans (45%). Two in ten consumers "always" check food labels, four in ten do so when buying a product for the first time and nearly three in ten check them when buying certain food types. Globally, the ingredients most likely to be checked for by consumers were fat (49%), calories (43%), sugar (42%), preservatives (40%), colouring and

additives (36%). In the online consumer opinion survey, 59% of South African respondents indicated that they "mostly" understand the nutritional information on food packaging. Fourteen percent of the respondents claimed to always read nutritional information on labels, whereas 49% indicated they read the information when they buy a product for the first time compared with 26% who read the nutritional information when on a diet and 31% when buying certain food types. Sixteen percent of South African consumers indicated reading nutritional information when buying products for their children, 13% when they have time and 7% never (AC Nielsen, 2005:2).

The results of a study conducted in South Africa to determine the attitude towards and the knowledge of consumers about nutrition found that 64.8% of consumers read food labels when buying food items, that 79.2% of consumers use labelling information when purchasing new products, and that 57.8% of consumers read the nutritional information of a product at home, while 52.8% read the information while shopping (Anderson & Coertze, 2001:29). Another South African study found that more men (57%) than women (43%) claim to read the health information on food labels. It was also determined that the majority of persons that do read labels and search for health information are aged between 25 and 34 years (Badham, 2003:50). From the results of these studies it can be concluded that South Africans tend to check or read food labels when buying a new product or product for the first time and when buying certain food types.

Surveys are continuously reporting that consumers are confused about diet and health-related messages (Evily, 2001:456). A consumer's culture and social relationship with food is one of the most important factors when interpreting and viewing the nutritional value of food (AC Nielsen, 2005:3). Diet-related diseases, such as heart disease, obesity and type 2 diabetes, are increasing. More and more people want information at their fingertips when shopping for food, so that they can make healthy choices for themselves and their family (Anon, 2002b). It has been hypothesised that use of food labels could result in a decrease in chronic, diet-related diseases, such as CHD and some cancers (Zarkin *et al.*, 1993:718). This is consistent with research that has shown that at least some use of food labels is associated with diets higher in overall dietary quality, lower in fat and/or higher in fruits and vegetables (Pérez-Escamilla & Haldeman, 2002:768).

Research suggests that many consumers value nutrition labels and find them important when making food choices, especially when buying a product for the first time (Silverglade *et al.*, 1998:12), as has been identified with South African consumers. Nutrition information is important for consumers who are trying to follow a healthy diet and is absolutely essential for consumers who are medically advised to select foods based on their nutrient contents (Silverglade *et al.*, 1998:12). Table 2.6 indicates the information mostly checked for on food labels by South African consumers.

Table 2.6: Information on food labels mostly checked for in South Africa
(obtained from AC Nielsen, 2005:4)

Content	Percentage
Preservatives	44%
Fat	46%
Colouring	38%
Additives	43%
Calories	37%
Sugar	43%
Protein	35%
Trans-fat	22%
Carbohydrates	35%
Fibre	33%
Salt / sodium	18%
Gluten	12%
Low GI*	17%

* GI - Glycaemic Index

Consumers not only expect manufacturers to provide accurate information with regard to the ingredients used, and not to include harmful substances, but also to indicate accurately the weight percentage of a substance which may have a significant impact on those consumers with special health conditions (Chan, 2003:4). Consumers also view a food as healthier if it carries a health claim and there is some evidence that the use of health claims improves the quality of dietary choices and knowledge of diet – disease relationships (Williams, 2005:256). Nutrition labels have also been shown to encourage more healthy diets among people who read them (Hawkes, 2004:37).

South Africans are strongly convinced that some foods are better for them than others and that some food types can make one healthier. This can lead to the conclusion that food manufacturers cannot assume that by placing a message on a food label it will be read or influence purchasing behaviour (Badham, 2003:50). It was also determined that South African consumers wanted more nutritional information for planning daily nutrient intakes and their meals. Those consumers, who indicated that they wanted more information on food labels, also thought that information on diet-related diseases could be placed on food labels (Anderson & Coertze, 2001:31).

In a telephone survey in Canada, 45% of the respondents said that products with functional benefits should promote the health benefit it provides on the packaging, rather than only the

presence of the component itself. This attribute alone was indicated by 34%. This means that the respondents preferred health claims to content claims, and 47% rated them as very useful (AC Nielsen, 2005).

It is clear that more research is needed to understand the impact that health claims could or do have on food choice and health. There are, however, some common findings, as indicated below, to be drawn from studies done:

- Health claims on foods are seen by consumers as useful, and they view a product as healthier and state that they are more likely to purchase a product if it has a health claim.

- Consumers are sceptical of health claims from food companies and agree that health claims should be approved by government.

- Consumers do not make clear distinctions between nutrition content claims, structure-function claims, and health claims.

- Consumers generally don't like long and complex, scientifically worded claims on foods and prefer split claims with a brief statement of the claim on the front of the package (Williams, 2005:263).

The time taken to carry out ordinary shopping and food preparation for food-allergic individuals is particularly stressful because any mistake or misreading of a label could place a life at risk (Gowland, 2001:118). Food labels must state all ingredients used in a product, as well as their origins and these must be declared in a clear, understandable and an easy-to-read manner (Mills *et al.*, 2004:1266). Most families of allergy sufferers report that the most significant obstacle which prevents them leading a normal life is the widespread use of allergen advisory labelling on pre-packed foods, particularly those aimed at or widely consumed by children, and everyday staples (Gowland, 2001:118). The phrase "may contain" is used voluntarily on pre-packaged food to indicate the possible presence of allergenic ingredients, such as peanut. Consumers have raised concerns of "overuse" and that it is sometimes used unnecessarily on certain products, which undermines valid warnings. People with food allergies must be very careful about the food that they eat, and labelling of pre-packaged food is very important to them. It has been shown that these phrases are confusing to consumers and sometimes difficult to locate on the label (United States Food and Drug Administration, 2004). Rather than assisting the allergic consumer, such labelling means they have even more restricted food choices and it makes everyday activities, such as shopping, difficult. There is also evidence that the widespread usage of "may contain" labels can be

both a deterrent to shopping and a devaluation of the label itself. Allergic consumers regularly ignore precautionary labels, putting themselves at a potential risk and further devaluing information provided on food labels (Gowland, 2001:118; Mills *et al.*, 2004:1266). It has also been found that teenagers and young adults often ignore allergen risk information. They take no notice of allergen advisory labelling (Gowland, 2001:118). More informative statements are needed on labels, and the UK's food watchdog is consulting on the use of alternative phrases (United States Food and Drug Administration, 2004).

A study was conducted in the US to evaluate the ability of parents of food-allergic children to read labels accurately for the presence of one or more major food allergens. The final results were extremely poor. Accurate interpretation of the food labels ranged from just seven percent for milk to 22% for soy, 54% for peanut, and 93% for wheat (Wood, 2002:920).

In a number of countries, such as South Africa, the vast majority of people are struggling with food security issues, poverty, and lack of education (Van Heerden, 2004:18). Data suggest that low-income consumers need assistance in understanding the entire food label and in overcoming distrust that labels are deceptive (Sullivan, 2003:30). However, there is a small but influential percentage of the population that lives in First World conditions. This small percentage of the population is the target for advertising about specific food components, or foods, or processes. These may include messages designed to create fear in the public, such as the craze about food additives, which is aimed at the more influential percentage of the population. The problem is that the First World component can influence the Third World component and convey incorrect messages and fears to people who are not able to judge if these messages are true or not (Van Heerden, 2004:18).

Consumers obtain most of their information about food and health from the media in the form of advertisements and articles. However, the media are often just interested in sensational news that will boost sales or viewer numbers. Consumers perceive published stories as being true and the public is susceptible to scare stories propagated by the media and advertisers. Such advertisements can cause panic and most of the public are not able to evaluate the facts in a rational manner. This can lead to the exclusion of certain foods from the diet, which is dangerous and can deprive adults and children of valuable sources of nourishment (Van Heerden, 2004:19).

2.9 Summary

In recent years, health has become the new benchmark for the global food industry. Food companies will have to have a clear strategy to make their products healthier, by reducing fat, salt and sugar contents, or introducing healthier alternatives to existing lines. It has been said that wellness will be to the food business what convenience was over the last 15 years (Mellentin, 2005:16).

Labelling information should take into account the needs of consumers, as certain consumers, such as those suffering from diabetes, kidney disease, heart disease and allergies, are extra careful in their intake of food (Chan, 2003:1). Some errors made on food labels might be considered minor and might not even have an effect on a consumer, but some errors can have lethal consequences. A mistake on a food label can lead to clinical reactions in a food-allergic consumer. Some errors might lead to an unnecessary restriction in an individual's diet, such as sometimes seen in a soy allergic child's diet, where there is an avoidance of soybean oil (Ring *et al.*, 2001:8).

During the late 1990s there was an explosion of food products with claimed added health benefits. Many of the claims associated with these products were unsubstantiated (Evily, 2001:456). This is misleading and unethical. Consumers with certain medical conditions, such as high cholesterol levels and CHD, try to avoid certain products and often go for "low fat" or "fat free" food products. Placing misleading claims or incorrect claims on food product labels can jeopardise the health of these consumers (Food Navigator, 2004).

The results of a study conducted in South Africa to determine the attitude towards and the knowledge of consumers about nutrition found that 64.8% of consumers read food labels when buying food items, that 79.2% of consumers use labelling information when purchasing new products, and that 57.8% of consumers read the nutritional information of a product at home, while 52.8% read the information while shopping (Anderson & Coertze, 2001:29).

Consumers not only expect manufacturers to provide accurate information with regard to the ingredients used, and not to include harmful substances, but also to indicate accurately the weight / percentage of a substance which may have a significant impact on those consumers with special health conditions (Chan, 2003:4). It is most often the nutrition labelling on food products that is wrong. Some errors are so bad that people following a sugar-free diet are unknowingly eating

heaps of sugar (Lipka, 2001:1). Basic food and nutrition information must complement the label. It has generally been found that food label information is considered very important for those with particular health needs, but that there is a lack of understanding of food labels. This highlights the need for a nutrition education programme to address these concerns (Sullivan, 2003:30). In order to protect the consumer, food labels must be clear and informative (Joseph, 2005:31), not misleading or confusing.

CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

3.1 Type of study and study design

This quantitative research study used a survey design to obtain the results. Quantitative research normally involves a large representative sample and fairly structured data collection procedures (Struwig & Stead, 2001:4), while a survey entails a "critical examination or inspection for a specified purpose" (Compton & Hall, 1972:139). Statistically selected random samples of food products from specific processed food categories were obtained from the natural environment, a food store. A checklist was constructed to collect and evaluate the food label information against the food labelling regulations with the specific purpose of identifying labelling errors and concerns that might impact consumer health. For the purpose of this study, this design showed the greatest similarity to real life (Welman & Kruger, 2001:53).

According to Compton and Hall (1972:140), a survey consists of six basic steps outlined below:

I. General objectives: The general objective is stated in broad terms. The general objective of this study was to determine labelling errors and concerns on specific categories of South African manufactured processed foods that may impact consumer health.

II. Specific objectives: Specific questions must also be answered. This study aimed to determine the type and number of labelling errors and concerns that occurred in specific food categories available in the South African processed food market.

III. Sampling plan: Food samples were randomly selected from each processed food category evaluated. Using a large sample size is more accurate than using small samples, but only if a large sample is practicable. However, the representativeness of the sample is more important than the size of the sample. In this study emphasis was placed on sample size and representativeness.

IV. Data collection: The information needed was collected through examination or inspection of the food labels utilising a constructed and pre-tested checklist.

V. Data analysis: The information gathered was evaluated against the food labelling regulations with the specified purpose to determine the labelling errors and concerns that might impact consumer health. For statistical analysis of the data, cross-tabulation was used and where necessary, possible significant differences or

associations were investigated between data categories by using the chi-square test (Struwig & Stead, 2001:165).

VI. Reporting: The data collected is presented in this written report (Compton & Hall, 1972:140-141).

3.2 Sample collection

The sample collection focused on the selection of specific food categories and food products that represented each food category that had to undergo labelling evaluation.

3.2.1 Food category

Labelling errors can occur on any label of any food product. The food industry is constantly looking for ways to differentiate their products from the competition in all segments of the market. Having an eye-catching, informative label is one of the ways a company can differentiate its product, and food suppliers should use the food label as promotional and educational material, i.e., for making relevant claims and statements.

The following food categories were selected for evaluation, based on previous workplace experience in evaluating food product labels, as products from these food categories were most often received at the workplace, as it is a labelling consultancy for food labelling evaluation. These food categories also make up the majority of processed food products available on the market:

- **Category A:** Breakfast cereals
- **Category B:** Savoury snacks
  - i. savoury biscuits
  - ii. potato chips, pretzels, etc.
- **Category C:** Sweet snacks
  - i. sweet biscuits
  - ii. chocolates
  - iii. sweets
- **Category D:** Refrigerated meals
- **Category E:** Non-refrigerated meals
- **Category F:** Soups and sauces
  - i. soups
  - ii. sauces

- **Category G:** Convenience / Easy-to-prepare desserts and baked goods
  i. desserts
  ii. baked products

Snack foods, both sweet and savoury, probably account for one of the biggest categories in the food industry (De Jongh, 2007). With consumers constantly looking for new and healthier alternatives, the industry is looking (or should start looking) for ways to promote these products, especially aiming at consumer health with "wellness" being the key trend (Mellentin, 2005:16). From the checklist pre-testing conducted before this study, it became evident that there are a number of snack foods on the market which do make label claims (Van Dyk, 2004:70). It is therefore necessary to determine if these claims and statements are truthful and whether companies can make additional claims/statements to assist consumers in making better and more informed product choices. Breakfast cereals were also identified in the checklist pre-testing conducted as the food category making the most claims and statements on their labels (Van Dyk, 2004:69). It can therefore be assumed that this food category is ahead of all other categories when it comes to making claims as well as participating in consumer education through product label use. The other selected categories, i.e., refrigerated and non-refrigerated meals, soups and sauces, and easy-to-prepare desserts and baked goods, all represent the trend for convenience, which is a strong driving force in the food industry (Sloan, 1998:37).

3.2.2 Food products

The assumption was made that the range of products stocked by a local urban large retail food store in each category would be representative of processed foods as a whole in each category. It was also assumed that the range of products stocked in each category would not differ very much from one large retail food store to another or from urban area to urban area. Only those food products manufactured in South Africa were included in the selection of the sample. Owing to logistic and resource constraints, it was decided to do the survey in one urban large retail food store. A total of 1559 products in the selected categories of processed foods were counted in the large retail food store, in Cape Town, known for carrying a large variety of processed products, three months prior to the execution of the study.

The stratified random sampling technique was followed, dividing the population, amount of available products over all categories (N=1559), into homogeneous sub-groups and then taking a simple random sample in each sub-group (Struwig & Stead, 2001:113). Statistically, using the Statistica version 7.1 data analysis software system (StatSoft Inc., 2007), it was determined that 246 food labels had to be evaluated to provide for an adequate sample to represent the overall population and the smaller sub-groups (Struwig & Stead, 2001:113). When several sub-categories are examined separately, fewer items need to be evaluated (Compton & Hall, 1972:195). From the survey conducted in the retail food store, a list of available products per processed food category was compiled, listing the product names. This list was used to select the products randomly per name for inclusion in the survey sample by using the Statistica version 7.1 data analysis software system (StatSoft Incl, 2007). The sample size of 246 was divided between the food categories, according to the market size of each of the food categories. The number and percentage of products available per category in the market compared with the number and percentage of products chosen for the evaluation are indicated in Table 3.1.

Table 3.1: Product sample representation per selected processed food category

Selected processed food category	Approximate number and percentage of food items in category (N=1559) *		Number and percentage of food items selected for evaluation in category (N=246)	
	N	%	N	%
A Breakfast cereals	123	8	21	9
B Savoury snacks	218	14	31	13
i. Savoury biscuits	93		12	
ii. Chips, pretzels, etc.	125		19	
C Sweet snacks	469	30	72	29
i. Sweet biscuits	96		18	
ii. Chocolates	146		21	
iii. Sweets	227		33	
D Refrigerated meals	108	7	23	9
E Non-refrigerated meals	93	6	17	7
F Soups & sauces	411	26	62	25
i. Soups	159		24	
ii. Sauces	252		38	
G Convenience desserts & baked goods	137	9	20	8
i. Baked goods	71		12	
ii. Desserts	66		8	
TOTAL	1559	100	246	100

* Obtained 3 months prior to survey in selected large retail food store

The product labels were evaluated in-store, straight from the shelf. The information on the label was evaluated according to the checklist that incorporated the food labelling regulations as per evaluated food labelling area.

3.3 Pilot study

3.3.1 Food label checklist construction

A food label checklist was compiled based on the different areas of food labelling that could have an impact on consumer health according to the current South African labelling regulations published in 1993 (South Africa, 1993) and the draft of these regulations published in August 2002 (South Africa. Department of Health, 2002). The compiled checklist was used to evaluate all the food labels (Appendix F). The labelling areas concerned with consumer health that were evaluated included the following:

- Ingredient list
- Allergen information
- Statements and claims made
    - Health claims
    - Nutritional claims
    - Allergenicity claims
    - Claims that could have been made
- Nutrition information
- Other information that could affect consumer health

The checklist was compiled in a tabular format, with separate sections for each food labelling area. The information that had to be evaluated under each section of the labelling regulations was listed in the checklist. Allocated columns allowed for indicating if the food label information, according to the relevant regulations, was acceptable/correct or not and if the information was present on the label. An additional column was also included to indicate if a product could have made a certain claim which was not present on the label during the evaluation. If errors occurred additional notes and/or comments were made on the checklist in the provided spaces. Labelling regulation requirements that assisted in the evaluation process were described in the checklist, for example the amount of fat that must be present in a product to be able to make a low-fat nutrient claim (See Appendix F for the layout as described above).

3.3.2 Food label checklist pre-testing

A food label checklist was constructed and used for pre-testing (Appendix G) as part of a Baccalaureus Technologiae (BTech) Consumer Science: Food and Nutrition in the subject Food and Food Science 4 (Van Dyk, 2004:110-114). This checklist was re-worked and changed to the current format with information removed and added (Appendix F). As part of the BTech study, a pre-testing was done evaluating 101 processed food product labels. The processed food categories evaluated included: breakfast cereals, savoury snacks, sweet snacks, frozen, and non-refrigerated meals. The labelling evaluation included checking all information that was required on a product label according to the regulations. The results indicated that errors were made on labels and that information as required by law was not present on all labels. It also indicated that there was additional information that could be added to food labels to assist the consumer in making food choices (Van Dyk, 2004:50-70). The checklist used as part of the BTech study (Appendix G) also included checking information such as date marking, supplier information and country of origin, information that does not have a direct impact on consumer health. The labelling checklist used in this study (Appendix F) only evaluated information on food labels that could have an effect on consumers or public health.

3.4 Data collection process

To collect the study data or results, the food label checklist (Appendix F) was used and completed during the evaluation of each food product label. It was indicated on the checklist whether particular information and/or claims were provided on the label. It was also further indicated whether the information or claims provided was acceptable/correct or not acceptable/incorrect, according to the regulations. All information provided on the labels was evaluated to determine if no additional claims could have been made that could assist consumers in making informed product choices. Labelling errors and concerns were highlighted. The errors were those current food labelling regulations that were not met and could affect consumer health. Concerns were seen as information that could have been provided on the labels but was omitted. This information is not necessarily directly addressed in the current food labelling regulations but could affect consumer health.

3.4.1 Prohibited statements and misleading descriptions

The labelling regulations have a list of statements that are not allowed on food labels, for example, the use of the word "health". Misleading descriptions may also not be used on food labels. The word "natural", for instance, may not be used on food products that are processed or contain ingredients that are processed (South Africa, 1993:12). Each food label was evaluated to determine whether it contained any such prohibited statements or misleading descriptions in any part of the wording on the label that could be considered a food labelling error.

3.4.2 Ingredient list

A compound ingredient is an ingredient which itself is composed of two or more ingredients (South Africa, 1993:2). According to the South African food labelling regulations, when a compound ingredient is used in a product, the names of the ingredients of the compound ingredient must be listed (South Africa, 1993:9); this would be a labelling error if these were not identified in the ingredient list. The ingredient list of each food label was evaluated to determine if it contained any compound ingredients whose individual ingredients were not identified.

If a product did not contain the words "colourant" or "flavourant" in the ingredient list, it was believed that the product did not contain these additives. The presence of any preservative in a food product, the colourant tartrazine, and the flavourant MSG, must, according to the regulations, be identified in the ingredient list of a product. Other colourants and flavourants do not have to be listed by name in the ingredient list of a product. The common chemical name of the additive category, for example, "colourant", can be used (South Africa, 1993:11). If an ingredient list listed a preservative, tartrazine or MSG it was indicated on the checklist, as well as if any product claimed to be free of these additives. If the words "preservative", "tartrazine" or "MSG" were not indicated in the label ingredient list, it was believed that the product did not contain these and it was assumed that the product could carry such a particular additive-free claim. If a label contained the words "colourant" or "flavourant", it was also assumed that the product was free of tartrazine and/or MSG as it is required by the regulations that these be identified

by their common chemical names+. Even if a product did not contain any colourants or flavourants, and did not identify tartrazine or MSG in the ingredient list, it was evaluated that the product could have made a tartrazine- or MSG-free claim. The absence of the identification of the additives, preservatives and tartrazine in the ingredient list of any product could be interpreted by the consumer that the product does not contain these additives, even if the additive is not normally used in the product. The products were evaluated as the consumer would interpret the label. For example, although it would be expected that refrigerated meals that have a short shelf life do not require preservatives to be added, it was indicated that such products could carry this particular claim as the same meal in another preservation form may require a preservative to ensure its shelf life. Such "additive-free" claims were considered a labelling concern as the general use of "additive-free" claims are not addressed in the current food labelling regulations and the food categories are not specified.

The exception was MSG, which is a monohydrate sodium salt used in flavour enhancers (DFST, 2005:147). As MSG is salt-based, it is mostly associated with salty/savoury snacks to enhance their flavour, and not with sweet products. Its absence from the latter products was therefore not considered for MSG-free claims that could have been made in the processed food categories A (breakfast cereals), C (sweet snacks) and G (convenience desserts and baked goods). The labelling regulations also state that no claim may be made on a product if all other products in the same category are free from that substance (South Africa, 1993:7).

3.4.3 Allergen information

Any allergen-free claim made on a food label was indicated on the labelling checklist. The allergens as indicated in the labelling regulations were used as reference (South Africa. Department of Health, 2002:14). It was considered a labelling error if egg or milk ingredients were not identified in the ingredient list of a product as this is required by law (South Africa, 1993:11). If a product did not claim to be free of an allergen, the information on the label was further evaluated to determine if it could have carried an allergen-free claim. It the product did not contain an advisory statement for a specific allergen, or the allergen could not be identified in the ingredient list, it was assumed that the product did not contain that specific allergen. Therefore, the product could have claimed to be free of that specific allergen, which is a labelling concern. Even if a product

is not likely to contain a certain ingredient, for example, breakfast cereal containing egg, the possibility exists that if it was made in the same factory or line as products containing this allergen, cross-contamination could have occurred. For allergic consumers, the information on food labels is the only way to know if a product contains a specific allergen or not. Placing allergen-related information on the label could be of great assistance to allergic consumers. Some products already claim to be "free of" a specific allergen. Regulations may, however, have to be implemented to control the use of this claim (Hey & Luedemann, 2001:341).

3.4.4 Nutrient claims

If any nutrient-related claim, such as "fat free", was made on a food label, it was evaluated according to the criteria of the regulations for making such claims. Mandatory nutritional information is required for any nutrient claims made on a food label and it was indicated on the checklist if the label contained a nutritional information table. Other mandatory regulations must also be adhered to, such as the indication of the mass or volume per serving of the product (South Africa. Department of Health, 2002:17-18). Any deviations from the regulations were considered a labelling error. If a product did not carry claims, the nutrition information table of the product was evaluated according to the regulations to determine if any nutrient claims could have been made on the products. If claims could have been made, it was indicated on the checklist as a concern as this information is withheld from consumers.

3.4.5 Other claims and information

Each label was further evaluated to determine if it made any additional claims, such as vegetarian or GI claims, and if such claims were made that it adhered to the specific regulations. The nutritional information tables of the labels were also evaluated to determine the number of products indicating the trans-fatty acid content as well as the cholesterol content of the product. This information is a concern for many consumers as it can have a huge impact on their health and well-being. A diet high in trans-fatty acids contributes to high blood cholesterol. Reducing the intake of these fats in the diet can lower blood cholesterol and may reduce the rate of cardiovascular disease (Sizer & Whitney, 2000:144).

3.5 Statistical analysis

The checklist data was coded, entered into MS Excel spreadsheets and imported into the Statistica version 7.1 data analysis software system (StatSoft Inc., 2007) for statistical analysis. The cross-tabulation and statistics (chi-square test to investigate differences or associations between data categories) (Struwig & Stead, 2001:165) presented in the report are only descriptive and exploratory in nature, pointing to possible associations and trends in labelling errors in the specific categories of processed foods. The level of significance used was $p=0.05$ and $p=0.001$.

CHAPTER 4

RESULTS AND DISCUSSION

The labels of the sampled food products were evaluated against the food label checklist incorporating the food product labelling regulation areas that may impact consumer health (see Appendix F). A limited number of studies were found that evaluated food product labels for mistakes made or concerns as this study. This limits the discussion of the results found in this study as it cannot be compared with a wide range of findings. The discussion is therefore included as part of this chapter. The majority of studies on food labels focus on the information consumers look for when purchasing a food product and the demographics of consumers reading food labels (Anderson & Coertze, 2001:29; Badham, 2003:50). The results obtained in this survey are provided below, according to the food product labelling regulation areas as evaluated.

4.1 Sample

The different processed food categories that were evaluated are represented according to their market size in the sample of 246 South African manufactured food products (Refer to Tables 4.1 and 3.1), which approximate about 18% of the available products in these processed food categories. The sample for each of the food categories was obtained by physically selecting the randomly identified food products to be evaluated in each category from the shelf. This was conducted in the selected large retail food store (as described in 3.3). Not all the randomly identified food products per processed food category could be found. Three of the identified products in the sub-category soups and one product each in the following sub-categories, chips, pretzels etc., chocolates, desserts and sauces could not be found and other random samples had to be selected. The products were evaluated against the food label checklist (as described in 3.5).

Table 4.1: Number and percentage of products evaluated per selected processed food category		
Selected processed food category	Number and percentage of food items evaluated (N=246)	
	n	%
A Breakfast cereals	21	9
B Savoury snacks	31	13
i. Savoury biscuits	12	
ii. Chips, pretzels, etc.	19	
C Sweet snacks	72	16
i. Sweet biscuits	18	
ii. Chocolates	21	
iii. Sweets	33	
D Refrigerated meals	23	9
E Non-refrigerated meals	17	7
F Soups & sauces	62	25
i. Soups	24	
ii. Sauces	38	
G Convenience desserts & baked goods	20	8
i. Baked goods	12	
ii. Desserts	8	

4.2 Ingredient list

The ingredient listing errors that were identified and the ingredient information that could have been indicated on the labels, but were not, can all have an effect on consumer health and well-being or public health, and are indicated below. The ingredient information that could have been indicated, but was not, is considered a food labelling concern. The current South African food labelling regulations and the draft regulations were used for the evaluation.

4.2.1 Identification of compound ingredients

According to the South African food labelling regulations, the names of the ingredients of the compound ingredient must be listed when a compound ingredient is used in a product (South Africa, 1993:9). Only 12% of the products evaluated did not indicate the component ingredients included in the compound ingredients in the ingredient list, which is a labelling error. There is a high application of this regulation as it has been a regulation for years and is not a newly drafted

regulation. Table 4.2 indicates the percentage of labels in each of the processed food categories evaluated not identifying compound ingredients listed in the ingredient list. Category E (non-refrigerated meals) had the highest percentage (24%) of product labels that did not meet the compound ingredient listing regulation, followed by Category F (soups and sauces) and Category D (refrigerated meals) (18% and 17% respectively). Category G (convenience desserts and baked goods) was found to have the lowest percentage error of nil.

Pasta formed part of the ingredient list of products evaluated in categories E (non-refrigerated meals), D (refrigerated meals) and F (soups and sauces). Pasta is a compound ingredient. On the 12% product labels that did not identify the compound component ingredients, pasta or noodles was not described on 45% of these labels. An example of how pasta could be indicated in an ingredient list is as follows: pasta (wheat flour, sunflower oil, sodium, stabilisers, colourants). Vegetable powder and cheese powder are further compound ingredients which were indicated on some labels (21% and 17% respectively) and were not accompanied by their component ingredients. Biscuits, chocolate chips and muesli were the compound ingredients found on labels in Category C (sweet snacks) that were not accompanied by their component ingredients (10%, 3% and 3% respectively). Yoghurt powder was the compound ingredient not described in the ingredient list of the product in Category A (breakfast cereals).

Table 4.2: Number and percentage of products per selected processed food category not identifying compound ingredients

Selected processed food category	Number and percentage of food items in category not identifying compound ingredients		
	N	n	%
A Breakfast cereals	21	1	5
B Savoury snacks	31	4	13
C Sweet snacks	72	5	7
D Refrigerated meals	23	4	17
E Non-refrigerated meals	17	4	24
F Soups & sauces	62	11	18
G Convenience desserts & baked goods	20	0	0
Total	246	29	12

4.2.2 Identification of fats and oils

The identification of fats and oils has been added to the draft regulations. The draft regulations require that the class name or origin of all refined fats and oils which have been used in a product must be identified in the list of ingredients with the accompanying term "vegetable", "animal" or "marine" (South Africa. Department of Health, 2002:21). Sixty-one percent of the products evaluated did not identify the origin of the fat or oil used in the ingredient list (See Table 4.3). Nearly all the products (94%) evaluated in Category B (savoury snacks) and 71% of the products in Category C (sweet snacks) did not identify the origin of the oil/fat used in the product. Almost two-thirds (65%) of the products in Category F (soups and sauces), half (53%) of the products in Category E (non-refrigerated meals) and a quarter of the products in categories A (breakfast cereals) and G (convenience desserts and baked goods) (24% and 25% respectively) did not identify the oil/fat used. Approximately 90% of the products in the sub-categories savoury biscuits, chips, pretzels, etc. and chocolates contained oil/fat of which the origin was not identified.

In South Africa mostly palm, sunflower or canola vegetable fats and/or vegetable oils are used in food products. However, if products are imported, these ingredients can be derived from either soy or peanut. Both of these ingredients are allergens and need to be identified in a product ingredient list (Carstensen, 2004). With fats and oils that could also be derived from animal origin, the lack of identification could also be a concern for consumers wanting to avoid animal products, such as vegetarians (Sizer & Whitney, 2000:204). The fatty-acid composition of fats and oils from different origins will each differ and the identification of the origin of the fat and/or oil used in a product may especially assist those consumers concerned with CHD (Anderson & Deskins, 1995:86). The US FSIS identified the problem that ingredients are not listed by their common names, e.g., listing just oil on an ingredient list and not vegetable oil is one of the ten most common mistakes made on food labels (United States Department of Agriculture. Food Safety and Inspection Service, 2003).

Table 4.3: Number and percentage of products per processed food category not identifying origin of fat and/or oil used

Selected processed food category	Number and percentage of food items in category not identifying origin of fat/oil used		
	N	n	%
A Breakfast cereals	21	5	24
B Savoury snacks	31	29	94
i. Savoury biscuits	12	11	92
ii. Chips, pretzels, etc.	19	18	95
C Sweet snacks	72	51	71
i. Sweet biscuits	18	15	83
ii. Chocolates	21	19	90
iii. Sweets	33	17	52
D Refrigerated meals	23	10	43
E Non-refrigerated meals	17	9	53
F Soups & sauces	62	40	65
i. Soups	24	21	88
ii. Sauces	38	19	50
G Convenience desserts & baked goods	20	5	25
i. Baked goods	12	4	33
ii. Desserts	8	1	13
Total	246	149	61

4.2.3 Additives

Forty percent of people globally will check for the presence of preservatives in a product, followed by 36% that will check for the presence of colourants and other additives (AC Nielsen, 2005). It is therefore important that these ingredients are correctly identified in a product ingredient list. The number and percentage of food products evaluated making certain additive-free claims compared with the number of product claims that could have been made are indicated in Table 4.4. Additive -free claims were indicated on between three (for artificial flavourants) to eight percent (for preservatives and artificial colourants) of the processed food products evaluated, while a further 20% (for MSG) and up to 93% (for tartrazine) could have indicated such claims. The difference between the claims made and the claims that could have been made for each of the additives over all the processed food categories selected were significant ($p<0.05$ and 0.001 respectively). (See Tables 4.5, 4.6 and 4.7.) The difference in the total number of products per processed food category and the number of products claiming to be additive free and those that could claim to be

additive free per processed food category (in Tables 4.5, 4.6 and 4.7) represent those products in the processed food category that contain the additive and cannot make the additive-free claim.

Table 4.4: Number and percentage of all evaluated processed food products that made and could have made additive-free claims

Additive-free claim		Claim made		Could claim	
	N	n	%	n	%
Tartrazine	246	12	5	229	93
MSG	246	17	7	48	20
Preservative	246	20	8	160	65
Artificial colourants	246	19	8	88	36
Artificial flavourants	246	8	3	55	22

4.2.3.1 Tartrazine

According to the food labelling regulations, the colourant tartrazine must be indicated in the ingredient list when it is used in a food product (South Africa, 1993:11). Two percent of the products evaluated indicated tartrazine content. Desserts had the highest percentage of products indicating containing tartrazine (13%), followed by savoury biscuits (8%). Consumers are avoiding colourants, including tartrazine, for many reasons. Only about five percent of the products evaluated claimed to be tartrazine free, compared with the additional 93% that could have claimed being tartrazine free ($p<0.001$). This was determined by evaluating the number of products per selected processed food category not listing tartrazine as an ingredient in the ingredient list. If the product contained a colourant and tartrazine was not identified, it was evaluated as not containing tartrazine as the regulations state that it must be identified. Even if the evaluated product did not list a colourant in the ingredient list, it was evaluated that the product could have made a tartrazine-free claim, as the consumer could interpret the label as such. The lack of tartrazine-free claims is a concern as tartrazine is commonly used as a food colourant, and can cause adverse reactions in sensitive individuals (Stevenson *et al.*, 1986:183). Table 4.5 indicates the percentage of tartrazine-free claims made per selected processed food category and the percentage of tartrazine-free claims that could have been made per category on those products not specifically listing tartrazine in the ingredient list as required.

Table 4.5: Number and percentage of products per category claiming tartrazine-free compared with those that could make the claim

Selected processed food category		Number and percentage of food items in category making a tartrazine-free claim*		Number and percentage food items in category that could make a tartrazine-free claim*	
	N	n	%	n	%
A Breakfast cereals	21	0	0	21	100
B Savoury snacks	31	5	16	24	77
i. Savoury biscuits	12	0	0	11	92
ii. Chips, pretzels, etc.	19	5	26	13	68
C Sweet snacks	72	5	7	66	92
i. Sweet biscuits	18	0	0	17	94
ii. Chocolates	21	0	0	21	100
iii. Sweets	33	5	15	28	85
D Refrigerated meals	23	0	0	23	100
E Non-refrigerated meals	17	0	0	17	100
F Soups & sauces	62	0	0	61	98
i. Soup	24	0	0	24	100
ii. Sauces	38	0	0	37	97
G Convenience desserts & baked goods	20	2	10	17	85
i. Baked goods	12	0	0	12	100
ii. Desserts	8	2	25	5	63
Total	246	12	5	229	93

*Significant difference ($p<0.001$; $p=0.000$)

No products in Category A (breakfast cereals), Category D (refrigerated meals) and Category E (non-refrigerated meals) made a tartrazine-free claim, although all evaluated products in these categories could have made this claim as they did not list tartrazine in the ingredient list. In Category F (soups and sauces) no products made this claim, but 98% could have made this claim. A sub-category of Category B (savoury snacks) chips and pretzels made tartrazine-free claims on 26% of the products, followed by desserts, a sub-category of Category G (convenience desserts and baked goods), with 25%. Tartrazine could be used in almost any product as a colourant and for individuals wanting to avoid this colourant, indicating that a product is tatrazine-free, would be of great assistance. However, many of the products that did not list tartrazine in the ingredient list also did not claim to be tartrazine free. The FDA requires that tartrazine be identified in a product label when used in food products so that consumers can avoid these products if they desire (Sizer & Whitney, 2000:532).

4.2.3.2 Monosodium glutamate

According to the draft food labelling regulations, glutamates must be identified in a product ingredient list (South Africa. Department of Health, 2002:13). Table 4.6 indicates the number and percentage of products per category that made an MSG-free claim and that could have made this claim ($p<0.05$). Although Category D (refrigerated meals) contained the most "no added MSG" claims of 39%, an additional 52% of the products in this category could have carried this claim. Category B (savoury snacks) carried the claim on 10% of the products with a further 29% that could have carried the claim. In Category F (soups and sauces) and Category E (non-refrigerated meals), six percent of the products made this claim with an additional 34% and 35% of the products respectively that could have carried the claim. This is also a concern as consumers would not be able to identify easily if the product contains added MSG. Some individuals are sensitive to MSG and develop adverse reactions on consumption (United States Food and Drug Administration, 1996:1).

Monosodium glutamate is a monohydrate sodium salt used in flavour enhancers. A flavour enhancer is used in a product to enhance the original flavour and/or aroma of the food (DFST, 2005:147). Because MSG is salt based, it is mostly associated with salty/savoury snacks to enhance their flavour, and not with sweet products. No MSG claims were made in categories A (breakfast cereals), C (sweet snacks) and G (desserts & baked goods) and it was as a result also indicated that no such claim was expected on the labels of the products in these categories. If a product in the other categories did not list MSG in the ingredient list, the product was evaluated as being able to make an MSG free claim. Even if the product did contain a flavourant, but it did not identify that it was MSG, it was evaluated that it was MSG free as the regulation stipulates that MSG must be identified (South Africa. Department of Health, 2002:13).

The FDA stipulates that MSG must be indicated on a food product label if it is added to a product directly or indirectly as part of another ingredient. This creates a loophole for foods that contain other sources of free glutamates but do not have to declare their presence. For example, free glutamates can be added to food in the form of hydrolysed vegetable protein. The presence of the free glutamates does not have to be declared. It has been proposed that a "no MSG" claim may only be allowed on food labels in cases where the product contains no other sources of free glutamates. In Canada, claims that a product is free from or has no added MSG and the product contains other sources of free glutamates, are considered as misleading (Silverglade *et al.*, 1998:26).

Table 4.6: Number and percentage of products per category claiming MSG free compared wit those that could make the claim

Selected processed food category		Number and percentage of food items in category making an MSG-free claim*		Number and percentage food items in category that could make an MSG-free claim*	
	N	n	%	n	%
A Breakfast cereals	21	0	0	0	0
B Savoury snacks	31	3	10	9	29
i. Savoury biscuits	12	3	25	4	33
ii. Chips, pretzels, etc.	19	0	0	5	26
C Sweet snacks	72	0	0	0	0
i. Sweet biscuits	18	0	0	0	0
ii. Chocolates	21	0	0	0	0
iii. Sweets	33	0	0	0	0
D Refrigerated meals	23	9	39	12	52
E Non-refrigerated meals	17	1	6	6	35
F Soups & sauces	62	4	6	21	34
i. Soup	24	2	8	2	8
ii. Sauces	38	2	5	19	50
G Convenience desserts & baked goods	20	0	0	0	0
i. Baked goods	12	0	0	0	0
ii. Desserts	8	0	0	0	0
Total	246	17	7	48	20

*Significant difference ($p<0.05$; $p=0.005$)

4.2.3.3 Other

The claims "preservative free" and "no artificial colourant" was made the most of the possible additive-free claims that could be made on the evaluated products followed by the "no added MSG" claim on eight percent and seven percent respectively of the products (See Tables 4.7 and 4.6 respectively). The claim "tartrazine free" was made on five percent of the products (See Table 4.5) and the claim "no artificial flavourant" on three percent of the products (See Table 4.7). Products in Category A (breakfast cereals), Category B (savoury snacks) and Category F (soups and sauces) carried the claims "preservative free", "no artificial colourants" and "no artificial flavourants". These claims could have been made on a number of products in all categories as these products did not list preservatives, artificial colourants or flavourants respectively in the ingredient list. The absence of these additives in the ingredient list could be correctly interpreted

by a consumer that the product does not contain these additives. The products were evaluated as the consumer would interpret the label. Table 4.7 indicates the percentage of products per selected processed food category that made additive-free claims compared with the percentage of products per category that could have made these claims pertaining to the indicated additives.

Forty-three percent of South African consumers look for additive information on food labels when purchasing a product (AC Nielsen, 2005:4). With consumers wanting to avoid additives for different reasons, such as adverse allergic or intolerant reactions (Ring *et al.*, 2001:4), it is a concern that not more manufacturers are making additive-free claims and placing this information on their products. In South Africa and the United States there are no official food labelling guidelines for making an additive-free claim. A "no additive", or, for example, "no artificial colourants" claim could be meaningful for a consumer, as it indicates that the product has not been enhanced with the addition of natural or artificial ingredients (Eco-labels.org, 2007).

Table 4.7: Number and percentage of products per category that made and could have made additive-free claims pertaining to preservatives, artificial colourants and flavourants

Processed food category		Additive-free claims											
		Preservative free				No artificial colourants				No artificial flavourants			
		Claim*		Could Claim*		Claim**		Could Claim**		Claim ***		Could Claim***	
	N	n	%	n	%	n	%	n	%	n	%	n	%
A Breakfast cereals	21	2	10	16	76	6	29	7	33	6	29	9	43
B Savoury snacks	31	4	16	16	52	2	17	11	35	1	3	5	16
i. Savoury biscuits	12	4	33	5	42	2	16	6	50	1	8	4	33
ii. Chips, pretzels, etc.	19	0	0	11	58	0	0	5	26	0	0	1	5
C Sweet snacks	72	0	0	47	76	1	1	28	39	1	1	5	7
i. Sweet biscuits	18	0	0	13	72	0	0	5	28	0	0	0	0
ii. Chocolates	21	0	0	17	81	1	5	15	71	1	5	2	9
iii. Sweets	33	0	0	25	75	0	0	8	24	0	0	3	9
D Refrigerated meals	23	7	30	13	57	7	30	10	43	0	0	11	48
E Non-refrigerated meals	17	2	12	10	59	1	6	5	29	0	0	4	29
F Soups & sauces	62	5	11	39	63	2	3	19	31	1	2	17	27
i. Soup	24	2	8	20	83	0	0	6	25	0	0	3	13
ii. Sauces	38	5	13	19	50	2	5	13	34	1	3	14	37
G Convenience desserts & baked goods	20	0	0	19	95	0	0	8	40	0	0	4	20
i. Baked goods	12	0	0	12	100	0	0	8	67	0	0	4	33
ii. Desserts	8	0	0	7	88	0	0	0	0	0	0	0	0
Total	246	20	8	160	65	19	8	88	36	8	3	55	22

* = Significant difference ($p<0.001$; $p=0.00000$)

** = Significant difference ($p<0.001$; $p=0.00003$)

*** = Significant difference ($p<0.05$; $p=0.029$)

Category D (refrigerated meals) carried the most "preservative-free" claims (30%) with no products in Category C (sweet snacks) and G (convenience desserts and baked goods) carrying the claim. A further 65% of the products in all the selected processed food categories could have carried the claim that the products are "preservative free". In Category G (convenience desserts and baked goods) 95% of the products could have carried the claim. The difference between the claims that were made and the claims that could have been made overall for all processed food categories covered were significant ($p<0.001$; $p=0.00000$) for the absence of preservatives.

According to an AC Nielsen study (AC Nielsen, 2005:3), 44% of South African consumers are looking for preservative information on food labels when purchasing food products. Globally, 40% of consumers look for preservative information. The FDA requires the indication of the use of preservatives in a product ingredient list as well as an indication of the function of the preservative in the product (United States Food and Drug Administration. Center for Food Safety & Applied Nutrition, 1999). It is therefore a concern that not more food manufacturers are providing this information on their food labels.

Thirty percent of the products in Category D (refrigerated meals) carried the claim "no artificial colourants" closely followed by Category A (breakfast cereals) with 29% of the products carrying this claim. None of the products in Category G (convenience desserts and baked goods) carried the claim "no artificial colourants" compared with the 40% that could have carried this claim. One percent of the products in Category C (sweet snacks) carried this claim, compared with the further 39% that could have carried this claim. Overall 36% of the evaluated products could additionally have carried a "no artificial colourants" claim. The difference between the claims that were made and the claims that could have been made overall for all included processed food categories were significant ($p<0.001$; $p=0.00003$) for the claim "no artificial colourants".

Category A (breakfast cereals) carried the claim "no artificial flavourant" on 29% of the products with an additional 43% of the products that could have carried this claim. None of the products in Category D (refrigerated meals), Category E (non-refrigerated meals) and Category G (convenience desserts and baked goods) carried this claim compared with the 48%, 29% and 20% respectively that could have carried this claim. Overall 22% of the evaluated products could additionally have carried a "no artificial flavourant" claim. The difference between the claims that were made and the claims that could have been made overall for all processed food categories were significant ($p<0.05$; $p=0.029$) for the claim "no artificial flavourants".

4.3 Allergen information

Certain food ingredients can cause allergic reactions in sensitive individuals and the information on product labels is their only way of identifying if a product is safe for them to consume. It is therefore important to indicate these ingredients in a product ingredient list, for easy identification by a consumer diagnosed with a food allergy.

4.3.1 Allergen-derived ingredients

If an ingredient derived from egg or milk is used in a product, it must, according to the South African food labelling regulations, be indicated in the ingredient list. The words "egg" or "milk" must be indicated in parenthesis behind the name of the ingredient or can form part of the name of the ingredient (South Africa, 1993:11-12). Less than one percent of the products (0.49%) did not identify ingredients derived from egg. However, 16% of the products evaluated contained ingredients derived from milk, which was not identified in the ingredient list. Ingredients such as casein, whey, caseinate, and cream are examples of ingredients found in the evaluated product ingredient lists which were not identified as a derivate of milk. Figure 4.1 illustrates the percentage of products per category not identifying ingredients derived from milk, which is a labelling error.

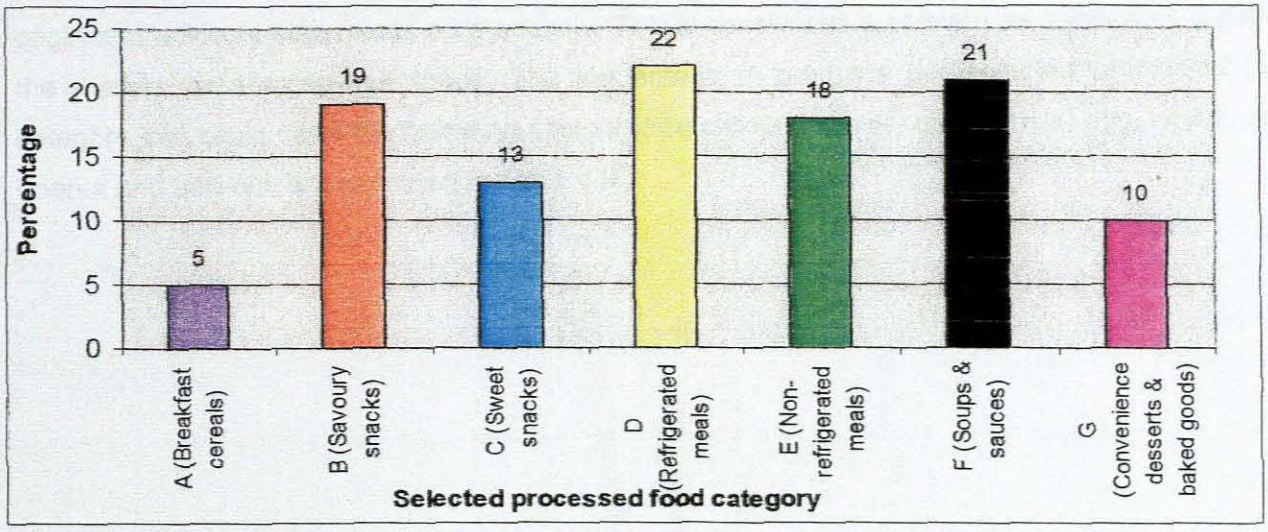

Figure 4.1: Percentage of products per selected processed food category not identifying ingredients derived from milk

The draft food labelling regulations state the following if a product contains allergen-derived ingredients: "If an ingredient derived from either milk, egg, fish, crustacean and molluscs, peanuts, soybeans, or tree-nuts is used in a product the word "egg", "fish", "crustacean" and "molluscs", "peanuts", "soybeans", or "tree-nuts", as the case may be shall be indicated in parentheses after the name of the ingredient in the ingredient list or these words should appear in the ingredient list (South Africa. Department of Health, 2002:14). Forty-one percent of the products evaluated contained an ingredient derived from the *Triticum* specie, such as wheat (South Africa. Department of Health, 2002:14), which was identified in the ingredient list. The presence of soya was indicated on 26% of the evaluated products, with a number of products containing ingredients that could have been derived from soya. (Refer to 4.3.4 for the specific information.)

The FDA conducted a series of inspections to determine food label accuracy by comparing the raw product ingredients with the finished product labels. Twenty-five percent of the manufacturers were found to have omitted raw ingredients, including peanuts and tree-nuts, from the final labels. When product samples were analysed for egg and peanut allergens, 25% of the products analysed for peanut and 10% of the products analysed for egg tested positive for residual allergen (Wood, 2002:922).

4.3.2 Allergen-free claims

Only one (0.41%) of all the products evaluated (N=246) claimed to be free from a specific allergen. A product in Category A (breakfast cereals) made a wheat-free claim. However, a much greater percentage of the products could have made allergen-free claims. This became evident during the evaluation of the ingredient lists of the sample products by ruling out any ingredients from unknown origin and advisory statements on the labels. This is considered a concern as it indicates a gap in the market for allergen-free foods. The percentage of products per selected processed food category that could carry the following allergen-free claims, namely, gluten, milk, egg, wheat, soy, peanut and tree-nut, are indicated in Table 4.8.

Table 4.8 Number and percentage of products per selected processed food category that could have made a specific allergen-free claim

Processed food category	Allergen free claims														
	Tree-nut		Gluten		Peanut		Wheat		Milk		Egg		Soy		Total Allergen-free claims per category
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n
A Breakfast cereals	7	33	4	19	4	19	3	14	0	0	13	62	13	62	44
B Savoury snacks	22	71	15	48	22	71	16	52	13	42	22	71	8	26	118
i. Savoury biscuits	4	33	1	8	4	33	2	17	3	25	7	59	2	17	23
ii. Chips, pretzels, etc.	18	95	14	73	18	95	14	74	10	53	15	79	6	32	95
C Sweet snacks	32	44	36	50	33	46	35	49	24	33	32	44	15	21	207
i. Sweet biscuits	13	72	0	0	13	71	0	0	7	39	10	44	1	6	44
ii. Chocolates	1	5	15	71	4	19	14	67	0	0	6	29	0	0	40
iii. Sweets	18	52	21	64	16	48	21	64	17	52	16	48	14	42	123
D Refrigerated meals	12	52	1	4	12	52	1	4	4	17	6	26	4	17	40
E Non-refrigerated meals	7	41	5	29	7	41	5	29	6	35	9	53	8	47	47
F Soups & sauces	34	55	12	19	34	55	12	19	19	31	24	38	12	19	147
i. Soups	14	58	2	8	14	58	2	8	5	21	10	42	3	12	50
ii. Sauces	20	53	10	26	20	52	10	26	14	37	14	37	9	24	97
G Convenience desserts & baked goods	17	85	1	5	17	85	1	5	3	15	4	20	5	25	48
i. Baked goods	9	75	0	0	9	75	0	0	1	8	0	0	3	25	22
ii. Desserts	8	100	1	13	8	100	1	12	2	25	4	50	2	25	26
Total for all categories	131	53	74	31	129	52	73	30	69	28	110	45	65	26	651

Fifty-three percent of all products evaluated were tree-nut free according to the information on the label with 52% being peanut free. These products had no indication of ingredients that could be derived from these nuts and carried no advisory statements for allergic individuals. Forty-five percent of the products could have claimed to be egg free. Gluten-free claims could have been made on 31% of the products and a wheat-free claim on 30%. Milk- and soy-free claims could have been made on 28% and 26% of the products respectively. This also became evident from

the information evaluated on the label and the absence of advisory statements present on the products.

A high percentage of products (41% to 85%) in nearly all categories could have made tree-nut and peanut-free claims. These products had no ingredients listed in the ingredient list that indicated these nuts and did not carry any such advisory statements. In Category G (convenience desserts and baked goods), 85% of the products evaluated could have carried both a peanut and tree-nut free claim. Gluten-free claims could have been made on about half of the products in the sweet and savoury snacks categories (50% and 48% respectively). In Canada there is a drive to motivate food manufacturers to offer more "peanut-free" products to allergic consumers, to decrease their dietary restrictions (Gowland, 2001:118).

Sixty-two percent of the evaluated breakfast cereals and 47% of the evaluated non-refrigerated meals could have claimed to be soya free. Soya can be used in both breakfast cereals and non-refrigerated meals, but could also be present in the product owing to cross-contamination occurring when products are manufactured on the same production lines. Tree-nut, peanut and egg-free claims could have been made on almost half of all the products, whereas the claims gluten, wheat, milk and soy free could have been made on a quarter to a third of the products.

Any "free from" allergen claim on a food product will be helpful for an allergic consumer when making food choices. It will be especially helpful on foods which have an obvious connection with the allergen such as cereals or biscuits that could have been in contact with peanuts (Gowland, 2001:119). All that can currently be offered to individuals suffering from food allergy and conditions of food intolerance is to avoid completely all foods containing the offending allergen. The indication of allergenic ingredients on a food product label is the only approach in food legislation to protect individuals against adverse allergic reactions and the only way to identify if a product contains an allergen (Hey & Luedemann, 2001:338; Mills *et al.*, 2004:1262). Currently in South Africa there are also no official food labelling guidelines for making "free from" allergen claims on food products. The draft food labelling regulations stipulate regulations for making a gluten-free claim (South Africa. Department of Health, 2002:14).

4.3.3 Advisory statements

The condition for use of an allergen advisory statement is provided for in the regulations. Where a product which contains an allergen and a product which does not contain an allergen are manufactured on the same production line or in the same facility, and the possibility of cross-contamination does exist, the warning "May contain traces of ... (name the allergen)", should be indicated on the label (South Africa. Department of Health, 2002:26-27). Almost 25% (24.8%) of the products (n=61) contained allergen advisory statements on the label. This was determined by evaluating the number of products with allergen advisory statements; even if the product listed more than one allergen advisory statement, it was calculated as one advisory statement.

Table 4.9 indicates the number and percentage of advisory statements made per processed food category. Of all the advisory statements made on the products (n=80), 13% were made for the presence of peanuts followed by nuts at 9%, mostly in Categories A (breakfast cereals) and C (sweet snacks). Seven percent of the products contained an advisory statement for tree-nuts. It occurred mostly in Category C (sweet snacks) and specifically in the sub-category sweet biscuits. Four percent of the products in Categories C (sweet snacks) and D (refrigerated meals) carried an advisory statement for egg. Some uncommon advisory statements were also made, mostly on products in Category C (sweet snacks), for example, advisory statements for sulphites, poppy- and sesame seeds. A third of the products evaluated contained an allergen advisory statement, with more than 70% of the products in Category A (breakfast cereals) and Category C (sweet snacks) containing advisory statements. Seventy-one percent of the products in Category A (breakfast cereals) carried an allergen advisory statement, with an advisory statement for nuts being on 52% of the products. More than 90% of the products evaluated in the sub-categories of Category C (sweet snacks), sweet biscuits and chocolates, contained advisory statements. Five percent of the products evaluated in Category F (soups & sauces) contained an advisory statement.

Table 4.9 Number and percentage of products per selected processed food category carrying specific allergen advisory statements

Processed food category	N	Allergen advisory statement																				*Number and percentage statements per category	
		Tree-nuts		Peanuts		Nuts		Egg		Sulphites		Seeds		Poppy seed		Sesame seed		Soy		Celery			
		n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
A Breakfast cereals	21	0	0	4	19	11	52	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	71
B Savoury snacks	31	1	3	0	0	2	6	0	0	0	0	1	3	0	0	0	0	0	0	0	0	4	13
i. Savoury biscuits	12	1	8	0	0	1	8	0	0	0	0	1	8	0	0	0	0	0	0	0	0	3	25
ii. Chips, pretzels, etc.	19	0	0	0	0	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	5
C Sweet snacks	72	12	17	27	38	8	11	3	4	1	1	0	0	1	1	1	1	0	0	0	0	53	74
i. Sweet biscuits	18	10	56	1	6	3	16	1	6	0	0	0	0	1	6	1	6	0	0	0	0	17	94
ii. Chocolates	21	2	10	14	67	3	14	1	5	0	0	0	0	0	0	0	0	0	0	0	0	20	95
iii. Sweets	33	0	0	12	36	2	6	1	3	1	3	0	0	0	0	0	0	0	0	0	0	16	48
D Refrigerated meals	23	0	0	0	0	0	0	1	4	0	0	0	0	0	0	0	0	0	0	1	4	2	8
E Non-refrigerated meals	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	6	0	0	1	6
F Soups & sauces	62	3	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	5
i. Soups	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ii. Sauces	38	3	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	8
G Convenience desserts & baked goods	20	0	0	0	0	2	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	10
i. Baked goods	1	0	0	0	0	2	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	16
ii. Desserts	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total advisory statements		16	7	31	13	23	9	4	2	1	1	1	1	1	1	1	1	1	1	1	1	80	33

*Number and percentage statements per processed food category = If a statement referred to two or more allergens it was counted as one advisory statement

Consumers in the UK have raised concerns about the "overuse" of advisory statements, noting that they are sometimes used unnecessarily on certain products, which undermines valid warnings. In the UK, the use of alternative phrases: "Not suitable for peanut-allergic consumers"

and "Not suitable for people with peanut allergy" has been recommended (Booyzen, 2005a). In Australia and New Zealand, precautionary labelling is used widely, and rather than helping consumers with their food choices, it restricts their choices (Mills *et al.*, 2004:1266).

4.3.4 Ingredients of unknown origin with allergenicity potential

According to the South African food labelling regulations, "allergens, which are hidden in a name of an ingredient, shall be indicated in parentheses after the name of the ingredient in the ingredient list or alternatively, the word "egg", "fish", "crustacean" and "molluscs", "peanuts", "soybeans", or "tree-nuts", should form part of the ingredient name" (South Africa. Department of Health, 2002:14). During the labelling evaluation, a number of ingredients were identified that could be derived from an allergen, but the origin was not indicated on the label. It therefore cannot be stated with certainty that these ingredients are derived from allergens, but the possibilities do exist. For example, there is a whole range of emulsifiers and lecithins, and these are made from a number of ingredients (Carstensen, 2004) which can include soy and egg. Both of these are known allergens and must be identified in the ingredient list. Allergic consumers would not know the origin of these ingredients and would therefore rather avoid the product, even if it is not derived from the offending allergen. However, consumers can also use these products not knowing that they contain a specific allergen that could result in allergic reactions. In total 80% of the products evaluated contained ingredients of unknown origin, which is a concern for consumers wanting or having to avoid certain ingredients. Table 4.10 indicates the percentage of products per processed food category that contained an ingredient derived from an unknown origin.

Table 4.10: Number and percentage of products per selected processed food category with ingredients of unknown origin

Processed food category	N	n	%
A Breakfast cereals	21	11	52
B Savoury snacks	31	27	87
i. Savoury biscuits	12	10	83
ii. Chips, pretzels, etc.	19	17	89
C Sweet snacks	72	57	79
i. Sweet biscuits	18	17	64
ii. Chocolates	21	20	95
iii. Sweets	33	20	60
D Refrigerated meals	23	20	87
E Non-refrigerated meals	17	13	76
F Soups & sauces	62	52	84
i. Soups	24	23	95
ii. Sauces	38	29	76
G Convenience desserts & baked goods	20	16	80
i. Baked goods	12	8	67
ii. Desserts	8	8	100
Total	246	196	80

In most categories, nearly 80% and above of the products contained an ingredient of unknown origin. Ninety-five percent of the products in the sub-categories chocolates (Category C sweet snacks) and soups (Category F soups and sauces) contained an ingredient of unknown origin. Table 4.11 indicates the different ingredients listed on the labels whose origins were unknown and that could have been derived from allergenic ingredients, with the number and percentage of labels per processed food category that did not identify the origin of these specific ingredients. Category A (breakfast cereals) contained far fewer ingredients of unknown origin, with only 52% of the products containing an ingredient of unknown origin.

Table 4.11: Number and percentage of ingredients of unknown origin with allergenic potential per processed food category

Ingredient	Possible allergen derivatative	Processed food category													
		A Breakfast cereals (N=21)		B Savoury snacks (N=31)		C Sweet snacks (N=72)		D Refrigerated meals (N=23)		E Non-refrigerated meals (N=17)		F Soups & sauces (N=62)		G Convenience desserts & baked goods (N=20)	
		n	%	n	%	n	%	n	%	n	%	n	%	n	%
Bread crumbs	Gluten/ wheat	0	0	0	0	0	0	1	5	0	0	0	0	0	0
Cereal binder	Gluten/ wheat	0	0	0	0	0	0	4	17	0	0	0	0	0	0
Dextrose	Gluten/ wheat	0	0	3	10	6	8	8	35	1	6	3	5	6	30
Emulsifier	Soy/ egg	2	10	2	7	18	25	3	12	2	12	16	26	6	30
Lecithin	Soy/egg	1	5	0	0	3	4	0	0	0	0	0	0	1	5
Malt extract	Gluten/ wheat	5	24	3	10	1	1	0	0	0	0	1	2	0	0
Maltodextrin	Gluten/ wheat	2	10	3	10	0	0	3	13	3	18	27	44	6	30
Modified starch	Gluten/ wheat	0	0	0	0	4	6	4	17	0	0	13	21	2	10
Stabiliser	Egg /soy	1	5	0	0	0	0	8	35	5	29	11	18	4	20
Starch	Gluten/ wheat	1	5	1	3	2	3	1	4	5	29	15	24	2	10
Thickener	Egg / Gluten/ wheat	0	0	0	0	0	0	7	30	2	12	13	21	3	15
Vegetable fat	Soy / peanut	2	10	2	7	39	54	4	17	3	18	32	52	5	25
Vegetable fibre	Soy	0	0	0	0	0	0	2	9	0	0	1	2	0	0
Vegetable gum	Soy	0	0	0	0	0	0	0	0	0	0	0	0	1	5
Vegetable oil	Soy / peanut	2	10	26	84	10	14	8	35	7	41	14	23	0	0
Vegetable powder	Soy	0	0	3	10	0	0	2	9	0	0	0	0	0	0
Vegetable protein	Soy	0	0	0	0	0	0	4	17	0	0	5	8	0	0
Vegetable shortening	Soy	0	0	1	3	3	4	0	0	0	0	0	0	3	15

The three ingredients, namely, emulsifier, starch and vegetable fat, were present in all the selected processed food categories without the origin of the ingredient being identified. Thirty percent of the products in Category G (convenience desserts and baked goods) did not identify the origin of the emulsifier, followed by Category F (soups and sauces) and Category C (sweet snacks), with 26% and 25% respectively. There is a whole range of emulsifiers and lecithins made from a number of ingredients (Carstensen, 2004) which can include soy and egg. It is therefore important to list the origin of an emulsifier and lecithin on the ingredients list for easy identification by an allergic consumer. One of the evaluated products in Category G (convenience desserts and baked goods) (N=20) did not identify the origin of the lecithin used, followed by Category A (breakfast cereals) (N=21) and Category C (sweet snacks) (N=72) with 1 and 3 products respectively. Although the number is low, it can be problematic for an egg- and/or soy-allergic consumer. In the new proposed draft regulations, emulsifier and lecithin are listed under hidden allergens as ingredients that could indicate the presence of egg protein on a food label (Booyzen, 2005a).

About 29% (29.4%) of the products in Category E (non-refrigerated meals) did not identify the origin of the starch used in the product, followed by 24% of the products in Category F (soups and sauces). Starch is almost always made from corn, but the possibility exists that it can be from another source, and therefore it must be indicated on the label (Carstensen, 2004). Maltodextrins are dextrins derived from starch in varying lengths, and are used for various applications in foods such as thickeners and carriers for flavourings in products such as soups and dry mixes (DFST, 2005:114). More than a third of the products in Categories F (soups & sauces) (44%) and G (convenience desserts & baked goods) (30%) that contained maltodextrin did not identify the origin. More than a third of the products in Category D (refrigerated meals) (35%) and Category G (convenience desserts & baked goods) (30%) contained dextrose and did not identify its origin. Dextrose forms part of glucose and the commercial manufacture of glucose is by hydrolysis of starch (DFST, 2005:167).

Stabilisers are used in food formulations to prevent separation, with hydrocolloids being an example of a stabiliser (DFST, 2005:348). Hydrocolloids are from animal, plant or microbial origin, therefore the possibility exists that they could be derived from soy, wheat or egg (DFST, 2005:188). Thirty-five percent of the evaluated products in Category D (refrigerated meals), 29% of the products in Category E (non-refrigerated meals) and 20% of the products in Category G (convenience desserts & baked goods) did not identify the origin of the stabiliser.

More than 50% of the products evaluated in Categories C (sweet snacks) and F (soups & sauces) did not identify the origin of the vegetable fat used in the products. Eighty-four percent of the products in Category B (savoury snacks) did not identify the vegetable oil used in the products. More than a third of the products in Categories E (non-refrigerated meals) (41%) and D (refrigerated meals) (35%) did not identify the vegetable oil used in the products. In South Africa, mostly palm, sunflower or canola vegetable fats and/or vegetable oils are used in food products. However, if products are imported, these ingredients can be derived from either soy or peanut (Carstensen, 2004). Both these ingredients form part of the allergens that, according to the draft regulations, need to be labelled on a product label (South Africa. Department of Health, 2002:14). In Europe, if a vegetable oil or flavourant is derived from their list of major allergenic foods, the source must be indicated in the ingredient list (Mills *et al.*, 2004:1264).

Processed foods can have hidden allergens which are not indicated in the ingredient list. Besides this lack of hidden allergen information on food labels consumers may also not understand the formulation of a product nor be able to identify ingredients derived from allergens. Labelling is the primary means for a food manufacturer to inform the consumer about the potential allergens in its products (Huggett & Hischenhuber, 1998:89).

4.4 Statements and claims

A number of prohibited statements, e.g. "wholesome", and a number of regulated claims, such as "low fat", can be unwittingly/wittingly made on food product labels. Many consumers are following specific diets in which certain foods or food components are restricted or to be avoided (Chan, 2003:1). For these, the prohibited statement practice and the correct indication of regulated claims may be of great assistance in the selection of food products. The following is an indication of the number of products displaying prohibited statements and making certain claims.

4.4.1 Use of prohibited statements

The South African food labelling regulations include a number of statements that are prohibited for use on food labels. These statements include the words "healthy", "health", "cure", "restorative", "natural" and "heal" (South Africa, 1993:7). Three of the product labels carried these words, of which two products represented Category A (breakfast cereals); this is a labelling error. One of the 21 products in this processed food category carried the word "health" and another product the word "healthy". In the United States, the word "healthy" is allowed, but under strict labelling

regulations and conditions that must be met (United States Food and Drug Administration. Center for Food Safety & Applied Nutrition, 1999). One of the 246 products evaluated carried the word "natural", although the product was processed. This appeared on a Category E (non-refrigerated meals) label but as a non-refrigerated meal, it is a processed product. According to the food labelling regulations, the word "natural" may not be used on a food product if it contains any ingredient not present in its natural form (South Africa, 1993:12).

The draft food labelling regulations include the additional statement relating to "nutritious" and "wholesome" that is prohibited on food labels (South Africa. Department of Health, 2002:9). When comparing the labels with the draft regulations, six of the 246 products evaluated contained the word "wholesome". This appeared in Category B (savoury snacks) on three sub-category savoury biscuits products, on two products in Category A (breakfast cereals) and one product in the sub-category soup in Category F (soups and sauces). Four products in Category A (breakfast cereals) also contained the word "nutritious". The use of these words on food product labels is a concern as this may be misleading to consumers.

In 2002, the UK's FSA issued advice on eight marketing terms used on food labels in the UK, namely "fresh", "pure", "natural", "traditional", "original", "authentic", "home made" and "farmhouse" (Food Navigator, 2004c). Despite this guidance, the UK's food watchdog accused the food industry of misleading consumers by using terms such as "fresh" and "natural" on food labels. The UK FSA conducted a survey of 220 food labels. Forty percent of the samples examined were misleading to the consumer, despite the majority of manufacturers following the best practice guidance issued by the agency (Food Navigator, 2004c).

4.4.2 Fortified and specific nutrient or energy claims

The draft food labelling regulations stipulate when specific energy and nutrient claims can be made, as well as fortified and enriched claims. Seventeen percent of all the processed food products evaluated (N=246) made a specific nutrient or energy claim on the label with three percent carrying a fortified or enriched claim. A further 45% of the evaluated products could have carried one or more specific nutrient or energy claims. The number of specific energy and nutrient claims made and that could have been made as well as the number of fortified and enriched claims made are indicated in Table 4.12. Only a few products (3%) in the selected processed food categories carried fortified or enriched claims, while somewhat more (17%) carried a specific nutrient or energy claim, of which most occurred in Category A (breakfast cereals). A total of 23

nutrient claims were made on products in Category A (breakfast cereals) with another 36 that could have been made. This means that almost three nutrient claims could be made per product in Category A (breakfast cereals).

Table 4.12: Number and percentage of specific energy and nutrient claims made and that could have been made and fortified claims made on the evaluated products

Processed food category		Specific nutrient or energy claims				Fortified, enriched claims	
		Claims made		Could claim		Claim made	
	N	n	%	n	%	n	%
A Breakfast cereals	21	23*		36*		5	24
B Savoury snacks	31	2	6	1	3	0	0
i. Savoury biscuits	12	2	17	0	0	0	0
ii. Chips, pretzels, etc.	19	0	0	1	5	0	0
C Sweet snacks	72	13	18	25	35	0	0
i. Sweet biscuits	18	0	0	2	11	0	0
ii. Chocolates	21	1	5	1	5	0	0
iii. Sweets	33	12	36	22	66	0	0
D Refrigerated meals	23	9	39	14	61	1	4
E Non-refrigerated meals	17	0	0	10	59	1	6
F Soups & sauces	62	3	5	27	44	0	0
i. Soups	24	0	0	19	79	0	0
ii. Sauces	38	3	8	8	21	0	0
G Convenience desserts & baked goods	20	3	15	2	10	0	0
i. Baked goods	12	1	8	0	0	0	0
ii. Desserts	8	2	25	2	25	0	0
Total	246	53	17**	115	45**	7	3

* More than one claim was made and could be made on products in the breakfast cereal processed food category

** Calculated by adding all claims made and claims that could have been made respectively and dividing by the total products evaluated, multiplied by a hundred to determine the percentage

The draft food labelling regulations also stipulate the specific conditions for making specific nutrient or energy claims. According to the current regulations, when one of these claims is made, it requires mandatory nutrition information that includes the identification of mass or volume per

serving, the amount of nutrients in respect to the claim made and the nutrient provision percentage of the RDA in respect to the claim. All the products making one of these claims contained the mandatory nutrition information and the amount of the nutrients in respect to the claim. The percentage of specific nutrient claims made and that could have been made on all evaluated products is indicated in Table 4.13.

Table 4.13: Number and percentage of specific energy and nutrient claims made and that could have been made on the evaluated products

	Claim made		Could claim	
	n	%	n	%
Low in energy	0	0	0	0
Source of energy	1	0.4	0	0
High in energy	6	2	8	3
Low fat	13	5	18	7
Fat free	3	1	10	4
Low in saturated fat	0	0	2	1
Saturated fat free	0	0	0	0
Trans-fatty acids free	0	0	6	2
Low cholesterol	2	1	0	0
Cholesterol free	0	0	0	0
Sugar free	3	1	0	0
Low sodium	2	1	11	5
Very low sodium	0	0	1	0
Sodium free	0	0	2	1
High in carbohydrate	0	0	25	10
Source of fibre	4	2	2	1
High in fibre	6	2	4	2
Source of protein	4	2	26	11
Source of vitamins & minerals	7	3	0	0
High in vitamins & minerals	2	1	0	0
Total	53	22	115	47

Only 53 claims were made on the evaluated products (n=246), compared with the 115 claims that could have been made. Twenty potential nutrient claims are stipulated in the labelling regulations and only 13 of these claims were made on the evaluated products. More of these claims could have been used. The claim "source of protein" could have been made the most and on an additional 11% of the products (n=26), but it was only present on four of the evaluated products. The claim "high in carbohydrates" could have been made on 10% of the products, followed by the

claim "low fat" that could have been made on a further 7% of the products. It is a concern that food labels are not providing consumers with information pertaining to the products. The claim "low fat" was made the most; it appeared on 5% of the evaluated products with, as indicated, another 7% of the products that could have made this claim. "Fat free" or "low fat" products form part of many diets and many consumers are using "reduced fat" products as part of a calorie-restricted diet to lose weight and for other health related issues (Sizer & Whitney, 2000:144). Therefore, there is a definite market for "low fat" products and consumers are looking for such claims on products when shopping.

Only four products indicated the amount of cholesterol present in the product in the nutrition information table. Cholesterol free cannot be claimed on plant foods as no plant food (e.g. oil) contains it. As indicated in Table 4.13, none of the evaluated products claimed to be cholesterol free and from the limited number of products (n=4) containing cholesterol information in the nutrition information table, none of these products could have made this claim. With elevated cholesterol levels being a risk factor for CHD, it would be in the consumer's interest to indicate its presence on a label (United States Food and Drug Administration, 2003:20).

According to the draft food labelling regulations, the trans-fatty acid contents must be included only when the nutritional information is mandatory on a label. Trans-fatty acid information was indicated on about 8% (7.7%) of the products (n=19), and of this 8%, six products according to these draft labelling regulations could have made the claim to be trans-fatty acid free as they contained 0.5g or less trans-fatty acids per 100g (South Africa. Department of Health, 2002:17) as indicated in their nutrition information tables. As from January 2006, food companies in the United States must list the trans-fatty acid content of their products in the nutrition information panel (Wan, 2003). Canada has included the indication of trans-fatty acids in their mandatory nutrition information from 2004 (Hawkes, 2004:37).

The sodium content of a product is very important for individuals following a sodium-restricted diet (Silverglade *et al.*, 1998:17), as well as for consumers suffering from hypertension or high blood pressure, as there is evidence indicating that a high salt intake could lead to high blood pressure (Anderson & Deskins, 1995:45). Nearly half (48%) of the 246 products evaluated indicated the sodium content of the product. As Table 4.13 shows, only two products were indicated to be low in sodium, compared with the additional 5% that could have made this claim. No products made a sodium-free claim; however it was found that two products could have carried this claim.

No significant difference ($p>0.05$) was found between the specific energy and nutrient claims made and the claims that could have been made, across the selected processed food categories. Not all consumers understand the nutrition information on a label and when a product is, for example, "low fat" or "fat free". Nutrient-related claims are an easy tool for consumers to distinguish between products and to choose a product that suits their dietary needs.

Nutrient content claims are approved in the United States by the FDA, with strict regulations that must be met. Definitions are provided for making a "free", "low" or "reduced/less" claim on a food product, with synonyms that could be used. Special requirements are set for making these claims on certain food categories such as main meals or dishes (United States Food and Drug Administration. Center for Food Safety & Applied Nutrition, 1999). These regulations are more descriptive than the proposed South African regulations.

4.4.3 Comparative claims

The draft food labelling regulations make provision for comparative claims to be made on products. "Comparative claims" compare the nutrient level(s) and/or energy value of two or more similar foodstuffs. Such comparative claims will include terms like "reduced", "less than", "fewer", "increased", "more than", "light", and "lite" (South Africa. Department of Health, 2002:19). Only 11 of the evaluated products (n=246) carried a comparative claim. Table 4.14 summarises the information that must be present on a label when a comparative claim is made and how these 11 products met the required information regulations.

Table 4.14 Provision of label information required by the evaluated products making a comparative claim

	Present on label		Not present on label	
	n	%	n	%
Compared with product in same category	8	72	3	27
Name of foodstuff compared with in close proximity	6	54	5	45
Relative difference of 25%	6	54	5	45
Prescribed nutritional information	9	82	2	18

The label regulations stipulate that when making a comparative claim, the product must be compared with a product in the same category. Twenty-seven percent of the products did not indicate with which product the product carrying the claim was being compared..To make a comparative claim, there must be a relevant difference of 25% in the substance being compared in the two products, and the name of the foodstuff with which the product is being compared must be indicated. Forty-five percent of the products did not indicate the relevant difference of the substance being compared nor the foodstuff it is being compared with. One product contained the comparative claim "reduced" with the rest (n=10) containing the wording "lite" and "less than".

The FDA has similar regulations for the use of comparative claims on food labels, but also requires that the amount of the nutrient, which is the subject of the claim, be identified in the reference food and the labelled food. The reference food must be a food or group of foods that is representative of the same type as the food bearing the claim. A product carrying, for example, a "light" claim should be a product recognised by the consumer as a food whose nutrient value was improved compared with the average product of its type (United States Food and Drug Administration. Center for Food Safety & Applied Nutrition, 1999).

4.4.4 Reduction of disease risk claim

The proposed draft food labelling regulations stipulate the reduction of disease risk claims that could be made by food manufacturers on their products. Appendix B indicates the proposed South African reduction of disease risk claims. It is a means of education for the consumer and a way for manufacturers to distinguish their products from the rest of the market. None of the products evaluated carried a reduction of disease risk claim.

There is a list of criteria that products must comply with before making a reduction of disease risk claim. None of the evaluated products, with the information provided on the label, could have made such a claim. It became evident that the products in Category A (breakfast cereals) have the biggest potential of carrying such a claim. With product development adaptations, the reduction of disease risk claim regarding whole grains and coronary heart disease and cancer can possibly be made in this food category. In seven countries specific reduction of disease risk claims are permitted. These seven countries are indicated in Appendix E. Specific words for the use of these claims and mandatory nutritional labelling information are required (Hawkes, 2004:22).

4.5 Nutrition information

Nutrition information is voluntary on food labels. However, as soon as a nutritional claim is made on a product it becomes mandatory. The draft regulations published in 2002 stipulate the formats for voluntary and mandatory nutrition information. Table 4.15 indicates the number and percentage of product labels that contained mandatory and voluntary nutrition information, i.e., the product carried no nutrition claim.

Table 4.15: Number and percentage of processed food products containing mandatory and voluntary nutrition information

		Nutrition information provided					
Processed food category	**Products**	**Mandatory**		**Voluntary**		**Total**	
	N	**n**	**%**	**n**	**%**	**n**	**%**
A Breakfast cereals	21	19	91	2	9	21	100
B Savoury snacks	31	4	13	25	81	29	94
i. Savoury biscuits	12	3	25	9	75	12	100
ii. Chips, pretzels, etc.	19	1	5	16	84	17	89
C Sweet snacks	72	9	13	47	65	56	77
i. Sweet biscuits	18	0	0	13	72	13	72
ii. Chocolates	21	1	5	17	81	15	71
iii. Sweets	33	8	24	17	52	25	76
D Refrigerated meals	23	5	22	18	78	23	100
E Non-refrigerated meals	17	1	6	14	82	15	88
F Soups & sauces	62	5	8	54	87	59	95
i. Soups	24	1	4	22	92	23	96
ii. Sauces	38	4	11	32	84	36	95
G Convenience desserts & baked goods	20	6	30	12	60	18	90
i. Baked goods	12	1	8	11	92	12	100
ii. Desserts	8	5	63	1	13	6	75
Total	246	49	20	172	70	221	90

Ninety percent of the evaluated products (N=246) provided nutrition information, of which 20% was mandatory, owing to a claim made on the product and, 70% voluntary with 10% providing no nutrition information, mostly occurring in Category C (sweet snacks). All the products evaluated in Category A (breakfast cereals) (N=21) and Category D (refrigerated meals) (N=23) contained nutrition information. All savoury biscuits (part of Category B) and baked goods (part of Category G) also contained nutrition information. Ninety percent of the products in Category A (breakfast cereals) (N=19) contained mandatory nutrition information, implying that it contained the most nutrition claims compared with all other evaluated food categories. Nutrition information is an important tool for consumers when evaluating and comparing food products for healthier choices. In Category C (sweet snacks) 77% of the evaluated products carried nutrition information. Although it is the lowest percentage, it is still indicated on approximately three-quarters of the evaluated products.

When a label contains voluntary nutrition information, manufacturers could, in addition, indicate the mass or volume per serving, the amount of a nutrient per serving and the percentage of the RDA the product contributes. Table 4.16 provides an indication of what number and percentage of products containing voluntary nutrition information contained the additional information as indicated above.

Table 4.16: Number and percentage of processed food products containing voluntary nutrition information and additional voluntary information

Processed food category			May contain this information					
	nutrition information		Mass or volume per serving		Amount of nutrient, energy per serving		% RDA*	
	N	%	n	%	n	%	n	%
A Breakfast cereals	2	100	2	100	2	100	2	100
B Savoury snacks	25	100						
i. Savoury biscuits	9	36	7	77	7	77	1	11
ii. Chips, pretzels, etc.	16	64	16	100	16	100	0	0
C Sweet snacks	47	100						
i. Sweet biscuits	13	28	9	69	9	69	0	0
ii. Chocolates	17	36	10	59	10	59	5	29
iii. Sweets	17	36	13	76	13	79	2	11
D Refrigerated meals	18	100	11	61	11	61	4	22
E Non-refrigerated meals	14	100	12	86	11	78	4	29
F Soups & sauces	54	100						
i. Soups	22	41	18	82	18	82	3	14
ii. Sauces	32	59	23	72	22	68	3	9
G Convenience desserts & baked goods	12	100						
i. Baked goods	11	92	9	82	9	82	3	27
ii. Desserts	1	8	1	100	1	100	0	0

* RDA – Recommended Dietary Allowance

The two products in Category A (breakfast cereals) contained all the additional voluntary information. Although the mass or volume per serving and the amount of energy or a nutrient per serving were indicated on many products (from 59% to 100% respectively), the energy and nutrient percentage RDA contribution was the area of information mostly not provided. It was indicated on the labels of up to only 29% of the products (except for Category A which includes the breakfast cereals).

The Codex Alimentarius Commission states that nutritional labelling should be voluntary, unless a claim is made. When a claim is made on a food product, the declaration of four nutrients must be

mandatory: energy, protein, available carbohydrate and fat (Hawkes, 2004:10). The guidelines for voluntary nutrition information provision on food labels have changed in the draft labelling regulations, requiring more specific nutrient information than required by the current regulations (South Africa. Department of Health, 2002:A2). Appendix D indicates the countries where nutritional labelling is mandatory and voluntary. In the United States, Canada, Australia and Brazil, for example, nutritional labelling is mandatory, whereas several countries, such as Kenya, Hong Kong and Egypt have no nutritional labelling regulations. Mandatory nutritional labelling in the United States was implemented in 1994; prior to this it was voluntary (Hawkes, 2004:12).

4.6 Other information

Food manufacturers can place many other nutritional information aspects on their food labels, for example, if a product is suitable for a vegetarian, to make food choices easier for the consumer. Consumers are also trying to avoid substances like trans-fatty acids, sodium and cholesterol for many different reasons, mainly for health. Providing this information on a food label can educate consumers and make their food choices easier.

4.6.1 Vegetarian claims

Consumers buy vegetarian products not only because they follow a vegetarian diet but also for religious or health reasons, for example, people of the Hindu religion follow vegetarian eating habits (Kinton *et al.,* 1999:42). Conditions are set out in the draft labelling regulations for making vegetarian claims on food products (South Africa. Department of Health, 2002:27). Only two of the products evaluated (N=246) carried a vegetarian claim, although 51% of the products could have made this claim. This could be a concern for consumers following a vegetarian diet as their choice of processed food products is limited and information regarding the content of the product is not easily visible, such as it would be if a vegetarian claim were present on the product.

4.6.2 Nutritional education

There is a need for more nutritional education and nutrition information on food labels, especially for those consumers concerned with their health (Anderson & Coertze, 2001:28). Only six of the products evaluated contained information that could be seen as nutritional education and all six these products were included in Category A (breakfast cereals). The nutritional education

information included on these products in this category covered aspects such as the role of certain nutrients like fibre, and vitamins and minerals in the body.

Consumers obtain most of their information about food and health from the media in the form of advertisements and articles. However, the media are often just interested in sensational news that will boost sales or viewer numbers. Such advertisements can cause panic and most of the public are not able to evaluate the facts in a rational manner. This can lead to the exclusion of certain foods from the diet, which is dangerous and can deprive adults and children of valuable sources of nourishment (Van Heerden, 2004:19). Food labels are a good way of communicating the nutritional properties of the food product to the consumer, as these are most often their first point of reference of a product. A survey conducted in South Africa indicated that 49% of the respondents read food labels when they buy a product for the first time (AC Nielsen, 2005:2).

4.6.3 Glycaemic index

Conditions are set out in the proposed draft regulations for making GI claims on a product and this information must be provided in the nutrition information (South Africa. Department of Health, 2002:19). Although this is stipulated only in the draft food labelling regulations, one product in the breakfast cereal category contained GI information on the label. The product made a low GI claim, meaning that the GI content of the product was less than 55 and it contained the mandatory nutrition information as stipulated in the draft regulations (South Africa. Department of Health, 2002:19). The lack of GI information on food labels could be a concern for consumers as a study conducted in 2005 found that 17% of South African consumers look for the GI content of a product, with 11% of global consumers looking for this information (AC Nielsen, 2005:3). Some South African beverages already display the GI value on their labels, although legislation has not yet been approved. Australia is the most advanced country in terms of knowledge of the GI of foods and conveying this information to their consumers (Venter *et al.*, 2003:120). Tesco, a large retail company in the UK, was also the first supermarket to label food products with the GI in 2004 (Nutrition Horizon, 2005).

CHAPTER 5

CONCLUSIONS

Food labelling legislation has been identified a major problem because it seems to fail in keeping up with the diversity of foodstuffs entering the food market, as well as with the technological developments in this field. It has also failed to catch up with the kind of health claims food manufacturers increasingly want to make, because of the health consciousness trend. Although most food manufacturers are labelling their products more responsibly, it is still often difficult for consumers to understand what the product is actually offering (Baker, 2000:32). This study aimed at identifying labelling errors and concerns on specific categories of South African processed food products that may impact consumer health. This is of importance to today's consumer, considering the health consciousness trend.

A number of errors were identified on the food labels of the specific categories of processed foods evaluated that include compound ingredients not being identified in the ingredient list and the use of prohibited statements. The identification of compound ingredients is required by both the current and draft food labelling regulations (South Africa, 1993:9; South Africa. Department of Health, 2002:19). Although a high indication of compound ingredients occurred, all the labels, as was expected, did not meet this regulation, which is a labelling error. Nearly a quarter of the products in Category E (non-refrigerated meals) contained a compound ingredient that was not identified in the ingredient list. It was further discovered that some compound ingredients that were not identified contain components that have an allergy risk, such as wheat. The lack of identification of these allergens could be seen as the presence of "hidden allergens" in the products. This is a major health risk for food-allergic consumers.

The use of prohibited statements listed in both the current and draft food labelling regulations was also found on the evaluated product labels. Three of the product labels carried such prohibited statements of which two carried the word "healthy" and one the word "natural", which are labelling errors. The draft regulations further state that the words "wholesome" and "nutritious" may not be used on food labels (South Africa. Department of Health, 2002:9). Six of the evaluated products contained the word "wholesome" and four the word "nutritious". Most of these prohibited statements occurred on products in Category A (breakfast cereals). This is a concern as the use of these words may mislead consumers into thinking that such products

are superior to other products in the promotion of health. These prohibited statements, i.e., "wholesome" and "nutritious", are linked to health promotion.

According to the current and draft food labelling regulations, nutritional information on food labels is voluntary, but becomes mandatory when a claim is made for it. The current regulations stipulate that in the provision of voluntary nutritional information, the amount of nutrients present in the product must be declared; however, it does not indicate which specific nutrients. The draft regulations indicate the specific format and all the nutrients that must be indicated in the voluntary nutritional information. Almost all the evaluated products provided nutritional information; about three-quarters of the evaluated products carried the information on a voluntary basis. However, not all the products provided all the additional voluntary information that could have been provided, such as the energy and nutrient percentage RDA contribution. According to the draft regulations, when voluntary nutritional information is provided, the sodium content must be indicated. About half of the products evaluated did not indicate the sodium content. This could be an indication that many food manufacturers are using the nutritional information format provided in the current labelling regulations. The current regulations do not specify the nutrients to be declared in the nutritional table. This is a concern as consumers can be provided with more information that can assist them in their buying decisions, especially those consumers who may be concerned about their health and specifically their sodium intake.

The current food labelling regulations only require ingredients derived from milk and egg to be indicated in the ingredient list (South Africa, 1993:11). Although ingredients derived from egg were mostly indicated, a number of the products did not identify ingredients derived from milk in the product ingredient list. This is a labelling error. The draft regulations extended this list of allergens that needs to be indicated in the ingredient list (South Africa. Department of Health,, 2002:14). A number of the evaluated labels contained ingredients in the ingredient list that did indicate if they were derived from an allergen, as required by the draft regulations. The major concern here was wheat. A further major concern identified in most of the processed food categories was the high percentage of products containing an ingredient of unknown origin, which in most of the cases could have been derived from gluten/wheat or soya, which are allergens and need to be identified in the ingredient list. This could be a major obstacle for food-allergic consumers or other consumers wanting to avoid a specific ingredient. Specific allergen-free claims could also have been made on a third to half of the products, but only one

product carried an allergen-free claim. The lack of "allergen-free" claims would be a concern for consumers suffering from food allergies.

The draft food labelling regulations describe the conditions for making an allergen advisory statement on food labels (South Africa. Department of Health, 2002:26-27). A third of the evaluated products contained an allergen advisory statement with most of these products containing an advisory statement for the presence of nuts, either as tree-nuts, peanuts or nuts. Products evaluated in category C (sweet snacks) contained the highest percentage of allergen advisory statements. Allergen advisory statements limit the product choices for food allergic consumers. The new proposed draft regulations have stricter conditions for making allergen advisory statements, which will benefit allergic consumers by broadening their food product choices and reducing their avoidance of some products, which could be unnecessary.

The new proposed draft food labelling regulations also recommend the indication of the origin of the fats and oils used in food products. Slightly more than half of the evaluated products did not identify the origin of the fat and/or oil used in the products, with some sub-categories being a major concern with nearly all the products in these sub-categories containing a fat or oil not identified. Category B (savoury snacks) contained the highest percentage of products not identifying the fat and/or oil used. Indicating the origin of the fats and oils used in food products may be particularly helpful to those consumers suffering from cardiovascular disease.

High fat intakes have been associated with many serious and life-threatening diseases, such as obesity, cardiovascular disease and some types of cancer. Many consumers are avoiding high-fat products for health reasons, to improve their health or as a disease preventative measure (Sizer & Whitney, 2000:144). There is a definite gap in the market for "healthier" products, such as "low fat", along with "low sodium" and "high fibre" products, which are liable to carry the relevant nutrient claims. About twice the number of products found to make these claims could have made nutrient claims, but did not. For the consumer to be informed about the beneficial nutritional aspects of such products, they must carry the related nutrient claims when applicable. Hardly any of the products evaluated claimed to be "low fat" or "fat free", although it is a labelling aspect checked by 46% of South Africans (AC Nielsen, 2005:4). With elevated cholesterol levels being a risk factor for CHD, it would be in the consumer's interest to indicate its presence on a label (United States Food and Drug Administration,, 2003:20). The indication of cholesterol is not mandatory on food labels. Only a limited number of

evaluated products indicated its levels in the nutritional information table. Trans-fat, like saturated fat and dietary cholesterol, raises LDL-cholesterol that increases the risk of CHD (United States Food and Drug Administration, 2003:20). The current food labelling regulations have no stipulation on trans-fatty acids, whereas the draft labelling regulations stipulate that the trans-fatty acid information becomes mandatory once a nutrition or health claim is made. However, a small number of product labels indicated the trans-fatty acid content in the nutritional information table, despite not being required by the current regulations. More countries are choosing the option to label trans-fatty acids (Hawkes, 2004:37).

The use of comparative claims is described in the draft food labelling regulations (South Africa. Department of Health, 2002:19). This claim can be used to differentiate two similar products on, for example, the energy content, providing the consumer with healthier options to choose from. A small number of evaluated products made comparative claims. However, many of these labels did not contain all the aspects of the mandatory information that must accompany such a claim on the label as stipulated in the regulations. The major problems were the placement of the name of the foodstuff the product was being compared with (in close proximity) and the indication of the relative difference (of 25%). These claims could, as a result, have been misleading to consumers. It can leave the consumer confused about the differences between the products and the real meaning of words such as "lite" and "less than". It could even leave the consumer with the question whether there is any difference between the product and other products?

Consumers buy vegetarian products not only because they follow a vegetarian diet but also for religious or health reasons, for example, persons of the Hindu religion that follow vegetarian eating habits (Kinton *et al.,* 1999:42). Conditions are set out in the draft food labelling regulations for making vegetarian claims on food products (South Africa. Department of Health, 2002:27). About half of the products evaluated could have carried a vegetarian claim. This could be an indication of a major opportunity for use in the market as meatless eating is a growing trend (Sloan, 1999:48).

A new addition to the draft food labelling regulations is the conditions stipulated for food products to make a reduction of disease risk claim (South Africa. Department of Health, 2002:20). None of the evaluated products made a reduction of disease risk health claim. This is probably the area of food labelling where there is the greatest need for

development and expansion in support of the consumer. It is important for food manufacturers to consider the health platform as a growing section in the market (Badham, 2003:50). The breakfast cereal category was found to be the category that made the most energy and specific nutrient claims on their product labels and also provided the most nutritional information as educational information to consumers. Breakfast cereals could, as a result, be the processed food category to take on this initiative in food labelling. This initiative can be considered as an area in food labelling that will greatly impact consumer health, but is currently not being utilised. Conditions are further set out in the proposed draft food labelling regulations for making a GI claim on a product (South Africa. Department of Health, 2002:19). Although this is stipulated only in the proposed draft regulations, one product, also in the breakfast cereal category, indicated the GI information on the label. The GI value of a product will be useful information for many consumers, from those who are diabetics to the very active.

Food manufacturers don't want information overload on their food labels, but they should provide the consumer with as much information about the product as possible. For example, more food products could carry a variety of additive-free claims to differentiate the product and to provide such information in a more user-friendly format to consumers. Such additive-free claims are important to South Africans as it was found that 44% check for preservative information on labels, 38% for colourant information and 43% for additive information in general (Nutrition Horizon, 2005:4). The indication of certain additive-free statements, such as tartrazine-free and MSG-free, may be beneficial to consumer health as many sensitive consumers are avoiding these additives due to adverse food reactions or food intolerance (Stevenson *et al.*, 1986:183; United States Food and Drug Administration, 1996:1). The food label is often the consumers' only source of information about the product they want to buy.

Although categories E (non-refrigerated meals), B (savoury snacks) and A (breakfast cereals) contained the higher percentage labelling errors respectively for not identifying compound ingredients, not identifying ingredients derived from milk, and the use of prohibited statements, categories F (soups and sauces) and D (refrigerated meals) contained similar higher percentage labelling errors both for not identifying compound ingredients and not identifying milk-derived ingredients. Category B (savoury snacks) contained the most labelling concerns which include the highest percentage of products not identifying the origin of the fats/oils used, listing of ingredients of unknown origin and the use of prohibited statements. Category A (breakfast cereals) is the category that provided the most information on the product labels. In

summary, it can be concluded that in general, more concerns were identified on the evaluated food labels than food labelling errors. This could be due to the current food labelling regulations having been in place for a couple of years; most food manufacturers are awaiting the final release of the new labelling regulations before changing their product labels.

CHAPTER 6

RECOMMENDATIONS

If one considers the amount of information provided on food labels compared with the amount that could have been provided, as was determined in this study, it is evident that basic training or education on food labelling regulations is needed by the South African processed food industry as well as for the Department of Health to finalise the new proposed draft food labelling regulations. A list of practical guidelines, and/or a practical educational training programme focusing on food labelling, can assist food manufacturers with their labelling issues as well as lowering the errors made and the concerns identified on the food labels evaluated. This study could serve as the basis for drafting such guidelines focusing on the food labelling areas that require attention, such as the claims that could have been made and the provision of information on those ingredients of unknown origin that may cause adverse food reactions.

Food manufacturers should be aware of the importance and advantages of proper food labelling (AC Nielsen, 2005:5). Manufacturers should realise that proper labelling, not only reduces compliance costs and minimises risk of product recall, but also enhances confidence in their products. Therefore it can be desirable for companies to adopt a standard higher than the mandatory requirements, for the sake of maintaining a good corporate image (Chan, 2003:9). Manufacturers should make their labelling as relevant and clear to their consumers as they can, given consumers are making purchase choices based on the information on the label. If they can't find the information they are interested in easily on the label, they may not buy the product (AC Nielsen, 2005:5). It is also evident that stricter regulations should be put in place to prevent food companies making superfluous and sometimes unimportant claims on their products.

Manufacturers don't want to have information overload on their labels, but they must be aware of the latest trends and product demands of consumers. Some consumers are trying, for many different reasons, to avoid food products containing any additives, whereas other consumers are only avoiding certain additives, such as MSG (Silverglade *et al.*, 1998:10), for specific reasons such as a food intolerance (United States Food and Drug Administration, 1996:1). Additive-free claims can serve as a point of differentiation, and assist consumers in making product choices, especially for consumers who have to avoid additives for health reasons. The regulations stipulate that no claim may be made on a food product that it is free from a substance if all other products in that category are free of that particular substance (South Africa, 1993:7), for example jelly sweets claiming to be fat free. However, consumers may not be aware that certain foodstuffs are naturally free of certain substances and that certain ingredients, such as preservatives, are not normally used in a certain food category. It can be beneficial

to the food manufacturer to communicate such information to their consumers, but then without making a claim on the food label. Again, educating the food manufacturer and the consumer in this area of food labelling may be necessary.

Even though the provision of nutrition information is voluntary in South Africa, it is beneficial to both the consumer and manufacturer to add it to the product label. Nutrition information assists consumers in making healthier food choices and differentiating between products. The processed food category, sweet snacks, had the highest percentage of products without nutrition information. Nutrition information on such products would be beneficial as it would assist consumers in making more informed choices as this food type will always be consumed and form a large section in supermarkets. It is also beneficial for food manufacturers to know the nutrition content of their products. This is important if they, for example, want to provide a healthier product, as it can guide them in the product re-formulation and as to what nutrition information they can promote or use as a point of product differentiation.

More attention should be given to identifying allergens present in food products. The current food labelling regulations only require ingredients derived from milk or egg to be indicated in the ingredient list (South Africa, 1993:11). The draft regulations extended this list of allergens that needs to be indicated in the ingredient list (South Africa. Department of Health, 2002:14). However, companies are not yet forced by law to apply this. The number of products found containing ingredients from unknown origin was alarming. Even if the law does not require it, a company can provide the additional information to clarify such ingredients of unknown origin. It may often only require an additional word such as "wheat" or "soya"; but, these additional words may be extremely helpful to food-allergic consumers. Easy identification of allergens can protect allergic individuals as well as ease their shopping. Simple terms should be used to identify major food allergens in an ingredient list. There is no good reason why not all foods containing, for example, milk protein, should not have the word "milk" on their labels; the consumer should not have to search for (and know the meaning of) words such as casein, whey, or lactoglobulin. If an allergen is contained in a spice or natural flavouring, this should also be clearly stated (Wood, 2002:921).

Allergen-free products are aimed at a niche market. However, this is a tremendous gap in the market that needs to be filled. By making an allergen-free claim on a product, it gives the allergic consumer a greater variety of products to choose from. There are also consumers who avoid certain food substances for health, religious and other reasons. Avoiding a particular substance can also be part of a trend or fad diet. With food allergies being an increasing problem world-wide, role players such as the food industry

should start to make changes and commitments to improve the health of allergic individuals. One way to start doing this is to increase allergen awareness among food manufacturers. This can start at the tertiary educational level and form part of the curriculum for students studying food-related courses, such as Food Technology, Hotel and Catering Management, Consumer Science: Food and Nutrition, and in the training of chefs. Even health inspectors could receive basic training as they are responsible for the inspection of products on behalf of the Department of Health in South Africa.

Manufacturers must be aware of what the consumer trends are. Health issues are receiving considerable media attention and are driving the strong health-consciousness trend. Focusing on this trend and health issues, and developing food products relating to these, will not only be beneficial to the consumer but also to the food company, as it will be seen as caring for consumer needs. Government, academia, and the food industry can play a significant role in the identification of healthy foods and food ingredients important for health. Government health agencies and the food industry must increase public health awareness and this can be done through educational programmes and regulating food product labelling. A consensus is needed among academia, government, and industry for appropriate food labelling and claims. These actions are needed to help individuals make healthy food selections (Greene *et al.*, 2001:S276).

No food product in the selected processed food categories made a reduction of disease risk health claim. This is probably the area of food labelling where there is the greatest need for application and improvement. More and more consumers are seeing food as a type of medicine and such claims will assist consumers in making healthier product choices. This again highlights product differentiation and making food product choices easier and more convenient for consumers, especially those who have health problems that can be negatively affected or aggravated by the food that they eat.

Many existing food labelling regulations with regard to health claims suggest that independent experts should conduct the scientific review needed to substantiate health claims. The evidence-based review must be unbiased, comprehensive and use scientific principles (Richardson *et al.*, 2003:111). Many companies don't have the resources to conduct the research to obtain the relevant information needed to substantiate a specific claim. Therefore the food industry should make use of labelling consultants, other external consultants or employ a person for labelling advice and food, nutrition and health guidance. These consultants or employees can do all the research needed for the food label compilation and some can also assist with new, substantiated promotional information that can be used on labels. They can also act as the "middle man" between the Department of Health and the food company. This can lower

the work and stress load of, for example, the Research and Development Department or Marketing Department employees as they can be assured that their food labels will be accurate from inception. It will minimise product recalls or expensive label changes, due to incorrect information on labels. It will also protect consumers, by providing them with correct and not misleading information.

The selection of products with alleged health benefits will continue to grow and consumers are unlikely to understand the subtle regulatory differences between health claims, nutrient function claims, and reduction of disease risk claims and may often interpret anything stated on the label to be true (Turner *et al.*, 2005:23). Food labels can be seen as the ideal way to inform and educate consumers on different aspects, especially regarding food, nutrition and health. Consumer education is crucial, not only on health and nutrition, but also on food choices and reading of food labels. The breakfast cereal category is the only processed food category evaluated that contained nutritional education information and also made the most energy and specific nutrient claims. There is thus a huge scope for growth in this area of food labelling.

By adding more promotional information on their food labels, companies will not only educate consumers and assist them in making informed choices, they will also differentiate their products from those of the competition. However, the promotional information must be truthful and not misleading, and should be useful to consumers. Companies should identify consumer needs and market trends. Promotional information can therefore include anything from health and nutritional claims to claiming, for example, that a product is "preservative free".

Studies have, however, found that many consumers do not use the nutritional claims or ingredient lists provided on labels as a source of information when choosing food products (Anderson & Coertze, 2001:35). Consumers should, as a result, be motivated to use the nutrition information on food labels because this will enable them to make healthier food choices. They should at the very least evaluate the nutrition information of new foods before they add them to their diet. To increase food label use by consumers, consumer understanding of terminology used on food labels could be raised; the format used for nutrition information should also be addressed (Anderson & Coertze, 2001:34). The terminology issue can be overcome by, for example, providing the word "milk" on food labels to increase the consumer's understanding of terms such as casein, whey, or lactoglobulin (Wood, 2002:921).

The media can have an impact on consumers when it comes to nutritional information (Anderson & Coertze, 2001:28) and be a vehicle to convey the information to consumers. This action is supported by the increasing number of consumers who are turning to the media for information on health and nutrition. There are different types of media reporting, ranging from news articles on single studies to feature pieces in magazines. When nutrition-related reporting was compared in five newspapers, it was determined that a limited number of scientific journals are routinely quoted in newspapers (Hackman & Moe, 1999:1564). Therefore, individuals who rely on newspapers for their nutrition knowledge are exposed to limited nutrition-related research. Media coverage on food labelling can increase consumer awareness and knowledge of food labelling and nutrition. The link between food, nutrition and health can be further highlighted. More and better coverage of food- and nutrition- related topics in the media are needed to increase the knowledge of consumers. Media coverage must, however, be truthful and not misleading.

In the United States the FDA has some control over product marketing, in the form of either premarket ingredient approval or notification or postmarket surveillance and control. The "pre-" means that the burden falls on the manufacturer and not actually on the FDA (Turner *et al.*, 2005:23). The manufacturers must gain approval, with substantiation for certain ingredients and claims from the FDA, before a product can be marketed. The South African Department of Health could also follow this route and put regulations in place for premarket approval. This will allow companies to distinguish themselves from other players in the market as claims allowed on products will be trustworthy.

Every country and food organisation has its own set of ideas about food labelling. Some general recommendations for labelling include:

- Full nutritional labelling made mandatory for all pre-packed food.
- Labels should be scrutinised by a designated panel before products are made available to consumers. If manufacturers cannot substantiate any claim, independent scientific research must be done.
- Penalties should be imposed if the law is infringed (Baker, 2000:33).

It is not only the role of the food manufacturer to ensure that labelling is done correctly; food retailers have to play their part as well. They are equally responsible for making sure incorrectly labelled products don't get shelf space (Warby, 2003:163). If retailers are stricter with suppliers and refuse to purchase products that are incorrectly labelled or misleading, it will serve as a wake-up call for manufacturers to pay more attention to their labelling. Retailers should therefore have trained individuals who can review all new and existing food labels to ensure that they supply good quality, trustworthy products to their

clients. An overload of information on food labels can also be confusing to consumers; however they need as much information regarding a product as possible to make informed food choices. Therefore a way must be found to provide all necessary product information to consumers through labelling, information sheets, customer help lines and even in-store information leaflets for easy access.

Consumer organisations should also educate consumers in making better food choices and assisting them in exercising their market power by choosing products with comprehensive and accurate product information. It is essential to raise public awareness on how consumers can make better choices with adequate labelling and how to interpret labels (Chan, 2003:9). Public health initiatives should change consumer attitudes with programmes that are simple, affordable, effective, and accessible (Greene *et al.*, 2001:S276).

Food labelling errors need to be eliminated before companies start making further claims on their products. The food industry, together with consumers, should drive the implementation of the new proposed draft food labelling regulations. These regulations are much stricter than the current regulations and will enforce stricter criteria that must be followed by food manufacturers, forcing both big and small manufacturers to comply. This will provide the consumer with additional but necessary information on food labels. *Currently the information provided in the new proposed draft food labelling regulations has* limited application as food companies might see it as being too costly to change their labels before the draft goes through for publication. More pressure must be placed on the Department of Health to finalise these regulations as this will eliminate many food labelling errors and concerns related to consumer health that were identified in this study.

A limitation of this study was the limited number or dearth of other studies determining the errors made on food labels. More studies of this nature should be conducted to determine the errors made on food labels and the labelling improvements that could be made by food manufacturers. Such studies could also highlight possible loopholes in the food labelling regulations. Other aspects that could be evaluated in future studies are the physical layout of the food label and adherence to the regulations on, for example, letter sizing, and general information provided on food labels such as country of origin. A similar study could be done once the new proposed draft food labelling regulations have been published and have reached their implementation date. Other food categories not covered in this study could also be included in future evaluations.

The labelling checklist could be adapted to include only the errors made on food labels or to identify improvements that could be made by food manufacturers. The checklist covered many areas of labelling information, and by focusing on, for example, only claims made or not made on food labels, this could have shortened the checklist but still provided useful and lacking food labelling information. Once the food categories and different foods in each category to be evaluated have been identified, the product label evaluation should start immediately. Food products selected for evaluation could, in some instances, not be found in the supermarket owing to low stock levels or the products being discontinued. This prolonged the study, with new food products having to be randomly selected or the researcher having to return to the supermarket when stock levels were replenished.

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Appendix A:

South African food labelling draft conditions for nutrient content claims

South African conditions for nutrient content claims (obtained from South Africa. Department of Health, 2002:17)

Component	Claim	Conditions
Energy	Low	Not more than
		170 kJ per 100g (solids)
		80 kJ per 100ml (liquids)
Fat	Low	3g per 100g (solidds)
		1,5g per 100ml (loquids)
	Virtually free or free	0,5g per 100g/ml
Saturated fat	Low	1,00g per 100g (solids)
		0,75g per 100ml (liquids)
		and 0,5g trans fatty acids per
		100g and 10% of combined
		energy value for saturated fat and trans fatty acids.
	Virtually free or free	0,1g per 100g (solids)
		0,1g per 100ml (liquids)
Trans fatty acids	Virtually free or free	0,5g pe 100g (solids)
		0,5g per 100ml (liquids)
Cholestrol	Low	20mg per 100g (solids)
		10mg per 100ml (liquids)
	Virtually free or free	5mg per 100g (solids)
		5mg per 100ml (liquids)
		and both claims less than:
		2,0g saturated fat and trans fatty acids
		combined per 100g (solids) or
		0,75g saturated fat per 100ml (liquids)
		and 10% of energy of saturated fat.
Sugars	Virtually free or free	0,5g per 100g/ml
Sodium	Low	120mg Na per 100g (305 NaCl)
	Very low	40mg per 100g
	Virtually free or free	5mg per 100g
Energy	Source	80kJ per 100ml
	High	250kJ per 100ml
Carbohydrates	High	13g per 100g or
		6,5g per 100ml and
		6,5g per 418kJ
Fibre	Source	2,5g per 100g and
		1,5g per 418kJ
	High	5g per 100g and
		3g per 418kJ

Component	Claim	Conditions
Protein	Source	5g per 100g (solids)
		2,5g per 100ml (liquids) and
		2,5g per 418kJ
	High	10g per 100g (solids)
		5g per 100ml (liquids) and
		5g per 418kJ
Vitamins and Minerals	Source	15% of RDA (solids) per serving
		7,5% of RDA (liquid) per serving and
		5% of RDA per 418kJ
	High	Twice the value of source

Appendix B:

South African food labelling draft reduction of disease risk claims and conditions

South African reduction of disease risk claims

(obtained from South Africa. Department of Health, 2002:21)

I	II
FOOD WORDING OF CLAIM CHARACTERISTICS	**PERMITTED**
Calcium and osteoporosis	
"High" in calcium; Supplements should disinte= grate and dissolve easily; Phosphorus content may not exceed calcium content	Regular exercise and a healthy diet with enough calcium may help susceptible individuals maintain good bone health and may reduce their risk of osteoporosis later in life
Sodium and hypertension	
Low sodium	Diets low in sodium may reduce the risk of high blood pressure, a disease associated with many risk factors, in some individuals
Dietary saturated fat and cholesterol and the risk of coronary heart disease	
Low saturated fat; Low cholesterol and low total fat	While many factors affect heart disease, diets low in total fat, saturated fat and cholesterol *may reduce the risk of* heart disease
Fibre containing grain products, fruit and vegetables and cancer	
Grain products, fruits or vegetables that are a source of dietary fibre (without enrichment) trans fatty; acid free and with a total fat profile in line with the South African prudent dietary goals	Low fat diets, rich in fibre-containing grain products, fruits and vegetables may reduce the risk of some types of cancer, a disease associated with many factors

I	II

FOOD WORDING OF CLAIM CHARACTERISTICS	PERMITTED
Fruits, vegetables and grain products that contain fibre, particularly soluble fibre, and the risk of coronary heart disease	
Fruit, vegetable or grain products that are a source of soluble dietary fibre; low saturated fat; low cholesterol, trans fatty acid free and with a total fat profile in line with the South African prudent dietary goals	Diets low in saturated fat and cholesterol and rich in fruit, vegetables and grain products that contain dietary fibre may reduce the risk of heart disease
Fruits and vegetables and cancer	
Fruit or vegetables; low total fat; high in least one of the following: Vitamins A or C or dietary fibre (without enrichment)	Low fat diets rich in fruits and vegetables (food that are low in fat and which contain dietary fibre, vitamins A and C) may reduce the risk of some types of cancer, a disease associated with many risk factors
Folate and neural tube defects	
High in folic acid	Women who consume adequate amounts of folate or folic acid, a B vitamin, daily throughout their childbearing years may reduce their risk of having a child with a birth defect of the brain and spinal cord. Such birth defects, while not widespread are very serious. They can have many causes. Adequate amounts of folate can be obtained from diets rich in fruits, dark green leafy vegetables, legumes, fortified grain products, fortified cereals or a nutritional supplement. Total folate consumption should be limited to 1 000 mcg per day from all sources

I	II
FOOD WORDING OF CLAIM CHARACTERISTICS	**PERMITTED**
Plant sterols and plant stanol esters and coronary heart disease	
Foodstuffs that contain at least 0,65 g plant sterols or 1,7 g plant stanol esters per serving and are low in saturated fat and cholesterol	Diets low in saturated fat and cholesterol that include two servings of food that provide a daily total of at least 1.3 g plant sterols or 3.4 g of plant stanol esters in two meals may reduce the risk of heart disease by lowering cholesterol
Oats and coronary heart disease	
At least 60 g whole oats (rolled oats oatmeal) or 40 g oat bran, enrichment, that provides 3 g or more β-glucan fibre per serving. The amount of β-glucan fibre per recommended serving shall be indicated in the table with nutritional information	3 g β-glucan fibre from 60 or g whole oats daily, or 40 g without oat fibre, as part of a diet low in saturated fat and cholesterol, may reduce the risk of coronary heart disease.
Sugar alcohols and dental caries	
The sugar alcohol should be the main sweetener in the foodstuff and should be a permitted sugar alcohol in terms of the Sweetener Regulations promulgated under Act No. 54 of 1972	Frequent eating of foods high in sugars and sticky starches as between-meal snacks can promote tooth decay. The sugar alcohol(s), (name sugar alcohol) used as a sweetener in name the product) does not promote tooth decay/dental caries.
Psyllium fibre and coronary heart disease	
1,7 g soluble fibre from the psyllium husk per suggested serving, low saturated fat, low Cholesterol and low total fat	Soluble fibre derived from foods such as psyllium, part of a diet low in saturated fat, cholesterol, and total fat, may reduce the risk of heart disease

I	II
FOOD WORDING OF CLAIM CHARACTERISTICS	**PERMITTED**
Whole grains and coronary heart disease and cancer	
Foodstuffs that contain at least 51% whole grains by weight as the main ingredient, that provide a minimum of 16 g of whole grains per serving, 2,8 g fibre per 50 g serving and are low in total fat, saturated fat and cholesterol	Diets rich in whole-grain foods and other plant foods and low in fat and cholesterol may reduce the risk of heart disease and certain cancers.
Soy protein and heart disease	
Foodstuffs that contain at least 6,25 g of soy protein per serving and are low in saturated fat and cholesterol	Diets which contain at least 25 g soy protein (4 servings) daily and which are low in saturated fat and cholesterol, may reduce the risk of heart disease by lowering cholesterol levels.

Appendix C:

South African food labelling draft conditions for probiotic claims

South African conditions for probiotic claims

(obtained from South Africa. Department of Health, 2002:23-24)

I PERMISSIBLE INFORMATION TO ACCOMPANY CLAIM	II CONDITIONS	III FOODSTUFFS
For foods for persons older than 1 year		
By improving the microbial balance in the intestines, probiotics improve the functioning of the digestive tract, and consequently improve general health. They inhibit the growth of harmful (pathogenic) microorganisms, and may, when ingested on a regular basis as part of a prudent, balanced diet, assist in the digestion of lactose. These bacteria also stimulate the functions of the human immune system.	The viable count of probiotic bacteria should exceed $1x10^8$ colony forming units per single portion foodstuff**. Only live, selected strains with premarket approval for its confirmed probiotic properties shall be permitted. These bacteria originate mainly from the genera: • Lactobacillus; • Bifidobacterium; • Lactococcus; and selected species from the genus Streptococcus, e.g. Str. salivarius subspecies thermophilus.	Foods not preserved with primaricin
For foods and formula for infants younger than 1 year		
Do.	The probiotic bacterial count should exceed 10^8 colony forming units per single portion foodstuff** at the end of the shelf life period. Permitted organism is live Bifidobacterium.	Infant formula and infant foods
** As determined by the method described in Annexure 11 at the end of the product's shelf life.		
Prebiotics are non-digestible food components which have a beneficial effect on the host health by selectively stimulating the growth and metabolic activities of one or a limited number of beneficial intestinal bacteria and thus improving the host's intestinal balance.	At least 3g prebiotic per daily serving. The amount and source of prebiotics shall be declared on the label	Fructo-oligosaccharides mainly from chicory, onion, garlic, asparagus, Jerusalem artichoke and soya beans as well as galacto-oligosaccharides from whey and galactosylsucrose

Appendix D:

Nutritional labelling regulations in 74 countries and areas, by category

Nutritional labelling regulations in 74 countries and areas, by category (obtained from Hawkes, 1994:12)

Mandatory (date implemented)	Voluntary, unless a nutrition claim is made (a)	Voluntary, except certain foods with special dietary uses (b)	No regulations
Argentina (will have as of 08/2006, currently voluntary)	Austria (EC)	Bahrain	Bahamas
Australia (12/2002)	Belgium (EC)	China (d)	Bangladesh
Brazil (9/2001)	Brunei Darussalam	Costa Rica	Barbados
Canada (1/2003)	Chile	Croatia	Belize
Israel (1993)	Denmark (EC)	India	Bermuda
Malaysia (on a wide range of foods) (9/2003)	Ecuador (Codex)	Kuwait (GCC)	Bosnia and Herzegovina
New Zealand (12/2002)	Finland (EC)	Republic of Korea (e)	Botswana
Paraguay (will have as of 08/2006, currently voluntary)	France (EC)	Mauritius (Codex)	Dominican Republic
United States (1994)	Germany (EC)	Morocco	Egypt
Uruguay (will have as of 08/2006, currently voluntary)	Greece (EC)	Nigeria	El Salvador
	Hungary (2001, only for energy)	Oman (GCC)	Guatemala
	Indonesia (C)	Peru	Honduras
	Italy (EC)	Philippines	Hong Kong, SAR (g)
	Japan	Poland (f)	Jordan
	Lithuania (EC)	Qatar (GCC)	Kenya
	Luxembourg (EC)	Saudi Arabia (GCC)	Nepal
	Mexico	United Arab Emirates (GCC)	Netherlands Antilles
	Netherlands (EC)	Venezuela	Pakistan
	Portugal (EC)		Turkmenistan
	Singapore		

Mandatory (date implemented)	Voluntary, unless a nutrition claim is made (a)	Voluntary, except certain foods with special dietary uses (b)	No regulations
	South Africa		
	Spain (EC)		
	Sweden (EC)		
	Switzerland		
	Thailand (d)		
	United Kingdom (EC)		
	Viet Nam		

EC = regulations based on the European Commission regulation on nutrition labelling (Council Directive 90/496/EEC)
GCC = regulations based on the Gulf Cooperation Council Standard (GS) 9/1995 on nutrition labelling
Codex = regulations developed taking guidance from the Codex Guidelines on Nutrition Labelling
(a) Countries that require labelling when a nutrition claim is made often also require nutrition labelling on foods with special dietary uses
(b) Specific foods vary, but may include diabetic food, low-sodium food, gluten-free food, infant formula, milk products and/or fortified foods
(c) and on foods with health claims
(d) and on food targeted at special groups, such as the elderly and children
(e) also on bread, noodles and retort foods or of any nutrient emphasized on the label (retort: foods such as dried packaged sauce mixes, to be mixed with water and then eaten)
(f) including all dairy foods, and all dairy foods must be labelled with fat content
(g) currently developing regulations mandating nutrition labels on all prepackaged foods, which will be preceded by voluntary requirements (see text).

Appendix E:

Health claims regulations in 74 countries and areas, by category

Health claims regulations in 74 countries and areas, by category (obtained from Hawkes, 1994:23)

Claims making reference to disease are specifically prohibited	Specified disease risk-reduction claims are permitted	Nutrient function and/or other function claims are permitted	Specific framework to permit product specific health claims	No regulations specific to health claims
Australia (a) Austria (b) Belgium (c, h, q) Brunei Darussalam Costa Rica (c,p) Denmark Ecuador (c) Finland (d) France (h) Germany (e) Greece Honduras (c) Israel (a) Italy Japan (f) Luxembourg Lithuania Malaysia Morocco Netherlands (c,h,q) New Zealand (a) Nigeria (c,p) Portugal Republic of Korea Singapore (c) Spain (h) Switzerland Thailand United Kingdom (h, n) Viet Nam (e,k)	Brazil Canada (g) China Indonesia Philippines Sweden (h) United States	Brazil Canada (g) China Belgium(h) Denmark Finland France (h) Germany Greece India (i) Italy Japan (f) Malaysia Poland (j) Netherlands (h) Republic of Korea Spain (h) Singapore Sweden (h) Thailand United Kingdom (h,n) United States Viet Nam (k)	Japan(f) Netherlands (h) Sweden (h)	Argentina Bahamas Bahrain Bangladesh Barbados (a) Belize Bermuda Bosnia and Herzegovina Botswana Dominican Republic Chile Croatia (l) Egypt El Salvador Guatemala Hong Kong,SAR (o) Hungary Jordan Kenya Kuwait Mauritius (m) Mexico Nepal Netherlands Antilles Oman Pakistan Paraguay Peru Qatar Saudi Arabia **South Africa (a)** Turkmenistan United Arab Emirates Uruguay Venezuela

(a) regulations on health claims currently under development
(b) unless preapproved by the government
(c) only health claims referring to the preventative and/or curative and/or therapeutic nature of foods are prohibited
(d) three permissible function claims allow reference to
(i) all foods with false claims are prohibited, but implied nutritional and health claims are allowed
(j) must be preapproved
(k) all implied claims must be truthful
(l) health claims are not regulated but are not desired
(m) all false claims on foods are prohibited
(n) the self-regulatory organization has approved claims that refer to disease risk-factor reduction
(e) except for dietetic foods
(f) function claims are allowed to mention an improved effect on a preliminary stage of a disease
(g) a policy is currently being developed on product-specific health claims
(h) some form of self-regulatory system for health claims is in place disease, but these are not permitted to be used on food products
(o) regulations on nutrient function claims are currently under development
(p) foods with health claims referring to diseases are regulated as medicines
(q) the self-regulatory codes would allow reference to disease risk reduction but no claims have been approved

Appendix F:

Food label checklist

APPENDIX F

LABEL CHECKLIST

Product Name: _____ ☐☐☐ *Food Category:* _____ ☐

Current legislation: 1993								
	INFORMATION	PRESENT		IF Present		Could claim	Comment
No		Yes	NO	Acceptable	Not Acceptable		
1	**Prohibited Statements**						
1.1	Impression food complies with directions from registered HPCSA member						
1.2a	Statement: health						
1.2b	Statement: healthy						
1.3a	Word: heal						
1.3b	Word: cure						
1.3c	Word: restorative						
2	**Misleading descriptions**						
2.1	Use of word: Natural (if product is processed)						
2.2	Other wording that could be misleading.						
3	**Ingredient list**						
3.1	Identify compound ingredients						
3.2	*Identification of a preservative*						
3.3	Contains tartrazine						
3.4	Contains MSG						
4	**Allergen information**						
4.1	Identify ingredients derived from milk						
4.2	Identify ingredients derived from egg						
5	**Nutritive value claims**						
5.1	Fortified, enriched or nutritious, provides balanced nutrition, nutritionally complete or *that it will increase mass*						
	Claim						
	a) Nutrition information						
	b) Mass or volume per serving						
	c) Kilojoule of energy content of serving & per 100g/ml						

	d) CHO, proteins, fibre, fats in g and sodium in mg per serving and 100g/ml and % of RDA proteins represent per serving						
	e) Amounts & % of RDA for nutrients (Vit A, D, E, C, B1, B2, niacin, B6, Folic acid, B12, Biotin, (Pantothenic acid, Ca, Phosphorus, Iron, Md, Zinc, Iodine)						
5.2	**Specific nutrient and/or energy claim**						
5 2.1	Claim:						
	a) Nutrition information						
	b) Mass or volume per serving						
	c) Amount of nutrient in respect to claim made or energy in KJ per serving						
	d) % RDA in respect to claim, not less than 15%						
6	**Nutritional format (Voluntary): No claim**						
6 1	Table format - heading nutritional information						
6 2	Amount of nutritent or energy per 100g/ml						
6.3	May contain: Indication of mass or volume per serving						
6 4	May contain: Amount of nutritent or energy per serving						
6 5	May contain: % of RDA nutrients represent per 100g/ml or serving						

Draft Regulations: August 2002							
	INFORMATION			IF Present		Could claim	Comment
No		Yes		Acceptable	Not Acceptable		
7	**Prohibited Statements**						
7.1a	Statement extra: wholesome						
7.1b	Statement extra: nutritious						
7.2	Suitable for diabetics						
8	**Ingredients list**						
8.1	Ingredients acceptable according to claims						
8.2	Origin of fats & oils						
9	**Allergen information**						
9.1	Identification of ingredient origin						
	a) Derived from Triticum species (e.g. wheat, rye, barley)						
	b) Derived from soya (e.g. vegetable protein)						
	c) Derived from fish (e.g. gelatine)						
	d) Derived from Crustacea or Molluscs						
	e) Derived from peanuts or tree nuts (e.g. oil)						
	f) Unknown origin						
9.2	Advisory statements						
10	**Nutritive value claims**						
10.1	*Enriched with (nutrient): Nutrient should not exceed 100% of RDA*						
10.2	Foodstuff provides complete or balanced All nutrients must exceed 15% of RDA						
10.3	Foodstuff fortified:						
	Prescribed nutritional information per serving & 100g / ml (Energy, protein, CHO, Total fat,						
	Saturated fat, Trans fat, Total dietary fibre, Sodium, nutrient specific to claim)						
11	**Specific nutrient and/or energy claim**						
11.1	a) Amount of nutrient in respect to claim made or energy in Kj per serving & per *100g / ml*						
	b) Prescribed nutritional information (Energy, protein, CHO, Total fat, Saturated fat, Trans fat						
	Total dietary fibre, Sodium, nutrient specific to claim)						

12	**Nutrient content claim**						
12.1	Energy: a) Low 100kj per 100g, 80kj per 100g (liquids)						
	b) Source 80kJ / 100ml						
	c) High 250kJ / 100ml						
12 2	Fat. a) Low 3g / 100g, 1.5g per 100ml						
	b) Virtually free or free 0.5g per 100g/ml						
12 3	Saturated fat. a) Low 1.00g / 100g, 0.75g / 100ml and 0 5g fatty acids /						
	100g and 10% of combined energy value for saturated fat & trans fat						
	b) Virtually free or free 0.5g / 100g and, 0.5g / 100ml						
12.4	Trans fatty acids. Virtually free or free 0.5g / 100g and 0 5g / 100ml						
12.5	Cholesterol: a) Low 20mg / 100g and 10mg / 100ml						
	b) Virtually free or free 5mg / 100g and 5mg / 100ml						
	2.0g saturated fat & trans fat combined / 100g (solids)						
	or 0.75g saturated fat / 100ml (liquids) & 10% of energy of saturated fat						
12.6	Sugar: Virtually free of free 0.5g / 100g/ml						
12 7	Sodium: a) Low 120mg Na per 100g (305 NaCl)						
	b) Very low 40mg / 100g						
	c) Virtually free or free 5mg / 100g						
12.8	Carbohydrate. High. 13g / 100g or 6 5g / 100ml & 6 5g / 418kJ						
12.9	Fibre: a) Source. 2.5g / 100g & 1,5g / 418kJ						
	b) High. 10g / 100g & 3g / 418kJ						
12 10	Protein: Source: 5g / 100g and 2.5g / 100ml & 2 5g / 418kJ						
12 11	Vitamins & minerals a) Source: 15% of RDA and 7 5% of RDA per serving & 5% of RDA / 418kJ						
	b) High: Twice value of source						
12 12	Uses prescribed wording "low", "free or virtually free", "source" or "high".						
12 13	Prescribed nutritional information declaration (see 5 2)						
13	**Nutrient function claims**						
13 1	Nutrient:						
	Efficacy- and functionality of nutrient or ingredient has been documented in scientific literature						

14	**Enhanced function claims**						
14.1	Claim:						
15	**Reduction of disease claim**						
15.1	Claim						
16	**Nutritional Education**						
16.1	Correct, acceptable definitions						
17	**Sugar claims**						
17.1	*Prohibited: "no sugar added" or "no added sugar" or ""sugar free" if it contains mono-and*						
	disaccharides and sugar alcohols unless low GI (0-55)						
18	**Glycemic index claims**						
18.1	Low GI 0-55						
18.2	Intermediate GI: 56-69						
18.3	High GI: 70+						
19	**Comparative claims examples: "reduced", "less than", "fewer", Increased", "more than", "light", "lite"**						
19.1	Claim wording.						
19.2	Foodstuffs compared should be different versions of the same category						
19.3	Difference in the energy value or nutrient content, *expressed as a percentage*						
19.4	Name of foodstuff(s) compared, appear in close proximity to the claim						
19.5	relative difference of at least 25%						
19.6	Prescribed nutritional information						
20	**Pro - prebiotic claim**						
20.1	Probiotic claim						
20.2	Pre-biotic claim						
21	**Vegetarian claims**						
21.1	Claim						

Claims / Statements not stipulated in regulations:							
22	**Allergenicity claims**						
22	a) Gluten-free						
	b) Milk-free						
	c) Egg-free						
	d) Wheat-free						
	e) Soy-free						
	f) Peanut-free						
	g) Tree-nut free						
22.2	Hidden allergens in ingredient list: ingredients correspond with claim						
23	**General Claims**						
23.1	Preservative free						
23.2	No Artificial colours						
23.3	No artificial Flavours						
23.4	No added MSG						
23.5	Tartrazine free						
23.6	Yeast free						
23.7	No Trans Fatty acid information						
23.8	Claim cholesterol free and all products in category is naturally cholesterol free						

Appendix G:

Food label checklist for pre-testing

APPENDIX G

LABELING CHECKLIST FOR PRE-TESTING

Product Name: _____ ☐☐ Food Category: _____ ☐

No	INFORMATION	Present	No	Yes Acceptable	Yes - Not acceptable	Errors
1	Health claims					
1	- Reduction of disease claim					
1.1	High in calcium - Phosphorus content may not exceed calcium content	Regular exercise and a healthy diet with enough Ca may help susceptible individuals maintain good bone health and may reduce their risk of osteoporosis later in life.				
1.2	Low in sodium	Diets low in sodium may reduce the risk of high blood pressure, a disease associated with many risk factors in some individuals.				
	- Other Health Claims					
1.3						
1.4						
1.5						
2	- Nutrient function claims	Efficacy- and functionality of nutrient or ingredient has been documented in scientific literature.				
2.1						
2.2						
2.3						
3	Allergenicity claims					
3.1	SA Legislation	a) Gluten-free				
		b) Milk-free				
		c) Egg-free				
		d) Wheat-free				
		e) Soy-free				

3.2	Hidden allergens in ingredient list	Ingredients correspond with claim					
3.3	Directions for use	Acceptable according to claim (if any, e.g. prepare with milk, with a milk-free claim)					
3.4	Advisory statements	(e.g. may contain traces of peanuts)					
4	**Nutritional Education**						
4.1	- Correct, acceptable definitions						
5	**Slogan's**						
5.1	- Acceptable according to legislation						
5.2	- Negative claim/slogan						
6	**Prohibited Statements**						
	- Prohibited statement	6.1)Statements: health, healthy; wholesome; nutritious					
		6.2) Words: heal, cure; restorative					
		6.3) Suitable for diabetics					
		6.4) Free from claim substance if apply to all in category					
		6.5) Natural					
7	**Nutritional Content**						
7.1	Energy	a) Low 100kl per 100g, 80kl per 100g (liquids)					
		b) Source 80kJ / 100ml					
		c) High 250kJ / 100ml					
7.2	Fat	a) Low 3g / 100g, 1.5g per 100ml					
		b) Virtually free or free 0.5g per 100g/ml					
7.3	Saturated fat	a) Low 1.00g / 100g, 0.75g / 100ml and 0.5g fatty acids / 100g and 10% of combined energy value for saturated fat & trans fat					
		b) Virtually free or free 0.5g / 100g and, 0.5g / 100ml					
7.4	Trans fatty acids	Virtually free or free 0.5g / 100g and 0.5g / 100ml					
7.5	Cholesterol	a) Low 20mg / 100g and 10mg / 100ml					
		b) Virtually free or free 5mg / 100g and 5mg / 100ml 2.0g saturated fat & trans fat combined / 100g (solids) or 0.75g saturated fat / 100ml (liquids) & 10% of energy of saturated fat					

7.6	Sugar	Virtually free of free 0.5g / 100g/ml				
7.7	Sodium	a) Low 120mg Na per 100g (305 NaCl)				
		b) Very low 40mg / 100g				
		c) Virtually free or free 5mg / 100g				
7.8	Carbohydrate	High, 13g / 100g or 6.5g / 100ml & 6.5g / 418kJ				
7.9	Fibre	a) Source: 2.5g / 100g & 1.5g / 418kJ				
		b) High: 10g / 100g & 3g / 418kJ				
7.10	Protein	Source: 5g / 100g and 2.5g / 100ml & 2.5g / 418kJ				
7.11	Vitamins & minerals	a) Source: 15% of RDA and 7.5% of RDA per serving & 5% of RDA / 418kJ				
		b) High: Twice value of source				
8	- Other nutritional information on label					
8.1	- Correct lay-out	a) Heading "Nutritional Information"				
		b) Indication of mass or volume of serving				
		c) Amounts of nutrients per serving				
		d) Amounts of nutrients per 100g (solids) or 100ml (liquid)				
		e) Percentage of RDA in serving				
8.2	- Enriched with (nutrient)	Nutrient should not exceed 100% of RDA, (see below)				
8.3	- Foodstuff provides complete or balanced nutrition	All nutrients (listed below) must exceed 15% of RDA				
8.4	RDA for adults and children older than 10 years	a) Protein - 56g				
		b) Vitamin A - 800 mcg RE				
		c) Vitamin D - 6 mcg				
		d) Vitamin E - 15mg				
		e) Vitamin C - 75mg				
		f) Vitamin B1 or thiamin - 1.4mg				
		g) Vitamin B2 or riboflavin - 1.6mg				
		h) Nicotinic acid or niacin - 18 mg				
		i) Vitamin B6 or pyridoxine - 2mg				
		j) Folic acid or folacin - 400mcg				
		k) Vitamin B12 - 3mcg				
		l) Biotin - 30mcg				
		m) Pantothenic acid - 6mg				
		n) Calcium - 1100mg				
		o) Phosphorus - 880mg				

		p) Iron - 14mg				
		q) Magnesium - 350mg				
		r) Zinc - 15mg				
		s) Iodine - 150mcg				
		t) Choline - 435mg				
		u) Selenium - 55mcg				
9	Ingredients list					
9.1	- Comply to South African regulations	a) Listing ingredients of compound ingredients				
		b) Origin of fats & oils				
		c) Identification of preservatives by name				
		d) Identify allergen containing ingredients				
9.2	Name of product corresponds with ingredients	Must state e.g. "apple flavour" if it doesn't contain real fruit				
9.3	- Ingredients acceptable according to claims					
9.4	- Identification of additives	By category name except tartrazine & MSG				
9.5	- Identification of ingredient origin	a) Derived from Triticum species (e.g. wheat, rye, barley)				
		b) Derived from milk (e.g. Whey)				
		c) Derived from egg (e.g. albumin)				
		d) Derived from soya (e.g. vegetable protein)				
		e) Derived from fish (e.g. gelatine)				
		f) Derived from Crustacea or Molluscs				
		g) Derived from peanuts or tree nuts (e.g. oil)				
		h) Unknown origin				
10	General					
10.1	- Country of origin					
10.2	- Information of producer	Name and address of manufacturer, packer, seller importer, or a person on whose behalf the foodstuff is prepacked				
10.3	- Date marking	Best-before, Sell-by or Use-by date				
10.4	- Batch identification					
10.5	Storage conditions	Special storage information where applicable				
10.6	Instructions for use	Instructions if it would be difficult to make appropriate use of foodstuff without instructions				

11	Preservative free claim					
12	Artificial colours claim					
13	No artificial Flavours claim					
14	No added MSG					
15	Tartrazine free claim					
16	Yeast free claim					
17	No Trans Fatty acid information					
18	Can claim peanut free					