

Food Safety Performance: *Labeling and Indications of Allergens*



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ABSTRACT

Globalization of trade within the food industry has increased consumer expectations for food safety and transparency of product information. As a result, the need to benchmark transnational food safety-related policies and practices has increased over the past decade. This study compares and contrasts national food labeling and indication of allergen regimes for pre-packaged foods in 16 Organization for Economic Co-operation and Development (OECD) countries. Information was collected from government web sites, academic journals, trade magazines, and direct contact with representatives of government and professional organizations.

Three metrics are common to the 16 countries in this study: name of food, list of ingredients, and indications of food additives. In the U.S., the “use by” or “made on” date is required for some baby foods. Australia, Canada and the U.S. require nutritional information on their labels; in OECD/EU nations, it is mandatory only when a nutrition claim is made. Australia, Canada, Japan and the U.S. must include the country of origin, which is voluntary in the other OECD/EU nations unless its absence could mislead consumers. The OECD/EU nations require only the name/address of the manufacturer, packager, or seller. Warning of allergens is voluntary in the U.S. and Canada, but specific directives apply if an allergen is present. All countries except Canada mandate use and storage information; in Canada, this is left to the manufacturer’s discretion. The U.S. and Japan are the only countries that do not mandate lot/batch identification. Global harmonization of food labeling guidelines and policies would simplify communication of accurate and relevant nutritional and food safety information. This would aid in reducing food allergen exposure, with the associated benefits of reduced health care costs, increased selection, and improved quality of life for consumers.

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INTRODUCTION

Global competition has motivated countries to pursue high food safety standards, ensuring a healthier population and contributing to economic growth. Food labeling is one method that governments can use to communicate with producers, sellers and consumers (19). An important element of food labeling is the identification of food allergens; it is used to warn consumers of food ingredients that could cause allergic reactions and possibly even death. Currently, it is estimated that allergies affect as many as 5–6% of young children and as many as 3–4% of adults in western countries (11). The Centers for Disease Control and Prevention (CDC) estimate that each year

anaphylaxis to food results in 30,000 emergency room visits, 2,000 hospitalizations and 150 deaths in the U.S. alone (14). Food labels must accurately and clearly communicate allergen information without misleading or reducing product choice for consumers.

The purpose of this study was to identify and evaluate elements common to global food safety systems in 16 OECD (Organization for Economic Co-operation and Development) countries with respect to labeling and allergens and to identify those countries that employ comparatively best practices to contain risks related to the safety of food systems (12). This study focuses on mandatory food labeling and indication of allergens of pre-packaged foods and discusses

TABLE 1. Definition of metrics evaluated in this study

METRIC	DEFINITION ¹
NAME OF FOOD	The true nature of the product, normally specific and not generic (e.g., yogurt)
WARNING OF ALLERGENS	Declaration informing consumers of the possible inadvertent presence of a food allergen in a food via precautionary statement
LIST OF INGREDIENTS	The list of contents, headed/preceded by an appropriate title that includes the term 'ingredient'; contents shall be listed in descending order of ingoing weight (m/m) at the time of the manufacture of the food
FOOD ACTIVITIES	Ingredients included in foods in order to achieve specific performance
DEALER NAME AND ADDRESS	The name and address of the manufacturer, packer, distributor, importer, exporter, or vendor of the food
COUNTRY OF ORIGIN	Source of the product; when processed in a country that changes its nature, the country of processing is considered the country of origin
LOT/BATCH IDENTIFICATION	Code that includes the lot number and factory producing the product
DATE MARKING AND STORAGE INSTRUCTIONS	Date of minimum durability, if not otherwise determined in an individual Codex standard. Special conditions for storage shall be declared if the validity of the date depends on storage conditions
INSTRUCTIONS FOR USE	Description of how product is to be used, including reconstitution, as necessary, to ensure correct use
NUTRITION INFORMATION	Nutritional properties of a food

¹Definitions for all metrics were derived from the Codex Alimentarius Commission and the Food and Agriculture Organization of the United Nations/World Health Organization food standards program (19). The definition of nutritional information was sourced from the Canadian Food Inspection Agency (2).

TABLE 2. Organizations to which enquiries were sent and responses received¹

SOURCE	NATURE OF (WRITTEN) FOOD LABELING COMMUNICATION
FOOD ALLERGY BRANCH, FOOD STANDARDS AGENCY U.K.	Clarified labeling requirements pertaining to allergen warnings on packaging in the U.K.
CANADIAN FOOD INSPECTION AGENCY (CFIA)	Clarified labeling information pertaining to storage
GERMAN FEDERAL OFFICE OF CONSUMER PROTECTION AND FOOD SAFETY	Confirmed that most European food labeling standards are harmonized and that Directive 200/13ec of the European Paliament was added to German legislation
FINNISH FOOD SAFETY AUTHORITY HELSINKI	Confirmed that Finland has the same regulations as the other EU nations
LIVSMEDELSVERKET, SWEDEN	Explained that labeling standards are available on the European Commission web site
DANISH DIVISION OF FOOD QUALITY, TECHNOLOGY AND MARKETING PRACTICES	Explained that most of Denmark's food labeling laws are based on EU regulations and that Denmark has additional national standards for dairy products and chocolate
SWITZERLAND'S FEDERAL OFFICE OF PUBLIC HEALTH	Informed that Switzerland's regulations are available in German, French and Italian but not English
EUROPEAN FOOD SAFETY AUTHORITY (EFSA)	Referred to EU food labeling regulations
U.S. DEPARTMENT OF AGRICULTURE (USDA)	Explained labeling standards for the U.S.A.
FOOD STANDARDS AUSTRALIA NEW ZEALAND (FSANZ)	Explained how to navigate the food labeling code
AUSTRIA OSTERREICHISCHE AGENTUR FUR (AGES)	Explained that the Austrian regulations are similar to the EU directive but are available in German only

¹Food labeling legislation for all countries was verified via correspondence whenever possible.

areas of convergence and divergence. The study is intended to assist academics, practitioners and policymakers in their assessment of food safety systems and to promote public health by highlighting countries that excel. Although all countries are striving to improve the standard of health for their citizens, more effort should be invested in developing internationally standardized labeling systems.

LITERATURE REVIEW

Food labeling is an important vehicle for communicating information to consumers. Food labels serve three basic functions: to communicate general product information (i.e., common name, list of ingredients, country of origin, and name of manufacturer); to provide health, safety and nutritional information; and to serve as a vehicle for marketing, promotion and advertising. They also assist consumers in making healthy food choices.

Although most consumers find food labels useful, some consumer groups are concerned that food labeling is not currently fulfilling its purpose. The warning of allergens via “precautionary statements” (i.e., may contain) is a common area of confusion among consumers. Food processors and consumers, while focusing on public health as the primary aspect of food allergen exposure, still have their own interests to protect. Food processors use precautionary statements to warn consumers of the inadvertent presence of allergens in food; consumers may believe that industry overuses precautionary statements, thereby limiting their food choices.

Interest groups believe that consumers find labels confusing, difficult to understand, and poorly illustrated (9). They suggest that global harmonization of food labeling standards may reduce confusion caused by conflicting information on labels originating in different countries. Food labeling is designed to help consumers differentiate among products and brands, enabling more informed purchases with respect to quantity per serving of fats, proteins, carbohydrates, vitamins and minerals, as well as specific information for consumers with special dietary requirements (2). This information is important, since global overweight and obesity rates (in 2008) indicate that about 35% of adults aged 20 years and over are overweight and another 12% of adults aged 20 years and older are obese; these rates may contribute to 2.8 million deaths each year (18).

The functionality and use of food labels by consumers was reported in a recent survey of 2,352 U.S. consumers (16). More than 54% of respondents reported that they read the label the first time they bought a product; 55% often acquired a general idea of the nutritional content of the food; 41% often decided which brand to purchase; 46% often compared food items with one other; 48% often used labels to check for an ingredient that a family member should avoid; 31% often used the label to verify a statement in the advertising or on the packaging, and 66% often used the label to check the number of calories or content of salt, vitamins, or fat. This survey illustrates how food labels are used as a form of nutritional food hazard risk communication.

Effective benchmarking of food labeling practices provides an understanding of how one’s own country is performing in terms of food safety. In an era of increasing accountability, many recognize this to

be of primary importance. Consulting those who regulate, assess and manage standards represents a unique methodology that may lead to implementation of legitimate and well-recognized food labeling standards across the industrialized world.

World ranking food safety performance report

The 2008 and 2010 World Ranking Food Safety Performance Reports were designed to identify the relative strengths and weaknesses in Canada’s food safety performance and compare Canada’s performance to that of 16 other OECD countries (3, 4). The current investigation is a follow-up to the previous World Ranking Reports, focusing specifically on Consumer Affairs and documenting how well countries communicate with their consumers about food labeling and indications of allergens. The previous ranking reports, although informative, were criticized for the subjective nature of the ranking methodology used by the authors. This study used a more objective approach, focusing on legal requirements. Three additional metrics were incorporated to give a broader labeling perspective.

METHODOLOGY

The study is based on food labeling data from January 2011 to March 2012, inclusive. Label metrics studied included the seven metrics used in the 2010 World Ranking Food Safety Performance Report as well as three additional metrics that were considered relevant to food safety (direction for use and storage, dealer name and address, and lot/batch identification). The following 16 OECD countries were selected because they were considered likely to enjoy high standards in food labeling and because their populations exceed one million: Austria, Australia, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, Netherlands, Norway, Sweden, United Kingdom and United States. Information on food labeling standards and practices was gathered from government web sites, academic journals, and trade magazines. The number of mandatory metrics in each country was tabulated. This simple, straightforward approach affords a simple, clear ranking of the metrics, all of which are mandatory, measurable, and public policy-driven. Definitions for all metrics are presented in [Table 1](#) (19).

Government web sites were consulted to identify mandatory metrics. Most frequently consulted were Europa 2011 (EU), CFIA 2011 (Canada), FDA 2008 (U.S.A.), MAFF 2008 (Japan) and FSANZ 2011 (Australia). The Codex Alimentarius site was also consulted. The most current information and data were gathered from secondary sources such as the OCED, World Health Organization, European Union (EU), national agencies such as the Food Allergy Branch of the Food Standards Agency U.K. and regulatory organizations in each of the countries ([Table 2](#)). Email correspondence and telephone calls were used to confirm information.

RESULTS AND DISCUSSION

The metrics that are mandatory for labeling of foods and indicating allergens are listed by country in [Table 3](#). The following three metrics

TABLE 3. Metrics required for labeling food and indicating allergens in 16 OECD countries

COUNTRY	COMPARATIVE MANDATORY METRICS						ADDITIONAL METRICS 2012			
	Name of Food	"Use by" or "made on" date	Nutritional information	List of ingredients	Country of origin	Warning of allergens via precautionary statement ¹	Indication of food additives	Direction for use and storage	Dealer name and address	Lot/Batch identification
AUSTRALIA	●	●	●	●	●		●	●	●	●
AUSTRIA	●	●		●			●	●		●
BELGIUM	●	●		●			●	●		●
CANADA	●	●	●	●	●		●		●	●
DENMARK	●	●		●			●	●		●
FINLAND	●	●		●			●	●		●
GERMANY	●	●		●			●	●		●
IRELAND	●	●		●			●	●		●
ITALY	●	●		●			●	●		●
JAPAN	●	●		●	●		●	●	●	
NETHERLANDS	●	●		●			●	●		●
NORWAY	●	●		●			●	●		●
SWEDEN	●	●		●			●	●		●
U.K.	●	●		●			●	●		●
U.S.	●		●	●	●		●	●	●	

¹The warning of allergens via precautionary statement is not mandatory in any of the countries included in this study.

are common to all countries: name of food, list of ingredients, and indications of food additives. In the United States, the “use by” or “made on” date is required only for infant formula and some baby foods.

Australia, Canada and the United States are required to include nutrition information on their labels. In the other OECD/EU nations included in this study, nutrition labeling is voluntary and becomes mandatory only when a nutrition claim is made.

Australia, Canada, Japan and the United States must include the “country of origin” on their labels; in the other OECD/EU nations, country of origin is voluntary unless its absence could mislead consumers.

The OECD/EU nations require only the name or business name and address of the manufacturer, packager, or seller established within the community. All countries except Canada mandate a statement about “use and storage.” Canada has no prescribed storage instructions; this is left to the manufacturer’s discretion. The United States and Japan are the only countries that do not mandate “lot/batch identification” on their labels.

Food labeling metrics for each country have been identified, but how has government policy responded to consumer labeling issues? Internationally, governments have been challenged to strike a balance among consumers’ rights to transparent information, values and ethics, the commercial marketing potential of labeled products, and government’s desire to apply a fair and protective approach to food labeling regulations. A more detailed assessment of government policy of the four countries with the most mandatory metrics (i.e., Australia, Canada, United States, and Japan) reveals similarities and differences.

Australia requires a total of nine metrics. With sound evidence-based policies, Australia has developed an effective food labeling program that reflects key stakeholder needs. In 2011, the Australia and New Zealand Ministerial Council commissioned a review of the food labeling law and policy (5), which resulted in the proposal of 61 labeling recommendations that support the need to protect and promote health as well as to prevent illness, injury, and disability, using different modes of intervention. The review recommended risk-based priorities of food labeling issues, which, in descending order, include food safety, preventative health, new technologies, and consumer value.

The food labeling hierarchy (Fig. 1) is a risk/evidence-based model of policy-driven democratic interaction, economic interaction, and arbitration (5). Public health and food safety are positioned at the

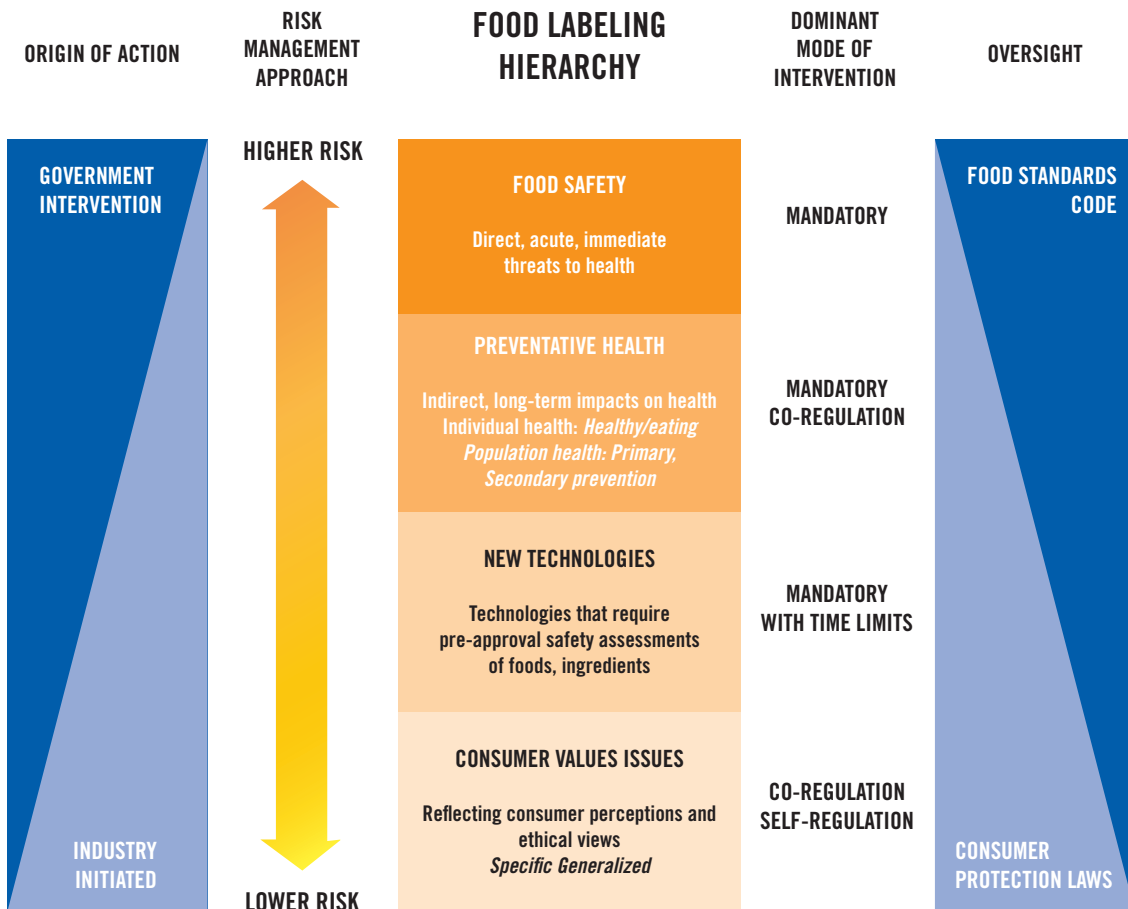


FIGURE 1. Food labeling hierarchy. (Source: CommonWEALTH, 2011).

apex of the food labeling hierarchy, with the emphasis on immediate threat (foodborne illness, allergies and sensitivities). Mandatory components of food labels are best before dates, use-by dates, storage instructions, ingredients, nutrition information, and health and related claims. Directly below the apex of the food labeling hierarchy is new technologies, which require pre-approved safety assessments of food ingredients (i.e., biotechnology, nanotechnology and irradiation). The third, and lowest-risk category relates to consumer values that reflect consumer perceptions and ethical views (i.e., country of origin, free range, organic and halal). This comprehensive review by the Australia and New Zealand Ministerial Council illustrates how effectively agencies, industry, and consumers can collaborate to achieve significant change for the betterment of society.

Canada mandates eight of the food labeling and indication of allergy metrics, while the United States and Japan require seven and the remaining countries require six. Health Canada policies and regulations for labeling of pre-packaged foods have produced quantifiable benefits such as reduced health care costs, less absenteeism, reduced time for identifying and verifying pre-packaged food information, and improved quality of life for consumers with food allergies and sensitivities (11).

The approval in 2012 of an enhanced labeling law for food allergen gluten sources and added sulphites in Canada is expected to yield a positive cost net impact of \$69.3 million annually for the next ten years (1). Health Canada's objective of this regulatory initiative is to assist consumers who have food allergies, celiac disease or sulphite sensitivity to make informed choices and avoid pre-packaged foods that may trigger adverse reactions (1).

The United States mandates seven metrics (Table 3) (16). The U.S. Congress Food Allergen Policy is reflected in the Food Allergen Labeling and Consumer Protection Act of 2004, which was designed to assist Americans in avoiding health risks posed by food allergens (15). The 111th Congress approved the Food Allergy and Anaphylaxis Management Act (6), which requires the Secretary of Health and Human Services to develop voluntary guidelines to manage the risk of food allergies and anaphylaxis for children in schools and early childhood education programs. It also requires other allergen safety initiatives such as inspection of manufacturing facilities to reduce or eliminate cross-contact of food with residues of major food allergens, more food allergy research, and improved publication of data on food-related allergic responses (17). Revisions to the U.S. Food and Drug Administration (FDA) food code provide guidelines for preparing allergen-free foods in food establishments to minimize the 30,000 hospital visits per year in the U.S. that can be traced to food allergen exposure (17).

In Japan, the Ministry of Health, Labor and Welfare oversees food labeling practices. In 2008, food labeling regulations were amalgamated (7). This was done to address domestic food issues; it has not affected imports. The food labeling system involves numerous regulations; the Japanese authorities are currently reviewing options to provide a unified food labeling system (7).

Food companies no longer focus exclusively on their domestic markets; with globalization comes the need to augment labeling policy

to better meet international standards. Governments are balancing advances in technology, changing consumer demographics, fiscal responsibility, health and safety, and the socioeconomic well-being of their people. Consumers make rational food purchasing decisions using information about allergens, nutrition, food safety, and/or fair trade. How much accuracy and information should consumers expect from labels? How much is enough? These questions will continue to challenge government policy makers and industry leaders.

FUTURE REGULATORY DIRECTION OF LABELING AND INDICATIONS OF ALLERGENS

Decision-makers are facing increased globalization and market liberalization and, in some cases, they have had to adapt by updating food labeling legislation to meet consumer demands. Examples are recent changes to Canadian and EU regulations. In Canada, for example, new food allergen labeling regulations that were passed in February 2011 and took effect in August 2012 added mustard to the list of priority allergens and required plain language and the declaration of otherwise "hidden" allergens (i.e., gluten sources, and sulphites) (10). The listing of "hidden" priority allergens was not previously required for an ingredient like a spice or flavor. However, labels on products must now inform consumers when these allergens are present, either in the ingredient list or in a "contains" statement (10).

The European Union approved several food labeling changes in September 2011. With one exception, these changes will become applicable three years after their publication in the Official Journal of the EU (December 12, 2011) (8). The exception is the mandatory nutrition declaration, which must be applied no later than five years after publication. The key elements in the new regulation are (1) mandatory nutrition declaration on pre-packaged foods, including the energy value and amount (per portion) of fat, saturated fat, carbohydrates, protein, sugars, and salt, (2) the use of a minimum font size of 1.2 mm for improved legibility, (3) extension of compulsory labeling of country of origin to fresh meat, (4) highlighting of allergens in the list of ingredients, and (5) identification of the name (dealer) or business name, as well as the indication of the importer's name and address (8).

No additional regulatory changes were identified for the remaining countries in this report.

LIMITATIONS

Although food allergy rates appear to be reasonably consistent among the OECD countries, they are difficult to quantify because of different interpretations of "food allergy" and differences in availability of country reports. Inconsistent definitions and documentation among the 16 countries from which information was collected made the comparison of information challenging and introduced the potential for error. Not surprisingly, interpretation of legal documents was also difficult. This paper provides valuable insights into comparative regulations among countries. The nature of the information available does not permit any rigorous quantitative analysis.

CONCLUSION

Insights on food labeling and indications of allergens were gained in this study. Interestingly, only three metrics were common to all countries. Australia's labeling policy encompassed the greatest number of metrics. A country wanting to improve its food safety policies should consider benchmarking Australia's model. Clearly, economic and societal needs will dictate that a country strive to meet only those labeling standards most relevant to its needs.

The results of this study should serve as a catalyst to inform – and perhaps inspire – policy makers, academics, and industry to push the bounds of food labeling standards to better provide the public with much-needed information about food content. The results may assist decision-makers in harmonizing global labeling standards to benefit consumers worldwide. In the future, countries may wish to consider additional metrics such as labeling of genetically modified foods or labeling of products for the food services sector.

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