

# A Review of Consumer Food Safety Advice from International Government Agencies

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## Abstract

Domestic food handling/preparation by consumers has been associated with sporadic incidence of foodborne illness internationally. Subsequently, governments across the world have developed sources of domestic food safety advice specifically for consumers. To date, there has not been a review of international government-based consumer food safety advice, therefore, very little is known about how these sources relate and compare to each other.

To identify commonalities and differences between food safety advice from international government agencies and assess the suitability and adequacy of advice.

An inclusion/exclusion criterion was utilized to identify online-sources of domestic food safety consumer advice from international government agencies (n = 14). A content analysis-approach was utilized to assess and compare sources.

Food safety practices (n = 1212) were included in reviewed sources (n = 14), in which five key food safety themes (cook, chill, clean, cross-contamination and check) were identified utilizing the content analysis approach. A total of 62 common food safety practices were present in three or more Government sources. The most frequently recommended food safety advice related to the refrigeration of perishable/cooked foods, which was included in the majority of sources. Despite the widespread inclusion of practices relating to refrigeration, many failed to include recommended refrigeration temperature to ensure food safety (5°C /41°F). The inclusion of guidance detailing cooking was lacking. Terminology changed frequently between Governments with 'use-by' replaced with 'sell-by' and even 'best before' date for food safety. One source suggested consumers should "always taste and smell products... If the flavour is normal, they are safe to eat" such guidance may encourage food safety malpractices and increase the risk of foodborne illness to consumers.

Reviewed consumer food safety advice from international government agency websites had many commonalities regarding food safety advice, however, details to inform consumers 'how' these actions are adequately carried out, or 'why' they are needed differed greatly.

## Introduction

As consumers lack adequate scientific food safety knowledge to evaluate food risks correctly (Bolek, 2020; Godwin 2005), it is critical for the food industry to produce foods which are as safe as possible to mitigate this lack of knowledge. However, as risks can never be fully removed, the consumer is still seen as the final line of defence at preventing foodborne illness (Redmond and Griffith, 2003). Governments, therefore, have a responsibility to fill this knowledge gap by providing advice and guidelines for consumers on adequate domestic food safety practices.

With 59.5% of the world's population now being active internet users (Statista, 2021), this is one of the best means to impart knowledge to a vast range of consumers. As a result, domestic food safety advice via government agency websites is a useful method for advising consumers on safe food practices. However, with so many governments across the globe, determining the food safety practices that are most commonly described should indicate those that are deemed by governments most important to follow.

This study aims to determine what domestic food safety practices are highlighted on government organisation websites, and collate a list of the most recurrent practices to assist the domestic consumers in improving their food safety practices at home.

## Methodology






### Website selection:

- Evidence gathered for this study was obtained using Government websites (n=30), from countries that appeared high within the Global Food Security Index for quality and safety and are classified by the World Economic Situation and Prospects (WESP) as developed countries.
- Following the initial data gathering, only websites presented in English (n=14) were selected for this study.

### Content Analysis:

- A content analysis was conducted on the domestic food safety practices shown on the government websites (n=1212), see content analysis flow chart for process undertaken.
- Practices were coded into 5 themes: cook, clean, chill, cross-contamination and check (see examples of the 5C's of food safety).
- A number of outliers, i.e. Practices that were only shown on only one government website and not repeated on any other, were discounted from the content analysis, however, were retained in a separate file for further evaluation.

## Examples of The 5C's of Food Safety

	All food contact surfaces including work surfaces, chopping boards, utensils and hands must be thoroughly washed and sanitised before and after food preparation
	Ensure raw foods are adequately cooking, to the correct core temperature (above 75°C – product dependent), for the correct duration of time.
	Keep all perishable foods in the refrigerator between 0°C and 5°C
	Avoid raw foods, including raw food packaging coming in contact with cooked foods, including all food contact surfaces, utensils and hands.
	Check the use by date on perishable foods – do not consume foods past their use by date. Do not consume mouldy foods or foods with blown packaging.

## Results

The food safety practices from the government websites were coded into five categories. After duplications were removed, the 1212 practices extracted, was reduced to 117. Once outlier results were removed, this left 62 food safety practices, split over the five categories.

Tables, shown below, present in order of highest to lowest the most frequent food safety advice in each category.

CLEAN
Washing vegetables and fruit prior to preparation or consumption (if eaten raw) was the most common food safety practice on Government Websites. This statement was presented within at least one government agency website in all countries included in this study. One reason for this could be the prevalence of foodborne illness associated with the consumption of fruits and vegetables. Studies have shown that produce remains the leading cause of foodborne illness (Wallace et al., 2011).
Wash vegetables and fruit prior to preparation (unless pre-washed)
Wash hands thoroughly using soap and hot water prior to food preparation
Clean all food contact surfaces after preparing raw meats, poultry and fish
Clean all food contact surfaces prior to food preparation
Wash hands after handling raw meats, poultry and fish

Table 1: Most commonly presented domestic food safety practices associated with cleaning

CHILL
One food safety practice stood out amongst all others on government agency websites as the most common within this research. Chilling perishable foods appeared on every government agency website, and on occasions, more than once within the same website page. One potential reason why this appeared so frequently is that it also covered leftovers within the "perishable" category, although, didn't actually state "leftover" food.
Chill perishable/ cooked foods in refrigerator
Chill leftover foods within 2 hours
Defrost frozen foods in refrigerator
Ensure refrigerator is maintained at the correct temperature
Separate large portions of food into small portions

Table 2: Most commonly presented domestic food safety practices associated with chilling/ refrigeration

CHECK
Ensuring the shelf life on food packaging was the most common statement on all Government websites, however, discrepancies as to how this is presented was evident. Consuming foods past their "use by date" was the most commonly noted point, however, several government websites stated not to consume foods past their "best before" date, which could increase food wastage and cause confusion between "use by" date and "best before" dates.
Do not use foods past use by date. Check Date Code/Product Shelf Life
Check for damaged product. Do not buy if damaged, bruised, bulging or looks spoiled
Check for damaged packaging before buying foods, do not buy or consume if packaging has been damaged
Follow the storage instructions on the packaging
Select healthy, fresh foods. Check aroma/ appearance for unpleasant 'off' aromas.

Table 2: Most commonly presented domestic food safety practices associated with checking date codes, products and packaging

## Content Analysis Flow Chart



## Discussion

In general, the majority of Governments provided similar food safety advice for domestic consumers, however, the level of detail varied substantially.

- On many occasions, advice was provided without suitable information and/or reasoning, meaning these were open to interpretation by the consumer, which could result in unacceptable food safety practices.
- It has already been noted that the consumers lack adequate scientific food safety knowledge to evaluate food risks correctly, therefore, Government website should clearly present food safety advice in a consistent, easy to read and understand manor that is not open to interpretation.

*One Government agency contradicted food safety advice provided by all other agencies, by stating "always taste and smell dairy products before throwing out the container – if the flavour is normal, they are safe to eat regardless of the best-before date". Some dairy products, including fresh pasteurised milk, mould ripened soft cheese, and some yoghurts are considered highly perishable, and require both use by dates and refrigerated storage. Some dairy products have a higher risk of Listeria monocytogenes being present, including soft cheese and farmhouse cheddar (O'Brien et al., 2009). Foodborne pathogens do not cause aroma, flavour or textural changes to food products (Wallace et al., 2011), therefore, any presence within a food would not be noticed if the "flavour is normal".*

## Conclusions

- Government agency websites, on the whole, share many visions for domestic food safety advice.
- The level of detail provided on Government websites varies considerably
- Terminology, e.g. "use by" and "best before" varies between Governments
- Governments with specific health concerns do offer specific advice to help mitigate these issues
- Further in depth research should be carried out to find out what food safety experts believe are the key domestic food safety practices at preventing foodborne illness and make recommendations to Government agencies to improve consistency.

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