Food Safety

Edited by Justin Healey

ISSUES IN SOCIETY
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THE SPINNEY PRESS

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INTRODUCTION

Food Safety is Volume 397 in the ‘Issues in Society’ series of educational resource books. The aim of this series is to offer current, diverse information about important issues in our world, from an Australian perspective.

KEY ISSUES IN THIS TOPIC
Food safety is the concept that food will not cause harm to the consumer when prepared and/or eaten according to its intended use. In Australia we rely on food safety standards to protect us from foodborne illness and food poisoning caused by poor handling, contamination, storage and temperature issues.

Who is responsible for food safety in Australia? What can we do ourselves as cooks and consumers to minimise exposure to food poisoning?

This book is a comprehensive guide featuring food safety tips on handling, hygiene and contamination. The book also explains symptoms, causes and labelling information in relation to food allergies, additives and intolerances.

You are what you eat – ensure you eat food in the knowledge it is safe.

SOURCES OF INFORMATION
Titles in the ‘Issues in Society’ series are individual resource books which provide an overview on a specific subject comprised of facts and opinions.

The information in this resource book is not from any single author, publication or organisation. The unique value of the ‘Issues in Society’ series lies in its diversity of content and perspectives.

The content comes from a wide variety of sources and includes:

- Newspaper reports and opinion pieces
- Website fact sheets
- Magazine and journal articles
- Statistics and surveys
- Government reports
- Literature from special interest groups

CRITICAL EVALUATION
As the information reproduced in this book is from a number of different sources, readers should always be aware of the origin of the text and whether or not the source is likely to be expressing a particular bias or agenda.

It is hoped that, as you read about the many aspects of the issues explored in this book, you will critically evaluate the information presented. In some cases, it is important that you decide whether you are being presented with facts or opinions. Does the writer give a biased or an unbiased report? If an opinion is being expressed, do you agree with the writer?

EXPLORING ISSUES
The ‘Exploring issues’ section at the back of this book features a range of ready-to-use worksheets relating to the articles and issues raised in this book. The activities and exercises in these worksheets are suitable for use by students at middle secondary school level and beyond.

FURTHER RESEARCH
This title offers a useful starting point for those who need convenient access to information about the issues involved. However, it is only a starting point. The ‘Web links’ section at the back of this book contains a list of useful websites which you can access for more reading on the topic.
WHO IS RESPONSIBLE FOR FOOD SAFETY IN AUSTRALIA?

Australia has comprehensive controls in place that protect Australians from exposure to unsafe food, according to the Department of Agriculture.

These controls include the Australia New Zealand Food Standards Code, which is enforced by state and territory governments and the Department of Agriculture for imported food.

There are three levels of government in the food regulatory system and each level of government plays a role in protecting public health and safety through regulating food (including imported food) for human consumption.

THE COMMONWEALTH GOVERNMENT

Through the Legislative and Governance Forum on Food Regulation, the Commonwealth Government works collaboratively with the New Zealand government and state and territory governments to develop food regulation policy.

The Department of Health and Ageing (DoHA) sets government policy on food in consultation with Australian state and territory governments.

Food Standards Australia New Zealand (FSANZ) develops food standards in line with this policy, which are then published in the Australia New Zealand Food Standards Code.

The department administers relevant legislation at the border. All imported food must meet Australian quarantine requirements (under the Quarantine Act) and is then subject to the requirements of the Imported Food Control Act.

Labelling on imported food is assessed for compliance.

There are three levels of government in the food regulatory system and each level of government plays a role in protecting public health and safety through regulating food (including imported food) for human consumption.
with the requirements under the Imported Food Inspection Scheme.

STATE AND TERRITORY GOVERNMENTS
The state and territory governments develop and administer food legislation, which gives legal force to the requirements of the Food Standards Code. Regulation of food production at the farm level is typically covered by primary production legislation. State or territory food acts usually cover food processing requirements through to retail sale requirements.

LOCAL GOVERNMENT
Along with the state and territory governments, local governments are responsible for monitoring the compliance of food in their jurisdiction.

FOOD LABELLING
The Food Standards Code currently mandates country of origin labelling for all packaged food and unpackaged fresh and processed fruit, vegetables, seafood and pork.

The Australian Government is committed to ensuring food labels are clear and accurate to enable consumers to make informed choices about the food they buy; and is taking further action to improve the clarity of food labels for consumers.

As part of these improvements, mandatory country of origin labelling requirements for unpackaged beef, sheep and chicken meat will come into effect in July 2013.

The Australian Consumer Law (ACL) includes a broad prohibition against misleading or deceptive conduct and a specific prohibition against representations that mislead the public as to the nature, manufacturing process and characteristics of all goods, including food.

In looking at whether misleading or deceptive conduct and/or false or misleading representations have been made in trade or commerce, the ACL considers country of origin claims.

The Australian Competition and Consumer Commission (ACCC) is engaged in both compliance and enforcement efforts in relation to labelling claims, including country of origin claims.

In particular, the ACCC is part of a Commonwealth working group which is reviewing existing guidance for industry and consumers in relation to country of origin labelling in relation to food and is working with ACL Regulators in relation to a number of current market survey activities. The ACCC and state and territory ACL regulators jointly enforce the ACL.

More information on Country of Origin is available on the ACCC website.

MORE INFORMATION
- Australian New Zealand Food Standards Code
- ACCC country of origin information
- Australia and New Zealand Ministerial Forum on Food Regulation (The Forum)
- Imported Food Inspection Scheme
- Australia Consumer Law website
- Questions and answers on horse meat in Australia
- Questions and answers on Australia’s imports of beef
  www.agriculture.gov.au/about/media-centre/beef_imports
- BSE food safety assessments on the FSANZ website

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In Australia, investigation of food complaints is undertaken by state and territory authorities or your local council, according to this advice from Food Standards Australia New Zealand. This is because the Food Standards Code is enforced and implemented in each state and territory by the relevant body.

You can find contact details for each state and territory food enforcement agency here: www.foodstandards.gov.au/about/foodenforcementcontacts/pages/default.aspx

Problems with food can include things like foreign material e.g. a bit of plastic in food or glass in cereal; or you might think a meal has made you sick. Thankfully problems like this are relatively uncommon but when they do occur Australia has a food recall system in place to deal with them.

What should I do if I suspect a problem?

Don’t eat the food product you are concerned about. Report the problem to the relevant local food enforcement contact and provide:

- Your name, address and phone number
- The brand name, food product name and manufacturer
- The size and package type
- Package codes and dates
- Name and location of the store and the date you purchased it.

Remember to keep the original container or packaging and if relevant, the foreign object (e.g. metal washer that you found in the food).

Refrigerate any uneaten portion of the food.

What should I do if I fall ill?

Food poisoning can be particularly serious in children, the elderly, pregnant women and people who are immuno-compromised (e.g. cancer and AIDS patients).

If you or someone under your care falls ill, it is important to seek early medical attention. Tell your doctor if you think that your illness is related to food you have eaten.

Remember that many food poisoning bugs take a while to take effect. Often the last meal may not be the culprit, as sometimes food poisoning symptoms may not appear for many hours and sometimes days.

Food recalls

A recall is action taken to remove food from distribution, sale and consumption, which may pose a health and safety risk to consumers. FSANZ coordinates food recall information to state and territory authorities, other government agencies and industry.

Food and health authorities advise on whether the recall of a food product should occur and in most cases industry initiates the recall process.

Stay informed about the latest consumer recalls by subscribing to our Food Recall alert. We also publish the latest recalls on our Facebook page and via Twitter.

Information on Australian product recalls (including food) is also available on the Product Safety Recalls website and the ACCC Recalls iPhone app.

THE SAFE FOOD SYSTEM

FOOD STANDARDS AUSTRALIA NEW ZEALAND Explains Food Safety Regulation

FOOD POLICY

Australia and New Zealand Ministerial Forum on Food Regulation

The food policy framework for Australia is set by the Australia and New Zealand Ministerial Forum on Food Regulation which consists of health and agriculture ministers from the states and territories, and the Australian and New Zealand governments. Food standards are developed to reflect this policy framework.

Department of Agriculture

The Department of Agriculture is responsible for Australian Government policy and programs that support a globally competitive and sustainable Australian food industry.

FOOD STANDARDS

Food Standards Australia New Zealand

FSANZ develops the food standards in the Food Standards Code with advice from other government agencies and input from stakeholders.

Food standards cover the use of ingredients, processing aids, colourings, additives, vitamins and minerals. They also cover the composition of some foods, such as dairy, meat and beverages as well as new technologies such as novel foods. We are also responsible for labelling for both packaged and unpackaged food, including specific mandatory warnings or advisory labels.

Public input is an important part of our decision-making process. Get involved and have your say or read about how we engage with the public in our Stakeholder Engagement Strategy.

ENFORCEMENT

Food standards are enforced by the states and territories (usually their health or human services departments) or, in some cases, by local government. These authorities regularly check food products for compliance with the Food Standards Code.

You should contact your local state or territory heath authority if you think there is a problem with a food. The food industry also regularly monitors food production to ensure our food supply continues to be high quality and safe.

The Imported Food Inspection Scheme is administered by the Department of Agriculture. The department is responsible for inspecting and sampling imported food.

Imported food must comply with the Imported Food Control Act 1992 which also requires imported food to comply with the Food Standards Code.

Implementation Subcommittee for Food Regulation

Australian state and territory and New Zealand government agencies are responsible for implementing, monitoring and enforcing food regulation through their individual food Acts and other food-related legislation. These agencies vary between jurisdictions. The Department of Agriculture enforces the Food Standards Code at the border in relation to imported food.

Food regulation authorities in Australia and New Zealand work together to ensure food regulations are implemented and enforced consistently. This work is done through the Implementation Subcommittee for Food Regulation (ISFR), through face-to-face meetings, out-of-session business and separate collaborations.

ISFR was set up by the Food Regulation Standing Committee (FRSC) to foster a consistent approach across jurisdictions to implementing and enforcing food regulation.

SURVEILLANCE

FSANZ, along with other government agencies in Australia and New Zealand, monitors the food supply to ensure it is safe. FSANZ routinely conducts targeted surveys and Australian Total Diet Studies to collect analytical data on the levels of chemicals, microbiological contaminants and nutrients in food. FSANZ also plays a leading role in surveillance activities conducted through the Implementation Subcommittee for Food Regulation.

Communicable Disease Network Australia (CDNA) and OzFoodNet

The Communicable Disease Network Australia and OzFoodNet monitor incidents and outbreaks of foodborne disease which can lead to the detection of an unsafe food product or unsafe food practice.

GENETICALLY MODIFIED CROPS

The Office of the Gene Technology Regulator regulates genetically modified (GM) organisms. If GM crops or animals are to be used in food then they must be approved by FSANZ.

PESTICIDES AND VETERINARY MEDICINES

The Australian Pesticides and Veterinary Medicines Authority (APVMA) places strict limits on agricultural and veterinary chemicals that can be used on crops and animals in Australia. The APVMA also sets withholding periods for when chemicals are used and when plants or animals can become part of the food supply. The APVMA can also make amendments to the FSANZ MRL standard for MRLs that are currently registered for use in Australia, following consultation with FSANZ about dietary exposure assessments.

KEY FACTS ON FOOD SAFETY

FAST FACTS SUPPLIED COURTESY OF THE WORLD HEALTH ORGANIZATION

1. More than 200 diseases are spread through food

Millions of people fall ill every year and many die as a result of eating unsafe food. Diarrhoeal diseases alone kill an estimated 1.5 million children annually, and most of these illnesses are attributed to contaminated food or drinking water. Proper food preparation can prevent most foodborne diseases.

2. Contaminated food can cause long-term health problems

The most common symptoms of foodborne disease are stomach pains, vomiting and diarrhoea. Food contaminated with heavy metals or with naturally occurring toxins can also cause long-term health problems including cancer and neurological disorders.

3. Foodborne diseases affect vulnerable people harder than other groups

Infections caused by contaminated food have a much higher impact on populations with poor or fragile health status and can easily lead to serious illness and death. For infants, pregnant women, the sick and the elderly, the consequences of foodborne disease are usually more severe and may be fatal.

4. There are many opportunities for food contamination to take place

Today’s food supply is complex and involves a range of different stages including on-farm production, slaughtering or harvesting, processing, storage, transport and distribution before the food reaches the consumers.

5. Globalisation makes food safety more complex and essential

Globalisation of food production and trade is making the food chain longer and complicates foodborne disease outbreak investigation and product recall in case of emergency.

6. Food safety is multisectoral and multidisciplinary

To improve food safety, a multitude of different professionals are working together, making use of the best available science and technologies. Different governmental departments and agencies, encompassing public health, agriculture, education and trade, need to collaborate and communicate with each other and engage with the civil society including consumer groups.

7. Food contamination also affects the economy and society as a whole

Food contamination has far reaching effects beyond direct public health consequences – it undermines food exports, tourism, livelihoods of food handlers and economic development, both in developed and developing countries.

8. Some harmful bacteria are becoming resistant to drug treatments

Antimicrobial resistance is a growing global health concern. Overuse and misuse of antimicrobials in agriculture and animal
husbandry, in addition to human clinical uses, is one of the factors leading to the emergence and spread of antimicrobial resistance. Antimicrobial-resistant bacteria in animals may be transmitted to humans via food.

9. Everybody has a role to play in keeping food safe

Food safety is a shared responsibility between governments, industry, producers, academia, and consumers. Everyone has a role to play. Achieving food safety is a multi-sectoral effort requiring expertise from a range of different disciplines – toxicology, microbiology, parasitology, nutrition, health economics, and human and veterinary medicine. Local communities, women’s groups and school education also play an important role.

10. Consumers must be well informed on food safety practices

People should make informed and wise food choices and adopt adequate behaviours. They should know common food hazards and how to handle food safely, using the information provided in food labelling.
TEN EASY STEPS TO SAFE FOOD

1. Buy from reputable suppliers with clean premises.
2. Avoid spoiled foods, foods past their use-by dates or foods in damaged containers or packaging.
3. Take chilled, frozen, or hot foods straight home in insulated containers.
5. Avoid high-risk foods left in the Temperature Danger Zone for more than four hours.
6. Keep high-risk foods out of the Temperature Danger Zone. Keep chilled foods cold at 5°C or colder and hot food hot at 60°C or hotter.
7. Thoroughly wash and dry hands when preparing food.
8. Use separate and clean utensils for raw foods and ready-to-eat foods.
9. Cook minced meats, poultry, fish and sausages thoroughly.
10. When in doubt, throw it out.

ENJOY YOUR FOOD
Don’t let it turn nasty

Victorians enjoy food. We produce some of the highest quality and freshest foods in the world.

We love to buy and cook food to eat at home, or outdoors on picnics, camping trips and barbecues, or to take to work and school.

Victorian and Australian food safety laws are designed to ensure the food you buy is safe.

All Victorian food businesses such as supermarkets, delis, butchers, fishmongers, take-aways and restaurants, have to comply with these laws and standards by selling food that is safe to eat and free of any contamination.

Even the best food in the world can turn nasty if poorly handled, stored or cooked.

Once the food is in your hands it’s up to you to keep your food safe to eat.

This information will explain how simple practices can ensure the food that you buy and take home to prepare for yourself, your family or friends remains safe and enjoyable.

Food businesses have a responsibility to sell food that is safe to eat.

HIGH-RISK FOOD

Bacteria grow and multiply on some types of food more easily than on others. The types of foods which bacteria prefer include:

- Meat
- Poultry
- Dairy products
- Eggs
- Smallgoods
- Seafood

- Cooked rice
- Cooked pasta
- Prepared salads, coleslaws, pasta salads
- Prepared fruit salads.

Did you know?

Food poisoning bacteria are often naturally present in food, and in the right conditions a single bacterium can grow into more than two million bacteria in just seven hours.

Ready-to-eat foods are foods that can be eaten without further preparation or cooking such as pre-prepared salads, take-aways and prepared sandwiches.

KEEP YOUR FOOD IN THE ‘RIGHT’ ZONE!
A basic rule-of-thumb is to keep high-risk foods in the right temperature zone for as long as possible

When shopping:

- Buy your chilled and frozen foods towards the end of your shopping trip.
Hot chickens and other hot foods should also be purchased later in your trip and kept separate from cold food.

When storing and transporting food:
- Keep chilled food at 5°C or colder.
- Keep frozen food frozen solid.
- Keep hot foods at 60°C or hotter.
- Throw out high-risk food left in the Temperature Danger Zone for more than four hours.
- Consume high-risk food left in the Temperature Danger Zone for more than two hours – don’t keep it for later.

**CHOOSE FOOD CAREFULLY**
- Only buy from reputable suppliers with clean and tidy premises.
- Check use-by dates and labels, avoid food past its use-by dates.
- Check food labels for allergen and nutritional information.
- Avoid products in damaged, dented, swollen or leaking cans, containers or other packaging.
- Avoid food that seems spoiled, such as mouldy or discoloured product.
- Check that staff use separate tongs when handling separate food types.
- Only buy eggs in cartons which identify the supplier – avoid cracked or soiled eggs.
- Avoid high-risk chilled and frozen foods that have been left out of the fridge and freezer.
- Avoid hot foods, like take-aways, that are not steaming hot.
- Avoid ready-to-eat foods left uncovered on counters.

- Prevent meat, chicken or fish juices leaking onto other products.

If you have serious concerns with the way food is handled, stored or prepared by a business, contact your local council health department.

*Once you purchase food, the safety of that food also becomes your responsibility.*

**GET FOOD HOME QUICKLY**
- If you have purchased hot, chilled or frozen foods, you should get them home as quickly as possible.
- For trips longer than about 30 minutes, or on very hot days, it’s a good idea to take an insulated cooler or bag with an ice pack, to keep chilled or frozen foods cold.
- Consider placing hot foods in an insulated container for trips longer than about 30 minutes.
- Consider wrapping hot foods in foil.
- Once you arrive home, immediately transfer chilled and frozen food into your fridge and freezer.

*Use an insulated container or bag to transport chilled or hot food.*

**TAKE CARE EATING OUTDOORS**
- Cut meats into serving-size pieces before leaving home, and have all salads ready to eat.
- Put raw meats and high-risk foods into separate leak-proof containers and into insulated coolers.
- Place containers with raw meats at the bottom of an insulated cooler and keep separate from ready-to-eat foods.
- Avoid packing food that has just been cooked or is still warm, unless you can keep it out of the Temperature Danger Zone. Refrigerate overnight before packing.
- Pack plenty of ice packs around chilled foods. Frozen drinks can serve as ice packs, especially in school lunches.
- Don’t place ready-to-eat food into containers used for storing raw food without thoroughly washing and drying the containers first.
- Consider using disposable wipes if there is no safe water for hand washing.

*Take extra care when preparing, storing and handling food to eat away from home.*

**STORE FOOD WELL**
- Keep food safe by:
  - Keeping high-risk chilled food in the fridge.
• Keeping frozen foods frozen hard.
• Storing foods in clean, non-toxic, food storage containers.
• Storing cooked foods separately from raw foods.
• Storing raw meats, seafood and chicken at the bottom of the fridge, in sealed or covered containers.
• Storing leftovers in the fridge. Packaged food and food from cans and jars can become high-risk once opened.
• Not storing food in opened cans.
• Avoiding egg, dairy and meat products past their use-by dates.
• Covering food in leak-proof containers with tight-fitting lids or wrap in foil or plastic film.
• When in doubt, throw it out.

Did you know?
You can keep your food fresh for longer and save on energy costs by ensuring the door seals on your fridge are in good condition.

Cover food in leak-proof containers with tight-fitting lids or wrap in foil or plastic film.

WASH HANDS WHEN PREPARING FOOD
• Wash hands for at least 30 seconds in warm, soapy water before preparing food.
• Wash your hands thoroughly before preparing food and after handling raw meats, chicken, seafood, eggs and unwashed vegetables.
• Dry your hands with clean towels or disposable towels.
• If you have any cuts or wounds on your hands, cover them with waterproof wound-strips or bandages.
• Wear clean, protective clothes like an apron when preparing food.
• If you feel unwell, let someone else prepare the food.

Did you know?
Wet hands are more likely to transmit bacteria. After washing your hands take the time to dry them thoroughly.

Wash hands for at least 30 seconds in warm, soapy water before preparing food.

KEEP IT CLEAN AND SEPARATE
• Keep raw foods separate from ready-to-eat foods.
• Use separate and clean utensils and equipment for ready-to-eat food.
• Don’t use the same equipment and utensils for raw foods and for ready-to-eat foods, without thoroughly cleaning them first.
• Thoroughly clean and dry cutting-boards, knives, pans, plates, containers and other utensils after using them.

THAW IT RIGHT – USE THE FRIDGE
Bacteria can grow in frozen food while it is thawing, so keep frozen food out of the Temperature Danger Zone
• Unless instructions direct otherwise, thaw frozen food in the fridge or use a microwave oven.
• If instructed on packaged frozen food, prepare and cook the food as directed, straight from the freezer.
• Defrost frozen meats, fish and poultry thoroughly before cooking.
• Keep defrosted food in the fridge until it is ready to be cooked.
• If defrosting using a microwave oven, cook the food immediately after defrosting.
• If you are using a microwave oven, speed-up the thawing by separating defrosted portions from still-frozen portions.
• Avoid re-freezing thawed food.

Use the fridge to thaw frozen food.

Use different clean utensils, cutting-boards and containers for different foods.
COOK IT RIGHT
One of the most important things you can do to stop high-risk food turning nasty is to cook it thoroughly

- Use a meat thermometer to help you get the temperature right.
- Thoroughly cook foods made from eggs such as omelettes and baked egg custards.
- Cook poultry until the meat is white – there should be no pink flesh.
- Cook hamburgers, mince, sausages, and rolled or stuffed roasts right through until any juices run clear.
- Cook white fish until it flakes easily with a fork.
- Most foods should be cooked to at least 75°C.
- Take extra care when preparing foods where the eggs remain uncooked such as egg-nog and home-made mayonnaise, as bacteria on the egg shells can contaminate the food.

Meat thermometers are available from many retail stores that sell kitchen utensils and barbecue equipment.

REHEATING AND COOLING FOOD

- Reheat foods thoroughly so they are steaming (above 75°C) or boiling.
- Keep cooked food out of the Temperature Danger Zone.
- If you need to store food for later use, once the steam stops rising cover it and put it in the fridge.
- When you cook ahead of time, divide large portions of food into small shallow containers for refrigeration.
- If you don’t want to cool the food straight away, keep hot food at a temperature of 60°C or hotter.

Did you know?
Good airflow inside your fridge is important for effective cooling. Try to avoid overfilling your fridge.

Reheat foods thoroughly so they are steaming (above 75°C) or boiling.

FOOD POISONING
Food poisoning is frequently caused by bacteria from food that has been poorly handled, stored or cooked. The food may look, taste and smell normal

The symptoms of food poisoning may vary depending on the type of bacteria or contaminants causing the illness.

You may experience one or more of the following symptoms:
- Nausea
- Stomach cramps
- Diarrhoea
- Fever
- Headaches.

Some people are more at risk from food poisoning including young children, pregnant women, the elderly and people with other illnesses.

Symptoms can occur within 30 minutes after eating, or a number of hours later. They can be mild or severe. Some bacteria can also cause other symptoms. _Listeria_ bacteria may cause miscarriage or other serious illness in susceptible people.

Where to get help
- See your doctor.
- Report your illness to your local council particularly if you think the illness is related to food that you have purchased or eaten so that the cause can be investigated.

Authorised by the Victorian Government, Melbourne.
Temperature danger zone 5°C to 60°C – keep hot food hot and cold food cold

Food Safety Information Council explains how to safely heat and cool your food

The temperature range between 5°C and 60°C is known as Temperature Danger Zone. This is because in this zone bacteria can grow to unsafe levels.

**Keeping cold food cold**

Keep your fridge below 5°C. Use a fridge thermometer to check that the temperature stays around 4 to 5°C. Also make sure you have enough fridge space as fridges won’t work properly when they are overloaded or when food is packed tightly because the cold air cannot circulate.

If you are running out of room in your fridge, remove foods that are not potentially hazardous, such as bottled or canned drinks. The temperature of these foods is not critical and they can be kept cool in insulated containers with ice or cold packs.

Freshly cooked food, not for immediate consumption, should have the temperature reduced as quickly as possible. Divide food into small portions and place in containers in the fridge or freezer as soon as it stops steaming.

**Keeping hot food hot**

Hot food needs to be kept and served at 60°C or hotter. If you are keeping it warm for someone put it in the oven at 60°C (or at 100°C if that is as low as your oven will go).

**Two-hour/four-hour rule**

Use the two-hour/four-hour guide below to work out how long potentially hazardous food can be held safely at temperatures in the danger zone.

Follow these 7 simple tips to keep your food out of the Temperature Danger Zone:

1. **Plan ahead.**
   Don’t over cater as the greater the quantity of food you prepare the harder it is to keep it hot or cool enough. If you are catering for a lot of people prepare food as closely as you can to the time you will serve it.

2. **Keep your fridge at or below 5°C.**
   Use a fridge thermometer to check that the fridge temperature stays around 4 to 5°C. Also make sure you have enough room in the fridge because if the food is packed tightly the cold air cannot circulate.

3. **Check the storage instructions.**
   Read the label on packaged food to see if it needs to be stored in the fridge or freezer, many unrefrigerated items may need to be refrigerated once opened.

4. **Keep hot food at or over 60°C.**
   Hot food needs to be kept and served at 60°C or hotter. If you are keeping it warm for someone put it in the oven at 60°C (or at 100°C if that is as low as your oven will go).

5. **Divide food up to cool.**
   Freshly cooked food, not for immediate consumption, should have the temperature reduced as quickly as possible. Divide into containers in small portions and put it into the fridge or freezer as soon as it stops steaming.

6. **Keep food on the move cool.**
   If you are transporting perishable food around such as: refrigerated or frozen shopping, your (or your child’s) lunch or goodies for a BBQ or a picnic always use a cooler bag and add a frozen block or drink to keep things cool.

7. **If in doubt throw it out.**
   If perishable food has been in the temperature danger zone for 2 to 4 hours consume it immediately. After 4 hours throw it out.

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FOOD SAFETY RULES

Temperature, hygiene and cross-contamination information from the Victorian Department of Health and Human Services

COLD STORAGE
- Cold food must be 5°C or colder.
- Frozen food must be frozen hard.
- Check the temperature of fridges and cold storage areas regularly.
- Thaw food in your fridge, away from, and below, cooked or ready to eat food.

PREPARATION
- Limit the time that high-risk food is in the temperature danger zone and return to the refrigerator during delays.
- If food is kept within the temperature danger zone for a total time of 4 hours or more, throw it out.

CROSS-CONTAMINATION
- Cross-contamination occurs when harmful bacteria or allergens spread to food from other food, surfaces, hands or equipment. This can lead to food-poisoning, to ensure cross-contamination does not occur, make sure you;
  - Keep raw food separate from cooked or ready-to-eat food.
  - Use separate utensils and cutting boards when preparing raw and cooked or ready-to-eat food.

COOKING FOOD
- Use a thermometer to make sure foods are thoroughly cooked and the centre reaches 75°C.
- Hot food must be kept at 60°C or hotter.
- Check that only clear juices run from thoroughly cooked minced meat, poultry, chicken or rolled roasts.

COOLING FOOD
- High-risk food must cool from 60°C to 21°C in the first 2 hours, and then to 5°C or lower in the next 4 hours.
- Once food has cooled to 21°C put it in the refrigerator or freezer.
- Large portions of food take longer to cool. Divide large portions into smaller batches before cooling.

CLEANING
- Use clean, sanitised and dry cutting boards, equipment and utensils.
- Clean and rinse wiping cloths after each use, and change frequently.
- Wash hands thoroughly and regularly.

Authorised and published by the Victorian Government.


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Each year, there are an estimated 4.1 million cases of food poisoning in Australia. Of those, around a third are thought to be caused by food handling mistakes in the home.

If you are sick, ask someone else to cook.

You can prevent food poisoning by following the four tips:

- Clean
- Cook
- Chill
- Separate.

Clean

- Our health is in our hands! Clean hands will decrease the possibilities of food poisoning and other diseases markedly. Remember the 20/20 rule:
  - Wash hands for 20 seconds with warm soapy water
  - Dry hands for 20 seconds before starting to cook
  - Repeat frequently especially after handling raw meats, poultry or vegetables with visible soil.
- Wash and dry chopping boards, utensils and work surfaces after preparing raw meats and poultry.
- Use thoroughly cleaned chopping boards, utensils and crockery for food that will not be cooked or heated before eaten such as salads.

Cook

- Cook chicken, minced or boned meats, hamburger, stuffed meats and sausages right through until all juices are clear.
- Defrost frozen poultry, minced, rolled and stuffed meats thoroughly before cooking.
- Always follow cooking instructions on packaged foods.
- Reheat to steaming hot before eating.

Chill

- Keep your fridge at 5°C or below.
- Keep perishable food in the fridge.
- Refrigerate hot food as soon as it stops steaming.
- Refrigerate leftovers promptly.
- Defrost food in the fridge, not on the kitchen bench.
- If in doubt, throw it out.

Separate

- Keep raw meat and poultry from touching other food.
- Keep raw meat and poultry in the bottom of the fridge or in a sealed container so it can’t drip onto other food.
- Cover all stored food.

The danger zone

Keep food hot, at or above 60°C, or cold, at or below 5°C.

Food poisoning is caused by bacteria and viruses in our food. Cooking food kills them but it’s important to prevent cooked food becoming contaminated again. Food poisoning bacteria multiply rapidly in food with a temperature between 5 and 60 degrees. Keeping perishable food below or above these temperatures can prevent bacteria growing.

By following these simple tips, you can make sure that you, and the people you cook for, are safe from food poisoning.

The Food Safety Information Council is Australia’s leading disseminator of consumer targeted food safety information. It is a non-profit group supported by the Australian Government Department of Health and Ageing, state and territory health and food safety agencies, local government, and leading professional, industry and community organisations.

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Summary
Incorrect storage of food can cause spoilage and food poisoning. High-risk food should be kept at 5°C or below, and above 60°C to avoid the ‘temperature danger zone’, where bacteria multiply fastest. Do not refreeze food that has been frozen and thawed once. Store raw food separately from cooked food.

Beware of the temperature danger zone
Food-poisoning bacteria grow and multiply fastest in the temperature danger zone between 5°C and 60°C. It is important to keep high-risk food out of this temperature zone.

Take special care with high-risk foods
Food-poisoning bacteria can grow and multiply on some types of food more easily than others. High-risk foods include:
• Raw and cooked meat, including poultry such as chicken and turkey, and foods containing these, such as casseroles, curries and lasagne
• Dairy products, such as custard and dairy-based desserts like custard tarts and cheesecake
• Eggs and egg products, such as quiche
• Smallgoods such as hams and salamis
• Seafood, such as seafood salad, patties, fish balls, stews containing seafood and fish stock
• Cooked rice and pasta
• Prepared salads like coleslaws, pasta salads and rice salads
• Prepared fruit salads
• Ready to eat foods, including sandwiches, rolls, and pizza that contain any of the food above.

Food that comes in packages, cans and jars can become high-risk foods once opened, and should be handled and stored correctly.

Storing food in the fridge
Your fridge temperature should be at 5°C or below. The freezer temperature should be below -15°C. Use a thermometer to check the temperature in your fridge.

Freezing food safely
When shopping, buy chilled and frozen foods at the end of your trip and take them home to store as quickly as possible. On hot days or for trips longer than 30 minutes, try to take an insulated cooler bag or icepack to keep frozen foods cold. Keep hot and cold foods separate while you take them home.

When you arrive home, put chilled and frozen foods into the fridge or freezer immediately. Make sure foods stored in the freezer are frozen hard.

Avoid refreezing thawed food
Food-poisoning bacteria can grow in frozen food while it is thawing, so avoid thawing frozen food in the temperature danger zone. Keep defrosted food in the fridge until it is ready to be cooked. If using a microwave oven to defrost food, cook it immediately after defrosting.

As a general rule, avoid refreezing thawed food. Food that is frozen a second time is likely to have higher levels of food-poisoning bacteria. The risk depends on the condition of the food when frozen, and how the food is handled between thawing and refreezing, but raw food should never be refrozen once thawed.

Store raw food separately from cooked food
Raw food and cooked food should be stored separately in the fridge. Bacteria from raw food can contaminate cold cooked food, and the bacteria can multiply to dangerous levels if the food is not cooked thoroughly again.
Always store raw food in sealed or covered containers at the bottom of the fridge. Keep raw foods below cooked foods, to avoid liquid such as meat juices dripping down and contaminating the cooked food.

**Choose strong, non-toxic food storage containers**

Make sure your food storage containers are clean and in good condition, and only use them for storing food. Cover them with tight-fitting lids, foil or plastic film to minimise potential contamination. Transfer the contents of opened cans into suitable containers.

**If in doubt, throw it out**

Throw out high-risk food left in the temperature danger zone for more than four hours – don’t put it in the fridge and don’t keep it for later. Check the use-by dates on food products and discard out-of-date food. If you are uncertain of the use-by date, throw it out.

**WHERE TO GET HELP**

- Food Safety Hotline, Tel. 1300 364 352
- Your local council health department.

**THINGS TO REMEMBER**

- Keep high-risk food at 5°C or below and above 60°C to avoid the temperature danger zone.
- Store raw foods below cooked foods.
- Store food in suitable, covered containers.
- Avoid refreezing thawed foods.
- Check and observe the use-by dates on food products.
- Take special care with high-risk foods.

This page has been produced in consultation with, and approved by Department of Health.

**USE-BY**

*Foods must be eaten or thrown away by this date*

- After this date foods may be unsafe to eat even if they look fine, because the nutrients in the food may become unstable or a build-up of bacteria may occur.
- It is illegal to sell foods after a ‘use-by’ date.
- Use-by dates are commonly found on short shelf life foods and perishables such as fresh meat packed at the supermarket, sliced ham and shaved meats, milk, yoghurt, custard and dairy products, and many ready-to-heat products like chilled pasta sauce or garlic bread.

**BEST BEFORE**

*Foods are still safe to eat after the date as long as they are not perished, damaged or deteriorated*

- ‘Best before’ date indicates that the product may lose some of its quality after this date passes.
- Foods can be legally sold after a ‘best before’ date as long as they are not damaged, deteriorated or perished.
- These foods should retain their colour, taste, texture and flavour as long as they are stored correctly, both at the retail outlet and at home.
- Most cereals, biscuits, snack foods, biscuits, chocolate, sauces, sugar, flour, eggs, tinned and frozen foods are labelled with a best before date.

**PROPER STORAGE**

- To make sure food lasts until its date mark, it is important to follow storage instructions, such as ‘keep refrigerated’ and ‘store in a cool, dark place’.
- Freshness and edibility right up to the use-by or best before date depends on how a food product is stored at the retail outlet and at home. Note: many foods need to be kept at certain temperatures, either in the fridge or freezer. For example, if a carton of milk is left out on the kitchen bench, it will quickly sour, regardless of its best before date.

**SOURCES**


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**SOURCES**

FOOD POISONING

MOST FOOD POISONING IS CAUSED BY HARMFUL BUGS GETTING INTO FOOD, CAUTIONS THE NSW FOOD AUTHORITY

Food poisoning is the name for the range of illnesses caused by eating or drinking contaminated food or drink. It is also sometimes called foodborne illness. It is quite common, affecting an estimated 5.4 million Australians each year. The symptoms can be unpleasant, and for some groups they can be quite serious.

TYPES

Most food poisoning is caused by harmful bugs (pathogens) getting into food.

The most common types of food poisoning are:
1. Bacterial e.g. Salmonella, Campylobacter, E.coli and Listeria
2. Viral e.g. Norovirus, Rotavirus and Hepatitis A
3. Intoxication caused by the toxins produced by some bugs such as Staphylococcus aureus, Bacillus cereus and Clostridium perfringens.

Some of these bugs can also be transferred from person-to-person with or without symptoms, or via contaminated surfaces. The symptoms they cause are the same even if food is not involved.

Some people have allergies and intolerances to specific foods or ingredients. These are not considered food poisoning, although they can also be very serious and even life threatening.

SYMPTOMS

Symptoms of food poisoning range from mild to very severe.

Symptoms usually take between a few hours to a few days to begin and may last for a few days, depending on the type of pathogen.

Symptoms often include one or more of:
• Nausea
• Stomach cramps
• Diarrhoea
• Vomiting
• Fever
• Headaches.

CAUSES

Some foods accommodate harmful bugs or toxins more than others.

The bugs or toxins may be present on foods at the time of purchase, get on to food by cross-contamination and poor hygiene or grow to harmful levels as a result of poor temperature control.

Harmful bugs can be:
• Carried on the bodies of people handling food
• Frequently present in the throat, nose, skin, hair and faeces
• Transferred to food after touching the nose, mouth or hair or smoking without washing hands before handling food. Sneezing or coughing around or near food can also lead to contamination.

Food poisoning can be caused by:
• Not cooking food thoroughly
• Not storing food that needs to be chilled below 5°C
• Someone who is ill or has poor hand hygiene handling the food
• Eating food after a ‘use-by’ date
• Cross-contamination, where bacteria is spread between food, surfaces, utensils and equipment.

Higher risk foods include:
• Meat, especially undercooked mince and rolled, formed or tenderised meats
• Raw or undercooked poultry such as chicken, duck and turkey
• Raw or lightly cooked eggs including foods made from raw egg such as unpasteurised mayonnaise
• Smallgoods such as salami and hams
• Seafood
• Cooked rice not kept at correct temperatures
• Cooked pasta not kept at correct temperatures
• Prepared salads such as coleslaw, pasta salads and rice salads
• Prepared fruit salads
• Unpasteurised dairy products.

Diagnosing correctly that illness is caused by food poisoning and identifying the particular cause can be difficult. Identifying the cause is not always possible.
SOME PEOPLE ARE MORE AT RISK

Some people can be more vulnerable to, or are affected more by the symptoms of food poisoning.

These include:
- Children younger than 5 years old
- Pregnant women
- People older than 70 years of age with certain underlying conditions, and
- People with compromised immune systems through chronic or acute ill health and some conditions and treatments.

In rare cases, food poisoning can result in long-term health problems and even death.

WHAT TO DO

People with diarrhoea and vomiting from any cause should stay home from work or school and drink plenty of fluids.

Where possible, people should avoid preparing food at home while ill and for 2 days after their symptoms have finished. They may still spread some illnesses via food for this period after symptoms have stopped.

PREVENTING FOOD POISONING

The risk of food poisoning can be minimised, by following the key tips at www.foodauthority.nsw.gov.au/consumers/keeping-food-safe/key-tips

FACT OR FICTION?

- Is it food poisoning?
- Was it the last thing you ate?
- Is the cause to be found in what you bring up?

WHEN TO SEEK MEDICAL ATTENTION

Most cases of food poisoning do not require medical attention. But contact a doctor if:
- Symptoms persist for more than 3 days or are very severe
- Not able to keep fluids down for more than a day
- Symptoms include blood or mucus in the vomit or diarrhoea
- The person is at risk of dehydration such as infants and the elderly. Consult their doctor as early as possible.

Further questions about illness possibly caused by food? Consult a doctor or call the local Public Health Unit.

MAKING A COMPLAINT

If you believe you are experiencing food poisoning caused by food that was purchased, you can report it in case an investigation is warranted.

DISCLAIMER

The health and illness-related information on this page is offered for general information and educational purposes only. It is not medical advice.

SOME COMMON FOOD POISONING BACTERIA

<table>
<thead>
<tr>
<th>BACTERIA TYPE</th>
<th>Foods that present the highest risk</th>
<th>Food poisoning symptoms</th>
<th>Symptoms occur</th>
<th>Special problems</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Salmonella</strong></td>
<td>Under-cooked meat, poultry, eggs and egg products.</td>
<td>Nausea, stomach cramps, diarrhoea, fever and headache.</td>
<td>Six hours to 3 days after eating contaminated food. Symptoms can last 3-5 days.</td>
<td>These bacteria produce toxins in food. The toxin is not destroyed during cooking, so correct storage of food before and after cooking is essential.</td>
</tr>
<tr>
<td><strong>Staphylococcus aureus</strong></td>
<td>Under-cooked meat and poultry dishes, egg products, mayonnaise-based salads, cream or custard-filled desserts.</td>
<td>Acute vomiting, nausea; occasionally diarrhoea and cramps.</td>
<td>One to 8 hours after eating the contaminated food. Symptoms may last about 24 hours.</td>
<td></td>
</tr>
<tr>
<td><strong>Campylobacter</strong></td>
<td>Raw meat, raw poultry, raw/unpasteurised milk. Household pets and flies may be carriers of the bacteria.</td>
<td>Diarrhoea, abdominal pain, nausea, headache and/or vomiting.</td>
<td>Usually 2-5 days after eating contaminated food. Symptoms may last 7-10 days. 25% of cases may experience a relapse.</td>
<td>The bacteria are killed when food is fully cooked and handled correctly by food handlers.</td>
</tr>
</tbody>
</table>

FOOD POISONING – PREVENTION

THERE ARE SOME SIMPLE RULES YOU CAN FOLLOW TO MINIMISE THE RISK OF FOOD POISONING, FROM BETTER HEALTH CHANNEL

Summary

Food poisoning is caused by eating contaminated food. The risk can be minimised by taking simple precautions. Some people are more at risk, including pregnant women, the elderly, young children and anyone with an illness. *E. coli, Salmonella, Listeria* and *Campylobacter* are some bacteria that cause food poisoning. Symptoms include nausea, stomach cramps, vomiting, diarrhoea, fever and headaches.

Food poisoning is caused by eating contaminated food and affects a large number of Australians every year. Food can be contaminated when it is handled, stored or prepared incorrectly. Some foods carry a higher risk of causing food poisoning, and some people are more at risk of getting food poisoning than others.

Food poisoning and bacteria

Food poisoning occurs when sufficient numbers of particular types of bacteria, or their toxins, are present in the food you eat. These bacteria are called pathogens.

High-risk foods

Food contamination is not just limited to foods you may consider risky, such as chicken or fish. Prepared fruits, vegetables and salads can also be potentially dangerous. Contaminated food will usually look, smell and taste normal. Food poisoning bacteria can grow and multiply on some types of food more easily than others.

Potentially high-risk foods include:

- Raw and cooked meat, including poultry such as chicken and turkey, and foods containing these, such as casseroles, curries and lasagne
- Dairy products, such as custard and dairy-based desserts like custard tarts and cheesecake
- Eggs and egg products, such as quiche
- Smallgoods such as hams and salamis
- Seafood, such as seafood salad, patties, fish balls, stews containing seafood and fish stock
- Cooked rice and pasta
- Prepared salads like coleslaws, pasta salads and rice salads
- Prepared fruit salads
- Ready-to-eat foods, including sandwiches, rolls, and pizza that contain any of the foods above.

High-risk groups for food poisoning

Some people are more at risk of getting food poisoning than others. Take special care when buying, storing and preparing food for these people.

Vulnerable groups include:

- Pregnant women
- The elderly
- Young children
- People with chronic illness.

Causes of food poisoning

Pathogens such as *Salmonella, Campylobacter* and *E. coli* may be found in our food-producing animals. Care in processing, transport, storage, preparing and serving of food is necessary to reduce the risk of contamination.
Food poisoning bacteria can multiply very quickly, particularly in certain conditions. The factors that affect bacterial growth include:

- **Time** – in ideal conditions, one bacterium can multiply to more than two million in seven hours.
- **Temperature** – food poisoning bacteria grow best in the temperature range between 5°C and 60°C. This is referred to as the ‘temperature danger zone’. This means that we need to keep perishable food either very cold or very hot, in order to avoid food poisoning.
- **Nutrients** – most foods contain enough nutrients for bacteria to grow. This is especially the case with potentially high-risk foods such as dairy and egg products, meat and poultry and seafood.
- **Water** – bacteria need water for their growth. Without water, growth may slow down or stop. That is why dried foods do not spoil.
- **pH** – is the measure of acidity or alkalinity and is also important for controlling bacterial growth. Low pH (acid conditions) generally stops bacterial growth, but where the pH of food is neutral, as is the case for many foods, most bacteria grow quite well.

Food contamination is not just limited to foods you may consider risky, such as chicken or fish. Prepared fruits, vegetables and salads can also be potentially dangerous. Contaminated food will usually look, smell and taste normal. Food poisoning bacteria can grow and multiply on some types of food more easily than others.

**Symptoms of food poisoning**

The symptoms of food poisoning may vary depending on the type of bacteria causing the illness. Symptoms can range from mild to very severe. They can occur almost immediately after eating, or a number of hours later, and they can last from 24 hours to five days.

When you get sick, you usually experience one or more of:

- Nausea
- Stomach cramps
- Diarrhoea
- Vomiting
- Fever
- Headaches.

Some foodborne pathogens cause other symptoms. For instance, pathogenic *Listeria* bacteria may cause miscarriage or meningitis in susceptible people. Food poisoning can also lead to other long-term illnesses and symptoms.

**If you think you have food poisoning**

If you experience some of these symptoms and think you have food poisoning, see your doctor as soon as possible. It’s also a good idea to report your illness to your local council or the Department of Health, so that the causes can be investigated. This is particularly important if you think the illness is related to eating out at a restaurant or café, or to food purchased from a shop or take-away outlet.

**How to prevent food poisoning**

There are some simple rules you can follow to minimise the risk of food poisoning. You should take steps to:

- Prevent food from being contaminated
- Prevent the bacteria in the food from growing and multiplying.

**Buying food**

When you buy food:

- Try to keep potentially high-risk foods outside the ‘temperature danger zone’ and buy hot and cold foods at the end of your shopping trip.
- Keep hot foods and cold foods separate.
- Avoid food past its use-by date and always check labels.
FOODBORNE ILLNESS ON THE DECLINE

New Australian National University research has found the incidence of foodborne illness has declined slightly and that one quarter of the 16 million cases of gastroenteritis each year are caused by food contamination.

The research tracked the changes in foodborne illness in Australia between 2000 and 2010. It found the number of cases of foodborne illness fell by 17 per cent, but the number of cases of the two leading causes of hospitalisation, Salmonella and Campylobacter, increased by 24 per cent and 13 per cent respectively.

“On average, each Australian has an episode of foodborne gastroenteritis once every five years,” said Associate Professor Martyn Kirk from the National Centre for Epidemiology and Population Health. “Australian authorities have worked hard in the last decade to ensure a safe food supply, so it is disappointing not to see a decline in Salmonella and Campylobacter infections,” he said.

Salmonella bacteria can be carried in undercooked chicken or eggs, while Campylobacter is commonly found in raw or undercooked poultry meat and raw milk. While the number of Salmonella and Campylobacter cases increased, they accounted for only around five per cent of cases of foodborne illness.

Associate Professor Kirk said the microbiological cause of 80 per cent of foodborne illnesses remained unknown.

“People often don’t find out the cause of their illness, either because they don’t visit a doctor, or they don’t have a test,” said Associate Professor Kirk.

The research also found an 85 per cent decline in cases of Hepatitis A virus infection as a result of vaccination campaigns.

In a second paper the researchers looked at four illnesses that can result from gastro; Guillain-Barré syndrome (GBS), haemolytic uremic syndrome (HUS), irritable bowel syndrome (IBS), and reactive arthritis (ReA). They found nearly one per cent of gastro cases, around 35,840 people, subsequently developed one of these illnesses, with 1,080 people hospitalised and 10 deaths.

Co-researcher Dr Kathryn Glass said people can avoid foodborne illness by keeping their hands clean when preparing food, keeping food refrigerated, keeping cooked and raw meat separate, and by ensuring meats are properly cooked.

“The key thing is that people who are infected should maintain good hygiene, including washing their hands and not preparing food while they are ill,” she said.

The findings have been published in two papers in the US Centers for Disease Control and Prevention journal, Emerging Infectious Diseases.

The research was funded by the Commonwealth Department of Health, Food Standards Australia New Zealand and the New South Wales Food Authority.


• Avoid food in swollen, dented, leaking or damaged cans, containers or other packaging.
• Don’t buy frozen or chilled foods that have been left out of the freezer, and only buy hot foods that are steaming hot.
• Check that serving staff use separate tongs when handling separate food types, such as meats and vegetables.
• Check that serving staff wear gloves when they handle the food, but not when they are cleaning surfaces or taking money.
• Make sure that eggs in cartons identify the supplier, and never buy cracked or dirty eggs.
• Take your shopping home quickly and store it immediately.

Preparing food to avoid food poisoning

When you prepare food:
• Wash your hands in warm, soapy water before preparing food.
• Don’t use the same cutting board for raw food that will be used for cooked (meat) and foods that are served raw (such as salads). This reduces the chances of cross-contamination of food.
• Note that most food should be cooked to a temperature of at least 75°C.
• Check the cooking temperature with a thermometer. If you don’t have one, make sure you cook poultry until the meat is white, particularly near the bone. Cook hamburgers, mince, rolled roasts and sausages

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right through until their juices run clear. Cook white fish until it flakes easily with a fork.

**Storing food to avoid food poisoning**

When you store food:
- Separate raw food from cooked food, and store raw food at the bottom of the fridge to avoid juices dripping onto and contaminating other food.
- Check your fridge temperature is below 5°C and your freezer temperature is below -15°C.
- Allow cooked foods to cool to room temperature (about 21°C) before storing in the refrigerator. (This should not take more than two hours – cooling will be quicker if you put the hot food into a number of smaller containers rather than leaving it in one large one.) This prevents the refrigerator temperature from rising and reduces the risk of bacterial growth in all food stored in the fridge.
- Cover all food with lids, tin foil or plastic wrap.
- Don't store food in opened tin cans.

**Things to remember**
- Food poisoning bacteria can multiply very quickly, particularly in certain conditions.
- Pregnant women, young children, the elderly and those with an illness are more at risk of food poisoning.
- Take care when preparing, storing or serving food, especially potentially high-risk foods.
- See your doctor as soon as possible if you experience symptoms of food poisoning.

**If you experience some of these symptoms and think you have food poisoning, see your doctor as soon as possible. It’s also a good idea to report your illness to your local council or the Department of Health, so that the causes can be investigated.**

**Where to get help**
- Your doctor
- NURSE-ON-CALL, Tel. 1300 60 60 24 – for expert health information and advice (24 hours, 7 days)
- Your local council health department
- Food Safety Hotline, Tel. 1300 364 352

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FROZEN BERRIES HEPATITIS A SCARE: HOW AUSTRALIA CHECKS IMPORTED FOOD

More than a dozen people across Australia have recently been infected with hepatitis A, with the outbreak linked to frozen berries imported from China, reports Clare Blumer for ABC News

Independent senator Nick Xenophon is calling for two inquiries into food imports, while the Department of Agriculture has written to Chinese authorities demanding assurances on measures to prevent further contamination.

But how does Australia’s food testing regime work?

Who is responsible for testing food imports?

The Department of Agriculture tests foods based on risk assessments and advice given by the Food Standards Australia New Zealand (FSANZ).

Do they test all the food coming into the country?

Every type of food is tested, but not every shipment of food coming in.

Food lines are tested based on three risk categories:

- Risk food (100 per cent tested): These foods have a medium to high level of risk to the public, and tests carried out depend on the type of food.
- Surveillance food (5 per cent of food lines tested): All other foods not classified as a risk food. These foods have less likelihood of being dangerous to the public, but if a surveillance food fails inspection, the inspection levels are increased.
- Food import compliance agreement: Importers can apply for an agreement that their food does not need to be inspected every time it arrives in Australia. If the Department of Agriculture agrees that their food management systems are satisfactory, the imports can be fast tracked at the borders.

Is fruit in one of the categories?

All food falls into one of those categories. Most fruits are in the surveillance category, so 5 per cent of fruit lines coming into the country are inspected, unless the company has a Food Import Compliance Agreement and can sidestep inspection.

Where do we get food from?

Australia’s biggest importer in dollar terms is its eastern neighbour, New Zealand. Australia shares a government agency with New Zealand that writes the rulebook on food safety for both countries so we do not test each other’s food imports.

China is Australia’s third largest importer but its food is tested more than any other origin country. In one year, Australia inspected 2,706 lines of food imported from China – 9 per

This chart shows how many lines of foods were inspected in each commodity group from July 2013 to June 2014.

Source: Department of Agriculture.

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**AMOUNT OF FOOD IMPORTS TESTED (BY FOOD TYPE)**

<table>
<thead>
<tr>
<th>Food Type</th>
<th>Tested</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eggs</td>
<td>40</td>
</tr>
<tr>
<td>Honey</td>
<td>52</td>
</tr>
<tr>
<td>Cereals, flours and milled products</td>
<td>2,274</td>
</tr>
<tr>
<td>Meat</td>
<td>3,921</td>
</tr>
<tr>
<td>Beverages</td>
<td>7,883</td>
</tr>
<tr>
<td>Dairy</td>
<td>9,586</td>
</tr>
<tr>
<td>Fruit and vegetables</td>
<td>13,380</td>
</tr>
<tr>
<td>Seafood</td>
<td>18,279</td>
</tr>
<tr>
<td>Other (incl. processed food)</td>
<td>39,643</td>
</tr>
</tbody>
</table>

This chart shows how many lines of foods were inspected in each commodity group from July 2013 to June 2014.
Chinese imports were analysed for dangerous chemicals, contaminants and microorganisms (usually forms of bacteria). They had a 100 per cent compliance rate for all food tested for microbial agents from July 2013 to June 2014, however they had only a 95 per cent compliance rate when tested for chemicals like pesticides.

China is Australia’s third largest importer but its food is tested more than any other origin country.

**How could they miss a hepatitis A contamination of a fruit?**

Australia does not routinely test for hepatitis A, or any other virus. The inspectors test for microorganisms, or bacteria, like *E. coli* and *salmonella*, but these are mainly tested in animal products like seafood.

FSANZ has advised that it is extremely difficult to test for viruses in food as they’re usually present at extremely low levels that aren’t easily detectable with current methods of analysis.

*Salmonella*, *E. coli* and *listeria* top the list of microbial agents the Department of Agriculture routinely checks for.

**What do they test for in fruits?**

Fruits are mainly tested for poisonous pesticides.

**How do they test?**

All foods are checked to make sure their labels comply with Australian regulations and there’s a visual check to assess whether they are safe. Then the food gets sent off for tests based on its risk level.

Australia does not routinely test for hepatitis A, or any other virus. The inspectors test for microorganisms, or bacteria, like *E. coli* and *salmonella*, but these are mainly tested in animal products like seafood.

If it is already a high risk food, inspectors wait for the food to pass the test before the food is released for sale. With everything else, inspectors take samples, let the food into the country, and only take action if the tests of the samples reveal problems with the food.

**Are the food importers required to meet any standards beyond the origin country’s requirements?**

Yes. The imports are supposed to comply with requirements laid out in the *Australia New Zealand Food Standards Code*.

**What if they fail?**

The food product can be treated, re-exported or destroyed. The food can also be recalled. If more shipments of the failed food are sent to Australia, 100 per cent are
inspected for compliance with the food standards until the long-term safety of the product is established.

It is extremely difficult to test for viruses in food as they’re usually present at extremely low levels that aren’t easily detectable with current methods of analysis. *Salmonella, E. coli* and *listeria* top the list of microbial agents the Department of Agriculture routinely checks for.

**Are any foods banned entirely?**

Yes. One example is that oysters from particular regions are not allowed into Australia at all, so if oysters reach Australia’s borders and do not have a certificate of origin, they are not allowed through.

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CHAPTER 2

Food additives, allergies and intolerances

The hard facts on food additives

Most food that comes in a packet or container contains at least some food additives. But what are these little three digit numbers and are they really a cause for concern? Bianca Nogrady explains in this article from ABC Health and Wellbeing

Reading the ingredient list on packaged food can leave you feeling bamboozled. Especially when it comes to the names and numbers of food additives, which are often completely unidentifiable and unpronounceable.

But despite our confusion, the food additives in our tins of tomatoes, tubs of margarine, or jars of jam are there for a variety of reasons. They may stop your food going off, improve its taste or appearance, or keep the ingredients from separating.

Food Standards Australia’s chief scientist Dr Paul Brent says: “a food additive is any substance that is not normally consumed as a food in itself and is not normally an ingredient, but which is allowed to be there if it fulfills a technological function in the final food”.

WHY DO WE NEED THEM?

We’ve been using ingredients to help us preserve and improve the taste of food for centuries and without certain additives many processed foods would be unsafe to eat, and if they weren’t we wouldn’t want to eat them anyway.

Some of the functions of food additives include:

- Adding or restoring colour to foods (artificial colours have code numbers in 100s)
- Preventing food from ‘going off’ (preservatives have code numbers in 200s)
- Slowing or preventing the oxidative deterioration of foods (antioxidants have code numbers in 300s)
- Improving the flavour of food (food enhancers have code numbers in the 600s).

“Consumers expect certain types of food to be certain types of colour so for example, if there are no colours we’d be eating clear margarine,” Brent says.

He acknowledges many of us are not happy with the amount of additives in our food, but argues they are a necessity.

“There is general concern about the use of food additives, that they’re not natural, why do we have them, that we should be eating organic food with no chemicals.

But the fact is that with a lot of food, particularly in a large continent like Australia where food has to travel a fair way, you do need preservatives.”

HOW SAFE ARE THEY?

Food Standards Australia and New Zealand (FSANZ) closely monitors the use of food additives, which Brent says undergo comprehensive safety assessments and are subject to regulatory scrutiny similar to...
pharmaceuticals and chemicals.

“The amount of data we get for a food additive compares with the amount of data that other agencies, such as the Office of Chemical Safety or the Therapeutic Goods Administration get.”

In addition, food additives are scrutinised by the World Health Organisation, the United Nations Food and Agriculture Organisation and its joint expert committee on food additives.

Dr Anne Swain, dietitian from Royal Prince Alfred Hospital’s allergy unit, says usually food additives aren’t a problem. But they can become an issue when overconsumed, or if someone with a sensitivity to a particular additive consumes them.

The amount of an additive food manufacturers are able to add to foods is based on tests of what is reasonable and safe, not only at normal levels of consumption, but also allowing for overconsumption.

“Could you overconsume? Yes. But generally the levels that are allowed [to be added to foods] are taking that into account.”

FOOD ADDITIVE INTOLERANCES

Around 5 per cent of the general population are sensitive to one or more food additives, says Dr Rob Loblay, head of the allergy unit at Sydney’s Royal Prince Alfred Hospital.

“For some people it’s a minor problem that only bothers them if they have way too much of something. For other people, who are very sensitive, it can be a significant problem and if they happen to have asthma it can be a serious problem,” says Loblay.

He points out intolerances to food additives are not food allergies; they don’t tend to involve the immune system and don’t show up on allergy tests. Also intolerances are unlikely to cause life-threatening reactions such as anaphylaxis, even though they can still make you very unwell.

“It’s a dose effect – often a little bit is not a problem, a bit more can be a problem, too much can be a problem. But that’s a very individual thing. Each person needs to work out how much is too much for them of which particular additive,” Loblay says.
PROBLEM ADDITIVES

Much of the concern about food additives has been based on certain groups.

Preservatives have been associated with intolerances, particularly among people with asthma. Sulphites (including sodium bisulphite (222), sodium metabisulphite (223) and potassium bisulphite (228)) found in wine, beer and dried fruit, are known to trigger asthmatic episodes and cause migraines in people who are sensitive to them. Also sodium nitrate (251) and sodium nitrite (250), which are used in processed meats, have been classified as ‘probably carcinogenic to humans’ by the International Agency for Research of Cancer (IARC).

Flavour enhancer monosodium glutamate (MSG) (621) is often used in Asian cooking and has been associated with ‘Chinese Restaurant Syndrome’ (a collection of symptoms including headache, numbness and tingling that some people experienced after eating foods containing MSG). While numerous studies have found MSG is safe for most of us, some people experience symptoms if they eat a large amount of MSG in a single meal.

Food colourings, such as tartrazine (102), allura red (129) and ponceau 4R (124), are often credited as the cause of hyperactivity in children. In 2007, a team of researchers from the University of Southampton in the UK studied food colourings and additives, and their effect on children’s behaviour. The authors of the Southampton study concluded there was a link between hyperactivity and food colourings (and one preservative) in children aged three and eight to nine years old.

Says Loblay: “It created this enormous wave of concern, as well as lobbying by various interest groups to ban additives from the market, or to ban colourings from market, or to ban them from schools. There was a big push to ban things and it caused some concern for the food authorities because they felt that it was all a bit overblown and so did we.”

NATURAL ADDITIVES

He says the distinction between ‘artificial’ and ‘natural’ food additives, is misguided because almost everyone who is sensitive to an artificial additive will also be sensitive to one or more natural substances. “Sometimes the additives and the natural substance are chemically identical, sometimes they’re chemically closely related and the distinction between natural and artificial is completely artificial.”

Swain says the main difference between these compounds in ‘natural’ versus processed foods is concentration.

“When you’re talking about the natural chemicals in food, you'll get a small amount of these compounds naturally occurring in food but when you get them as an additive, you get a large dose in one hit,” says Swain. However, she stresses that for the majority of people, the nature and levels of additives in our food supply are not an issue as long as they are consumed in moderation. “I’m not saying that people should have lots of colours, preservatives etcetera, but I’m equally not saying it should be banned from our food supply,” Swain says. “I think there’s too much junk out there but for those that want to eat junk, it’s there.”

WHAT DO FOOD ADDITIVES DO?
FOOD STANDARDS AUSTRALIA NEW ZEALAND EXPLAINS THE ROLE OF ADDITIVES

Some food additives have more than one use. Food additives are listed according to their functional or class names.

Examples of the most common functions are:

- **Acids/Acidity regulators/Alkalis** help to maintain a constant acid level in food. This is important for taste, as well as to influence how other substances in the food function. For example, an acidified food can retard the growth of some micro-organisms.

- **Anti-caking agents** reduce the tendency of individual food particles to adhere and improve flow characteristics. For example, seasoning with an added anti-caking agent flows freely and doesn’t clump together.

- **Antioxidants** retard or prevent the oxidative deterioration of foods. For example, in fats and oils, rancid flavours can develop when they are exposed to oxygen. Antioxidants prevent this from happening.

- **Bulking agents** contribute to the volume of the food, without contributing significantly to its available energy. For example, sugar often contributes to the volume of lollies, while some low-joule foods need bulking agents added to them to replace the bulk normally provided by sugar.

- **Colourings** add or restore colour to foods, e.g. icing mixture is coloured to make it more attractive on cakes.

- **Emulsifiers** facilitate or maintain oil and water from separating into layers, e.g. emulsifiers may be used in margarine to prevent oil forming a layer on top of the margarine.

- **Firming agents/stabilisers** maintain the uniform dispersion of substances in solid and semi-solid foods.

- **Flavour enhancers** enhance the existing taste and/or odour of a food.

- **Foaming agents** maintain the uniform dispersion of gases in aerated foods.

- **Gelling agents** modify the texture of the food through gel formation.

- **Glazing agents** impart a coating to the external surface of the food, e.g. a wax coating on fruit to improve its appearance.

- **Humectants** reduce moisture loss in foods, e.g. glycerine may be added to icing to prevent it from drying out.

- **Preservatives** retard or prevent the deterioration of food by micro-organisms, and thus prevent spoilage of foods.

- **Raising agents** liberate gases, thereby increasing the volume of a food and are often used in baked goods.

- **Sweeteners** replace the sweetness normally provided by sugars in foods without contributing significantly to their available energy.

- **Thickeners** increase the viscosity of a food, e.g. a sauce might contain a thickener to give it the desired consistency.

ADDITIVES MOST LIKELY TO CAUSE ADVERSE REACTIONS

A USEFUL FOODWATCH ARTICLE WRITTEN BY CATHERINE SAXELBY

The consumption of additives in food is a vexed issue. On the one hand, no one plans to consume them in the first place and some – a limited number – have been linked to health problems ranging from asthma, wheezing, rashes, digestive upsets, behaviour problems in kids resulting in overactivity, lack of concentration and impulsiveness (hyperactivity).

On the other hand, additives help us live a fuller life if the products we buy can be stored without refrigeration, look attractive, keep for weeks without separating, drying out or crumbling, as well as allow us to eat out of season and minimise the need for salt or oil for preserving.

However, not all additives are harmful and I’ve already spelled out a short list of the ones that shouldn’t worry us here. So what follows are my lists of the worst additives. For clarity, I’ve divided them down into Colours, Preservatives and Flavour Enhancers. I’ve listed all the possible additives from the food code but in practice only one or two from each group are commonly added to food. So you won’t see ALL these additives when out shopping. I’ve highlighted in bold the commonly-used ones.

13 COLOURS

Many people blame sugar but it may be the colours that sugar keeps company with in items like lollies, chocolates, ice creams, soft drinks, cordials and snack foods that are the REAL cause of the problem.

Natural colours such as caramel (150a-d), beet red (162), chlorophyll (140, 141) and beta-carotene (160a) have a good safety record and pose no problem. No limit is put on their use in food and they can be added to all foods according to good manufacturing practice (called ‘uncertified’ by the US Food and Drug Administration).

However, artificial colours like tartrazine, Sunset Yellow FCF, erythrosine, amaranth and Brilliant Blue FCF have question marks hanging over them and have been linked to food sensitivity reactions. Tartrazine, once a common yellow colouring, has been extensively investigated for its ability to induce hives and asthma in aspirin-sensitive asthmatics. And they were used to test children’s bad behaviour in the Southampton Study (more on page 31). Because of these problems artificial colours cannot be added freely. Food regulations set limits on what type of foods they can be added to and at what levels.

Here’s my list of the 13 problem colours with their additive code number:

**Colours – artificial**
- 102 Tartrazine
- 110 Sunset yellow FCF
- 122 Azorubine
- 123 Amaranth
- 124 Ponceau 4R
- 127 Erythrosine
- 129 Allura red AC
- 132 Indigotine
- 133 Brilliant blue FCF
- 142 Food green S
- 151 Brilliant black BN
- 155 Brown HT

**Colour – natural**
- 160bAnnatto extracts

May be added to:
- Coloured foods like soft drinks, cordial, sweets, chocolate, packet desserts, cakes, biscuits, sauces, jelly crystals, toppings, snack foods, processed cheese, sauces, pickles, coloured medications and medication syrup for children. Since 1997 Erythrosine use has been limited to maraschino cherries.

23 PRESERVATIVES

There are five groups of preservatives that are problematic:

1. **Sorbates**

Sorbates occur naturally in some fruits e.g. berries, but are synthesised and added to foods to inhibit the growth of moulds and yeasts that can cause foods to spoil (most commonly as potassium sorbate).

Potassium sorbate is a widely used preservative in food production as it’s highly soluble, inexpensive and easily produced – this also makes it a popular choice for many industrial applications as well.

When added to water, potassium sorbate breaks down into sorbic acid and potassium. It is the sorbic acid that is active as an anti-microbial. It is more active at lower pH i.e. acidic mixes.

Potassium sorbate is widely regarded as safe and unlikely to be hazardous. A 2005 FSANZ study found even high consumers were unlikely to reach the ADI cut-off and overconsume it.

Both natural and added must be avoided on elimination diets to test for food sensitivities. Sorbic acid can cause contact dermatitis at concentrations above 0.5%. Studies show that if it is used at a concentration of not more than 0.2% it is unlikely to constitute a safety hazard.

- 200 Sorbic acid
- 201 Sodium sorbate
- 202 Potassium sorbate
- 203 Calcium sorbate
Commonly added to:
• Cottage cheese, yoghurt, dried meat, dried fruit, pickles, wine especially sweet and sparkling wine, apple cider, flavoured syrups and toppings.
• Also widely used in pharmaceuticals including syrups, eye, ear and nose drops, contact lens solution, and many herbal supplements.
• Many personal hygiene products use potassium sorbate e.g. cleansers, shampoo, moisturisers, anti-aging creams, hand creams, eye shadow, mascara, blush, hair colour, cream-based concealers and other liquid products. It prevents the products spoiling or breaking down as they sit on the shelf or in room temperature storage for long periods of time.

2. Benzoates
Benzoates occur naturally in cranberries, bilberries and other berries, vegetables, pepper, herbs, spices, peppermint and honey. Both natural and added must be avoided on elimination diets to test for food sensitivities.
• 210 Benzoic acid
• 211 Sodium benzoate
• 212 Potassium benzoate
• 313 Calcium benzoate

Commonly added to:
Non-cola soft drinks, cordials, orange juice and fruit drinks.

3. Sulphites or sulfites (sulphur-containing preservatives)
Sulphur compounds have been used for centuries by the ancient Greeks and Romans to preserve wine. Today they are still used in wineries to destroy undesirable bacteria in wine storage vats and slow spoilage. However, in a small number of sensitive asthma patients, they can trigger wheezing and throat tightening, frequently within one or two minutes of consumption.

The most widely used is sodium metabisulphite (223) and sulphur dioxide (220):
• 220 Sulphur dioxide
• 221 Sodium sulphite
• 222 Sodium bisulphite
• 223 Sodium metabisulphite
• 224 Potassium metabisulphite
• 225 Potassium sulphite
• 228 Potassium bisulphite

Commonly added to:
Dried apricots, dried apple, ‘fresh’ fruit salad, cordial, juice, fruit juice drinks, dried vegetables (like dried peas and instant mashed potato), pickled vegetables (like onions and gherkins), pickles, chutney, sausages, frankfurts, devon, vinegar, beer, wine, especially white wine in casks. They prevent the darkening of dried fruit and juices and are used to preserve soft drinks, pickled onions and sausages.

4. Propionates
All the propionates occur naturally in many foods and can be produced by bacteria as well e.g. in cheeses such as Swiss cheese.
• 280 Propionic acid
• 281 Sodium propionate
• 282 Calcium propionate
• 283 Potassium propionate

Commonly added to:
Breads, cakes, pastries as a mould inhibitor – calcium propionate 282 is the most common mould inhibitor and
is used in humid weather where bread would otherwise go mouldy. Many bakeries now do not use it anymore so consume your bread within a couple of days or else freeze it for later eating.

5. Nitrites
Nitrites are on the watch list as they can be converted to nitrosamines in the body, which may cause cancer.

- 249 Potassium nitrite
- 250 Sodium nitrite
- 251 Sodium nitrate
- 252 Potassium nitrate

Commonly added to:
- Ham, bacon, corned beef, salamis, hot dogs, frankfurters and cured and canned luncheon meats – think of all these as ‘processed meats’ and limit your intake.

9 FLAVOUR ENHANCERS
Generally flavour enhancers cause no harm at levels normally eaten. But high doses given under experimental conditions have been linked to food intolerance symptoms (almost always in combination with other chemicals like amines and salicylates).

Glutamates
- 621 Monosodium glutamate (MSG)
- 622 Monopotassium glutamate
- 623 Calcium glutamate
- 624 Monoammonium glutamate
- 625 Magnesium glutamate

Guanylates
- 627 Disodium guanylate
- 631 Disodium inosinate
- 635 Ribonucleotides
- Hydrolysed Vegetable Protein (HVP) – no number

Commonly added to:
- Soups, sauces, stock, gravies, seasonings, Asian and vegetarian dishes, flavoured crisps and snack foods, instant noodles. Asian cooks have used MSG extracted from seaweed for centuries as a way to flavour their instant noodles. Asian cooks have used MSG extracted from seaweed for centuries as a way to flavour their instant noodles.

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Flavour enhancers
- Glutamates and MSG 620, 621, 622, 623, 624, 625
- Disodium guanylate 627
- Disodium inosinate 631
- Ribonucleotides 635
- Hydrolysed Vegetable Protein (HVP) – no number

Natural alternatives
With shoppers ever wary of anything artificial and actively looking for clean-labels, natural colourings and natural preservatives look set to take over from synthetic alternatives in market value.

Even though natural colours have less consistency, less colour range and heat stability and are more expensive than their chemical alternatives, they’ve got the appeal. So our natural confectionery is now coloured with beet red or elderberry extract rather than red.

The Southampton six
One of the most significant studies determining consumers from artificial colourings was the Southampton Study published in 2007 in the Lancet.

It was a study of almost 300 children aged 3, 8 and 9 by the UK’s University of Southampton. They tested reactions to a mixture of six colours and the preservative sodium benzoate (211), a preservative found in many lollies and soft drinks.

Results showed significant adverse affects on the children’s behaviour with one mix but not another and in older children but less so in the 3 year olds.

It was not a completely compelling study but nonetheless most major companies, particularly those involved in producing products aimed at children, have been searching for natural alternatives to their synthetic colours since then.

The 6 food colours used in the study – which now have a voluntary ban in the UK – are:
- Sunset yellow (E110)
- Quinoline yellow (E104)
- Carmoisine (E122)
- Allura red (E129)
- Tartrazine (E102)
- Ponceau 4R (E124)

These six controversial bright red or yellow colours are usually found in:
- Lollies, chocolate, soft drink, cordial, sports drink, iced doughnuts, iced cupcakes, iced biscuits, cakes, muffins, flavoured milk, medicines, ice cream.


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FOOD COLOURS

Food colours are either produced naturally or derived synthetically. Like all food additives, colours must undergo a safety assessment by FSANZ before they can be used in food or drinks sold in Australia or New Zealand. This process sets a safety limit for food additives to try and ensure no one would eat an unsafe level, even if they ate a large amount of foods containing the colour over a lifetime.

The food colours currently approved have been used safely for decades and FSANZ reviews all new evidence about the safety of food colours.

Surveys undertaken by FSANZ have found that Australian children consume low levels of food colours.

Food intolerance
Some people notice a reaction to either natural or synthetic additives. Reported reactions include rashes, irritable bowel symptoms, headaches, and behavioural changes in children.

If you think you or your child has a food intolerance seek advice from a doctor or accredited practising dietitian who can tell you which additive to avoid, if any. To help you avoid additives, all additives in a food or drink must be labelled with either the name or the specific internationally recognised code number of the additive.

How many food colours do we consume?
Recent dietary estimates reported in the Supplementary colours report (FSANZ 2012) confirm the findings of the Survey of added colours in foods available in Australia (FSANZ 2008). The updated exposure estimates show that the current projected dietary exposure of children to added colours in food and beverages in Australia remains well within the Acceptable Daily Intake (ADI). In all cases, including high consumers, the estimated dietary exposure was <5% of the ADI for all colours investigated.

The findings of this latest report confirm that dietary exposure to added colours in food and beverages does not pose a public health and safety concern for children in Australia.

Southampton study
In 2007, researchers at the University of Southampton looked at possible effects of artificial food colours on children’s behaviour.

Like other food agencies around the world, FSANZ looked at this study and did not find evidence that would result in a lowering of safety limits for these colours.

The European Food Safety Authority (EFSA) published opinions on six food colours in November 2009, and a further seven food colours in 2010. EFSA concluded that the available evidence did not indicate a causal link between exposure to the colours, including those in the Southampton Study, and possible effects on behaviour.

However the European Union has required some colours to have the warning statement: “may have an adverse effect on activity and attention in children”.

In March 2011 a committee of the US Food and Drug Administration reviewed whether available scientific data supported a causal link between eating food colours and hyperactivity. The committee found that current data (including the Southampton study) did not support a link.

FOOD ALLERGY

MYDR EXPLAINS THE ISSUES AROUND FOOD ALLERGIES AND INTOLERANCES

Many people will have an unpleasant reaction to something they eat or drink, and think they may have a food allergy. However, most of these people are more likely to have what’s called a ‘food intolerance’, rather than a true food allergy. Proven food allergies occur in approximately one in 20 children and about one in 100 adults.

Both a food allergy and a food intolerance can make you unwell, but a food allergy has the potential to be life-threatening.

DIFFERENCES BETWEEN FOOD ALLERGY AND FOOD INTOLERANCE

<table>
<thead>
<tr>
<th>FOOD ALLERGY</th>
<th>FOOD INTOLERANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Involves the immune system.</td>
<td>Does not involve the immune system.</td>
</tr>
<tr>
<td>Symptoms include rash, hives, vomiting, diarrhoea, abdominal cramps and occasionally difficulty breathing.</td>
<td>Can cause abdominal pain, wind, diarrhoea, headache, mouth ulcers, hives and runny nose.</td>
</tr>
<tr>
<td>Symptoms usually appear a few minutes to an hour after eating the food.</td>
<td>Symptoms can appear within minutes of eating the food or more usually several hours, but can take several days to appear.</td>
</tr>
<tr>
<td>Food allergy can be mild or severe and in extreme cases can cause life-threatening anaphylaxis.</td>
<td>Food chemicals or additives (such as flavours or preservatives) are often the cause of food intolerances.</td>
</tr>
</tbody>
</table>

FOOD ALLERGY

A food allergy involves a reaction of your immune system, whereas a food intolerance does not. If you have a food allergy your immune system makes antibodies against a particular (normally harmless) food. It’s as if your immune system mistakes that type of food for a harmful foreign invader.

This means that when you eat the particular food again, the pre-formed antibodies swing into action and trigger a cascade of reactions in your tissues that result in some or all of the typical symptoms of food allergy:
- Mouth itching and swelling
- Rash
- Hives
- Runny nose
- Vomiting
- Abdominal pain
- Diarrhoea
- Swelling of the throat and tongue, and
- Sometimes difficulty breathing.

These symptoms usually occur within 30 minutes of eating the food.

There is also a delayed type of food allergy that causes symptoms (often affecting the skin or digestion) 24-72 hours after eating a food that you are allergic to. This type of allergy is not well understood and can be difficult to diagnose.

ANAPHYLAXIS: A MEDICAL EMERGENCY

Food allergy symptoms are often severe, and sometimes life-threatening. A severe, sudden, life-threatening allergic reaction is called anaphylaxis. Anaphylaxis is a medical emergency that needs immediate treatment.

Symptoms of anaphylaxis include:
- Swelling of the lips and tongue
The treatment for food allergy is to completely avoid the food that causes your allergy. People who have a severe allergy should be careful to avoid even touching the food or eating trace amounts of it, which may be present in processed foods. A dietitian can show you how to recognise the relevant ingredient on food labels.

- Difficulty breathing
- Widespread rash
- Vomiting
- Wheeze
- Sudden drop in blood pressure, and
- Collapse.

COMMON FOOD ALLERGIES

The foods most commonly associated with food allergy are:
- Milk
- Eggs
- Nuts, especially peanuts
- Grains, such as wheat, oats and rye
- Soy
- Fish and shellfish
- Sesame
- Tomatoes, berries and other fruit.

The allergic reaction is usually to a protein within the food.

Most children who have an allergy to soy, wheat, milk or eggs grow out of this by the time they start school, whereas an allergy to seafood or nuts is likely to be severe and last for life.

DIAGNOSIS OF FOOD ALLERGY

See your doctor for diagnosis of food allergy. You will be asked to describe your symptoms, and your doctor may suggest blood tests or skin prick tests to investigate whether you have a food allergy. You may be referred to an allergy specialist for these and possibly other tests. It is important to know exactly which food is causing your allergy so that you can avoid it in the future.

TREATMENT OF FOOD ALLERGY

The treatment for food allergy is to completely avoid the food that causes your allergy. People who have a severe allergy should be careful to avoid even touching the food or eating trace amounts of it, which may be present in processed foods. A dietitian can show you how to recognise the relevant ingredient on food labels.

If you are thought to be at risk of a severe allergic reaction to a food, your doctor or specialist may advise you to wear an identifying bracelet such as a MedicAlert bracelet and possibly to avoid certain medicines. He or she should also give you a written ‘Anaphylaxis Action Plan’ telling you what to do in the event of a severe allergic reaction.

ADRENALINE SELF-INJECTION DEVICES (AUTO-INJECTORS)

As part of your Anaphylaxis Action Plan, your doctor or specialist may advise that you carry with you at all times an adrenaline self-injection device such as an EpiPen or Anapen. The medicine in the adrenaline auto-injector helps treat severe allergic reactions by shrinking blood vessels that have become too expanded, making your heart beat more strongly and helping you breathe.

Your doctor or specialist should explain when and how to use the adrenaline auto-injector. You can practise with a training device that has no needle or medicine so that you know what to do with the real device should the need arise.

If you develop signs and symptoms of a severe allergic reaction as described by your doctor or pharmacist, inject the adrenaline into your thigh muscle straight away as you have been shown, and seek urgent medical help.

Children may be prescribed either a regular or reduced-dose auto-injector, depending on the severity of their allergic reactions and their body weight.

Check your device regularly and take it to your pharmacist for a replacement if it is approaching or past its expiry date or if the packaging gets damaged.

WHAT IS FOOD INTOLERANCE?

Food intolerance is an abnormal response to a food (often to a ‘food chemical’ or additive), resulting in symptoms of illness. Food intolerance is not an immune system reaction and does not generally cause life-threatening symptoms. The suspect food chemical may occur naturally in the food or it may be added to
A food intolerance can mean you have symptoms to a range of foods because the suspect chemical may be present in many different foods. In contrast, a person with a food allergy will often react to only one or two foods.

Food intolerance is a more common condition than food allergy and may cause diarrhoea, nausea, cramping or headache soon after eating the food, hours later, or even days after eating the food. The severity of symptoms can vary because the suspect food chemical can accumulate in the body, depending on how much of the suspect food (or foods that contain the suspect chemical) you have eaten. Eating a small amount of the suspect food may not cause symptoms, but eating a lot of it can.

Sometimes a food intolerance occurs when your body is not able to process a food component. A good example of this is lactose intolerance where the person lacks the enzyme necessary to break down the milk sugar (lactose) for proper digestion.

Food intolerance won’t show up in the blood tests or skin prick tests used to diagnose food allergy. The symptoms of food intolerance are often similar to the symptoms of food allergy and many other conditions. To find out if you have a food intolerance, your doctor may refer you to a dietitian, who will supervise eliminating and reintroducing various foods in your diet, one at a time, to check the effect on your symptoms. You should not carry out an elimination diet without supervision by your doctor or specialist or a dietitian.

The treatment for a food intolerance is usually to avoid eating large amounts of foods that contain the suspect food chemical, so that the chemical does not accumulate in the body and so you can prevent symptoms from appearing. A dietitian can help you devise an eating plan that helps you achieve this, yet still allows you to enjoy a balanced diet that includes all the essential nutrients.

REFERENCES

While food allergies affect a small proportion of the population, an allergic reaction can be life-threatening or fatal.

It is generally estimated that 1-2 per cent of the Australian population suffers from a true food allergy. In children this rate rises to between 5 and 8 per cent. Allergies to milk and eggs are often outgrown by 5-7 years of age, while allergies to peanut tend to be lifelong and allergies to seafood may not occur until late teens and early adulthood. The Code requires labelling declarations for the eight allergic foods estimated to produce 90% of allergic reactions to foods. However, it is recognised that there are many other foods that may cause an allergic reaction and which are not regulated by the Code for mandatory labelling declarations.

Most food allergens are proteins, and an individual must first be sensitised by exposure to the protein to develop antibodies, which then react to further exposures. Allergenic proteins are usually not denatured under food processing conditions and are relatively resistant to digestion. Allergic reactions to foods are characterised by the rapid release of powerful cellular chemicals such as histamine by the antibodies, which can occur within minutes or up to four hours after ingestion. Food allergies are usually mediated by immunoglobulin E (IgE) antibodies and can be confirmed by a skin-prick test or blood test.

Food allergy symptoms vary in nature and severity between individuals and may include:
- Respiratory problems (rhinitis, asthma, throat swelling)
- Gastrointestinal problems (nausea, vomiting, diarrhoea, abdominal cramping) or
- Skin problems (hives, itching, dermatitis, eczema).

A severe reaction (anaphylaxis) can occur after contact/ingestion with allergens in foods. This can result in a rapid loss of blood pressure, severe obstruction of the airways, a generalised shock reaction and multiple organ failure. This can be fatal if not treated within minutes. While few people with
Food allergies are at risk of such serious consequences, some deaths have occurred following accidental ingestion of a food containing an allergen to which the individual is sensitive.

Coeliac disease is an autoimmune reaction to dietary gluten. Although Coeliac disease does not result in anaphylaxis, it causes damage to the intestine reducing the ability to absorb nutrients. Symptoms may appear at any time from early childhood to senior years. Treatment requires a strict, lifelong gluten-free diet to allow the intestine to recover and to avoid complications.

In contrast to food allergies, food intolerances are generally more common. Reactions are more obviously dose-related, and include non-protein substances in foods. An intolerance reaction to a food may have delayed symptoms, with no observable effect for several hours after eating the food. There are no proven laboratory tests for food intolerances and diagnosis is through the use of an elimination diet.

Symptoms can range from mild to severe and may include:
- Hives, eczema, other itchy skin rashes
- Stuffy or runny nose, asthma, frequent colds or ear infections
- Mouth ulcers, reflux, bloating, stomach aches, constipation and/or diarrhoea, incontinence
- Migraines or headaches
- Lack of concentration, anxiety, depression, lethargy, irritability, sleeping difficulties.

**Food allergy basics**

- A food allergy is an immune system response to a food protein that the body mistakenly believes is harmful. When the individual eats food containing that protein, the immune system releases massive amounts of chemicals, triggering symptoms that can affect a person's breathing, gastrointestinal tract, skin and/or heart.
- Symptoms of food allergy can include; hives, swelling of the lips, face and eyes, swelling of the tongue, breathing difficulty, abdominal pain, vomiting or a sudden drop in blood pressure. If left untreated, these symptoms can be fatal.
- It is estimated that up to 2% of adults, 1 in 10 babies* and 6% of children have food allergy and some of them will experience a life-threatening allergic reaction (anaphylaxis).
- There are more than 170 foods known to have triggered severe allergic reactions. Examples include kiwi fruit, banana, chicken, mustard and celery.
- Currently, there is no cure for food allergy. Avoidance of the food is the only way to prevent a reaction.
- Adrenaline is the first line treatment for severe allergic reactions and can be administered via an auto-injector called the EpiPen®.
- Food allergy is the leading cause of (severe reactions) anaphylaxis outside the hospital setting.
- An estimated 10 people die from anaphylactic reactions each year in Australia and some of these may have been triggered by food. We do not know exact numbers because there is no register collecting data.


Food allergy occurs in around 1 in 20 children and in about 2 in 100 adults. The most common triggers are egg, cow’s milk, peanut, tree nuts, seafood, sesame, soy, fish and wheat. The majority of food allergies in children are not severe, and may be ‘outgrown’ with time. However, peanut, tree nut, seed and seafood allergies are less likely to be outgrown and tend to be lifelong allergies. Some food allergies can be severe, causing life-threatening reactions known as anaphylaxis.

What is allergy?
An allergy is when the immune system reacts to a substance (allergen) in the environment which is usually harmless (e.g. food, pollen, animal dander and dust mite) or bites, stings and medications. This results in the production of allergy antibodies which are proteins in the immune system which identify and react with foreign substances.

An allergic reaction is when someone develops symptoms following exposure to an allergen, such as hives, swelling of the lips, eyes or face, vomiting or wheeze. It is important to note that only some people with allergy antibodies will develop symptoms following exposure to the allergen, hence confirmation of allergy by a clinical immunology/allergy specialist is required.

Allergic reactions range from mild to severe. Anaphylaxis is the most severe form of allergic reaction.

Symptoms of food allergy are usually obvious
Mild to moderate symptoms of food allergy include:
- Swelling of face, lips and/or eyes
- Hives or welts on the skin
- Abdominal pain, vomiting.

Signs of a severe allergic reaction (anaphylaxis) to foods include:
- Difficult/noisy breathing
- Swelling of tongue
- Swelling/tightness in throat
- Difficulty talking and/or hoarse voice
- Wheeze or persistent cough
- Persistent dizziness and/or collapse
- Pale and floppy (in young children).

Food allergy can sometimes be dangerous
Mild, moderate and even severe allergic reactions (anaphylaxis) to foods are common in Australia and New Zealand. However, deaths from anaphylaxis due to food allergy are rare in Australia and New Zealand. Most deaths can be prevented by careful allergen avoidance measures and immediate administration of an adrenalin autoinjector.

The most common foods causing life-threatening anaphylaxis are peanuts, tree nuts, shellfish, milk and egg. Symptoms of anaphylaxis affect our breathing and/or our heart.

Sometimes food allergy may be less obvious
Less common symptoms of food allergy include infantile colic, reflux of stomach contents, eczema, chronic diarrhoea and failure to thrive in infants.

Not all adverse reactions to foods are due to allergy
The term allergy is often misused to describe any adverse reaction to foods which results in annoying (but ultimately harmless) symptoms such as headaches after overindulging in chocolate or red wine, or bloating after drinking a milkshake or eating too much pasta. While these reactions are not allergic, the result is a widespread impression that all adverse reactions to foods are trivial.

Adverse reactions to foods that are not allergy include food intolerances, toxic reactions, food poisoning, enzyme deficiencies, food aversion or irritation from skin contact with certain foods. These adverse reactions are often mistaken for food allergy.

How common is food allergy and is it increasing?
Studies have shown that food allergy affects 10% of children up to 1 year of age; between 4-8% of children aged up to 5 years of age and approximately 2% of adults. Hospital admissions for severe allergic reactions (anaphylaxis) have doubled over the last decade in Australia, USA and UK. In Australia, admissions for anaphylaxis due to food allergy in children aged 0 to 4 years are even higher, having increased five fold over the same period.

Why the rise in food allergy?
We currently do not have clear information as to why food allergy seems to have increased so rapidly in recent years, particularly in young children. This area requires additional research studies, several of which are already underway.

Proposed explanations (which have not yet been proven in studies) include:
- Hygiene hypothesis, which proposes that less exposure to infections in early childhood, is associated with an increased risk of allergy.
- Delayed versus early introduction of allergenic foods (e.g. egg, peanut or tree nuts).
- Methods of food processing (e.g. roasting makes peanuts more allergenic).
• Development of allergy to food by skin exposure (e.g. the use of unrefined nut oil based moisturisers).

This area requires additional research studies, several of which are underway.

**Allergies to cow’s milk, eggs and peanuts are the most common in children**

Nine foods cause 90% of food allergic reactions, including cow’s milk, egg, peanut, tree nuts, sesame, soy, fish, shellfish and wheat. Peanut, tree nuts, shellfish, fish, sesame and egg are the most common food allergens in older children and adults. Other triggers such as herbal medicines, fruits and vegetables have been described and almost any food can cause an allergic reaction.

**When does food allergy develop?**

Food allergy can develop at any age, but is most common in young children aged less than 5 years. Even young babies can develop symptoms of food allergy.

**Reliable diagnosis of food allergy is important**

Your doctor will normally ask a series of questions that may help to narrow down the list of likely causes such as foods or medicines consumed that day, or exposure to stinging insects. This approach will also help to exclude conditions that can sometimes be confused with food allergy and anaphylaxis.

Skin prick allergy tests or allergy blood tests help to confirm or exclude potential triggers. Sometimes a temporary elimination diet under close medical and dietetic supervision will be needed, followed by food challenges to identify the cause. Long term unsupervised restricted diets should not be undertaken, as this can lead to malnutrition and other complications such as food aversion.

While the results of allergy testing are a useful guide in determining whether the person is allergic, they do not provide a reliable guide to whether the reaction will be mild or severe. Information on allergy tests is available on the ASCIA website: [www.allergy.org.au/patients/allergy-testing/allergy-testing](http://www.allergy.org.au/patients/allergy-testing/allergy-testing)

**Food allergy does not run in the family**

Most of the time, children with food allergy do not have parents with food allergy. However, if a family has one child with food allergy, their brothers and sisters are at a slightly higher risk of having food allergy themselves, although that risk is still relatively low.

Symptoms of food allergy typically include hives (urticaria), swelling around the mouth, and vomiting, usually within 30 minutes of eating a food. Other symptoms can include a runny or blocked nose, abdominal pain, or diarrhoea.

Some parents want to have their other children screened for food allergy. If the test is negative, that may be reassuring, but does not mean that the other child will never develop an allergy in the future. If their screening test is positive, it is not always clear whether it definitely represents allergy. In this situation, a food challenge (under medical supervision) may be required to confirm the allergy.
A positive allergy test is not the same as being food allergic

It is important to know that a positive skin prick allergy test or allergy blood test means that the body’s immune system has produced a response to a food, but sometimes these are false positives. In other words, the test may be positive yet the person can actually eat the food without any symptoms. For this reason, it is important to confirm the significance of a positive allergy test (in some circumstances) with a supervised food challenge. In a child with a positive test of uncertain meaning, this is often done around school entry age under medical supervision. Interpretation of test results (and whether challenge should be undertaken) should be discussed with your doctor.

Unorthodox so-called allergy tests are unproven

There are several methods of unorthodox so-called tests for food allergy. Examples include cytotoxic food testing, Vega testing, kinesiology, allergy elimination techniques, iridology, pulse testing, Alcat testing, Rinkel’s intradermal skin testing, reflexology, hair analysis and IgG food antibody testing. These have no scientific basis, are unreliable and have no useful role in the assessment of allergy. These techniques have not been shown to be reliable or reproducible when subjected to formal study. ASCIA advises against the use of these tests for diagnosis or to guide medical treatment. No Medicare rebate is available in Australia for these tests, and their use is also not supported in New Zealand.

Adverse consequences may also arise from unorthodox testing and treatments. Treatment based on inaccurate, false positive or clinically irrelevant results is not only misleading, but can lead to ineffective and at times expensive treatments, and delay more effective therapy. Sometimes harmful therapy may result, such as unnecessary dietary avoidance and risk of malnutrition, particularly in children. Information on these methods is available on the ASCIA website: www.allergy.org.au/patients/allergy-testing/unorthodox-testing-and-treatment

Most children grow out of their food allergy

Most children allergic to cow’s milk, soy, wheat or egg will ‘outgrow’ their food allergy. By contrast, allergic reactions to peanut, tree nuts, sesame and seafood persist in the majority (~75%) of children affected. When food allergy develops for the first time in adults, it usually persists.

Allergic reactions may be mild, moderate or severe, and can be influenced by a number of factors

These factors include:
• The severity of the allergy
• The amount eaten
• The form of the food (liquid may sometimes be absorbed faster)
• Whether it is eaten on its own or mixed in with other foods
• Exercise around the same time as the meal, as this may worsen severity
• Whether the food is cooked, as cooked food is sometimes better tolerated
• The presence or absence of asthma
• Menstrual cycle in females
• Intake of alcohol.

Can food allergies be prevented?

There are many studies on allergy prevention, however, there are no clear guidelines on how to prevent food allergy.

The following advice is currently provided by ASCIA:
• Breastfeed for at least 6 months.
• There is no evidence that restricting a mother’s diet during pregnancy or during breastfeeding reduces the risk of developing food allergy. Such restrictions can adversely affect growth in babies and is not recommended.
• Continue to breastfeed whilst introducing solid/complementary foods, from 4 to 6 months of age, without delaying any particular foods.
• Do not smoke during pregnancy.
• Avoid exposure to tobacco smoke in the home.

If supplementary infant formula is required and there is:
• No family history of allergic disease – regular cow’s milk formula can be used.
• A family history of allergic disease – partially hydrolysed formula (labelled as HA formula) may be used.

If you suspect an allergy to a specific food, seek medical advice before introducing it into the food. In children with confirmed cow’s milk and soy allergy, appropriate formula is available on prescription from your doctor.

Research into food allergy is ongoing

The increased frequency of food allergy is driving research into areas such as prevention, treatment and why it has become more common. Current areas of research include allergen immunotherapy (also referred to as desensitisation) to switch off the allergy once it has developed. Initial results are encouraging but it is not yet ready for routine clinical use. Research continues to explore new ways of more effectively treating this condition.

ASCIA Action Plans are essential

Many people with food allergies will have an accidental exposure every few years, even when they are very careful to avoid the foods they are allergic to. The difficulties of avoiding some foods completely make it
Living with your food allergy

As there is currently no cure for food allergy, strict avoidance is essential in the management of food allergy.

It is important for individuals with food allergy to:
- Carry their adrenaline autoinjector (if prescribed) and ASCIA Action Plan with them at all times
- Know the signs and symptoms of mild to moderate and severe allergic reactions (anaphylaxis) and what to do when a reaction occurs
- Read and understand food labels for food allergy
- Tell wait staff that they have a food allergy when eating out
- Be aware of cross-contamination of food allergens when preparing food.

Food allergy can be effectively managed

The good news is that people with food allergy can learn to live with their condition with the guidance of their clinical immunology/allergy specialist and a network of supportive contacts. Having an ASCIA Action Plan for Anaphylaxis and adrenaline autoinjector offers reassurance, but this is not a substitute for strategies to minimise the risk of exposure.

Allergy & Anaphylaxis Australia (www.allergyfacts.org.au) and Allergy New Zealand (www.allergy.org.nz) are community support organisations that offer valuable updates and tips for living with food allergies.

Further information on food allergy and anaphylaxis is provided on the ASCIA website:
- www.allergy.org.au/health-professionals/anaphylaxis-resources

DISCLAIMER
This document has been developed and peer reviewed by ASCIA members and is based on expert opinion and the available published literature at the time of review. Information contained in this document is not intended to replace medical advice and any questions regarding a medical diagnosis or treatment should be directed to a medical practitioner. The development of this document is not funded by any commercial sources and is not influenced by commercial organisations.

REFERENCES

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The Australasian Society of Clinical Immunology and Allergy (ASCIA) is the peak professional body of clinical immunology/allergy specialists in Australia and New Zealand.

**WARNING: UNCLEAR LABELLINGS ‘MAY DRIVE YOU NUTS’**

Many packaged foods carry allergy warnings such as ‘may contain nuts’. But how real is the risk of accidental allergen contamination? By Miranda Herron from CHOICE

Whether it’s gluten, nuts, dairy or any other substance that you’re allergic to or intolerant of, you need to know which foods contain the offending substance, for the sake of your safety and sanity. But labels warning that a food “may” contain the allergen, rather than definitively stating that it does, can be frustrating, confusing and dangerously tempting to ignore.

Voluntary advisory labels on packaged foods, such as “May contain traces of...” or “Manufactured in a facility which also processes...” have increased recently, with one study finding these now appear on more than half of all packaged foods in Australian supermarkets. Not surprisingly this is causing some confusion.

**MANDATORY AND VOLUNTARY LABELLING**

It’s mandatory for peanuts, tree nuts, milk, eggs, sesame seeds, fish, shellfish, soy, wheat, royal jelly and sulphites (more than 10 mg/kg) to be listed as allergens on food packaging if they are included as an ingredient.

However, voluntary advisory labels can also be placed on packaging by manufacturers to warn that there may be accidental cross-contamination of the food by allergens during processing of the food. For example, a chocolate bar may not contain nuts, but if it’s made in a factory that makes other foods with nuts, there’s a risk that tiny traces or even a fragment of nut may contaminate the bar.

As there’s no standard wording, font or style specified, manufacturers use whatever wording they like – making the huge variety of so-called precautionary warnings confusing for consumers (see our other reports on food labelling at www.choice.com.au).

**HOW REAL IS THE RISK?**

It’s impossible to know, but Murdoch Children’s Research Institute (MCRI) in Melbourne found 90% of the top five foods at risk of contamination – chocolates, breakfast cereals, muesli bars and savoury and sweet biscuits – now carry some form of precautionary statement.

However, when tested, only seven per cent of these high-risk products with warning statements about peanuts actually had detectable levels of the nut. Other samples that had precautionary labelling for hazelnut, milk, egg, soy or lupin had no detectable level of those allergens present at all.

**CONFUSED CONSUMERS**

More than 50% of packaged processed foods in Australian supermarkets now show these precautionary warnings, and a study by the MCRI found that people with allergies have little idea whether the food really might be contaminated, or whether the
manufacturer has just put the warning on to cover against legal action if someone does get sick from cross-contamination.

The MCRI study, which included parents of children with a history of anaphylaxis, found that 80% of those parents did not know if a food with a precautionary warning is safe, irrespective of the wording. Only five per cent felt they could “completely trust” food labels and tended to ignore warnings because they perceived them simply as a way for food manufacturers to cover themselves legally.

“We have no data on how many people who ignore labels suffer anaphylactic events, and we’re planning to do a national study,” says Professor Katie Allen, lead researcher from MCRI in Melbourne. “At this stage we think it’s more likely that the increase in anaphylactic hospitalisations is due to the increase in allergies, but the problem with the current labelling system is that the ‘may contain’ statements transfer the assessment of risk of contamination from manufacturers to consumers.”

As a result it’s up to the consumer to decide, with no real information, whether to take the risk of eating a food, and people with serious allergies are left with a diminished choice of products they can consume with complete confidence.

TO EAT OR NOT TO EAT ...

It all comes down to a personal assessment of risk with the help of your doctor, Dr Rob Loblay, allergy unit director at the Department of Clinical Immunology, RPA Hospital, Sydney says, “Some people will find a food with a warning hasn’t affected them in the past and doesn’t affect them now and they continue to eat the food – others won’t feel confident to take the risk.

“Despite the concerns of many people with coeliac disease, most can tolerate 20 parts per million of gluten, so occasional trace amounts aren’t such a huge issue,” he says. “But for those allergic to nuts, a fragment – a quarter of a peanut – in a food can be life-threatening.”

Some brands of chocolate that don’t list nuts can have nut traces, so Loblay advises anyone with a nut allergy to be wary of eating chocolates labelled ‘may contain nuts’ and only buy those labelled ‘nut free’. He says stringent avoidance of nuts may give children the best chance of growing out of their allergy.

SEVERE ALLERGIES

People with certain severe allergies need to take ‘may contain’ messages very seriously, and call the manufacturer for advice if unsure. Checking the label every time in case the formulation changes is also essential, as this comment from website The Conversation shows:

“I recently had a nasty reaction to Cadbury chocolate biscuits. It was only after getting stabilised that I found a tiny circle on the front of the package saying ‘new allergen information’. The back of the package indicated that the biscuits, formerly labelled as ‘may contain traces of nuts’, were now made with hazelnut paste as a major component of the recipe.

“I spoke with Cadbury, whose attitude appeared to suggest that because they’d previously mentioned ‘may contain’ etc., I shouldn’t have been surprised at the major change in recipe.”

GOING GLUTEN FREE

According to Annabel Mackenzie from Coeliac Australia, people with coeliac disease could rely on certain Cadbury products as being gluten free up until the company changed hands and ‘may contain gluten’ began appearing on products.

Cadbury didn’t return CHOICE’s calls, but according to a consumer’s Facebook post, the company said they hadn’t changed the formulation or the production methods. However, they were unable to guarantee that products would be free of gluten cross-contamination.

This raises the question: was there a risk of contamination previously, but no warning? Or is the risk still low and is the company’s simply putting out a standard statement to reduce potential lawsuits?

EXPERTS CALL FOR CLEAR LABELLING

“Labelling is also a big issue,” says Dr Loblay. “It’s easy for people to miss allergen information, and they often only find it after a reaction when they go back and look at the packet. The print is too small and hard for older people to read, and packaging can sometimes fold over, obscuring the warning.

“I’d like to see a recognisable standard health information panel on all packaging that is separate to the ingredients list and contains allergen warnings, additives and health claims. That way, everyone knows where to look.”

THE VITAL SOLUTION

If many foods with warnings don’t actually have allergen contamination, then why are manufacturers using unnecessary warnings.

“Allergens were not on the radar of manufacturers last century, but after mandatory allergen labelling began in 2002, most big manufacturers cleaned up their act,” says Dr Rob Loblay. “However, avoiding all cross-contamination in a factory that makes different products requires a lot of time and investment – and in some cases, building separate facilities. In the small
Australian market, this may not be cost-effective.”

The good news is that there is a solution to this label confusion. The bad news is that it’s not being widely used.

VITAL (Voluntary Incidental Trace Allergen Labelling) is a process to assess cross-contamination risk. Developed by food manufacturers, the industry group Allergen Bureau, NSW Food Authority and allergy support groups, it estimates the risk of cross-contamination in a factory and can tell if a product will be safe for 90% of people.

Under VITAL, a ‘may be present’ warning should only be placed on packaging by a manufacturer if the risk of contamination is assessed to be above a certain level.

**IT’S A GREAT IDEA BUT ...**

While VITAL can provide consumers with clarity around risk levels, there’s currently no way for people to know whether a product has been through the VITAL risk assessment or whether the manufacturer is adding the warning just in case.

“VITAL has been useful for raising awareness of cross-contamination among manufacturers,” says Professor Katie Allen. “Food makers can tell via VITAL that the food would be safe to eat for about 90% of people with allergies, but because they can’t be 100% sure it’s safe for everyone, they’re too scared to label it as safe.

“If they said something like ‘highly unlikely to contain nuts’, it would be much more useful.”

Research from MCRI in 2012 also found that only 12.7% of foods with precautionary labels surveyed had been through the VITAL process, which means the other 87.3% of warnings are likely to be placed on products as an insurance policy for the manufacturer.

**WOULD A VITAL LOGO WORK?**

One option could be that manufacturers whose products have been put through the VITAL process would carry a VITAL logo so consumers could be confident that the risk had been assessed. Some allergen labelling advocacy groups would also like the VITAL process to be made mandatory for all food manufacturers, in order to reduce the number of unnecessary precautionary warnings.

“The idea is that VITAL can define the level below which 90% of people will not have an allergic reaction,” says Dr Loblay. “VITAL may be useful to prevent acute

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**Food allergens – information for consumers**

Food allergies can be life-threatening. The only way to manage a food allergy is by avoiding the food allergen, advises Food Standards Australia New Zealand

If you suspect you or someone you care for has a food allergy you should contact a doctor so you can be referred to an allergy/immunology specialist or doctor with experience in food allergy for ongoing management. The Allergen Collaboration has agreed on a number of key messages for consumers in regard to food allergens.

These are listed below.

- You should be referred to an allergy/immunology specialist or doctor with experience in food allergy for ongoing management.
- Always check food labels for allergens every time you eat.
- Always disclose your allergy and ask about allergen content when eating away from home.
- Always be vigilant for high risk situations where food may be cross contaminated by other customers, e.g. buffet meals, bulk bin food displays, etc.
- Always carry your adrenaline auto-injector if you are prescribed one and be prepared to use it.
- Always carry your ASCIA (Australasian Society of Clinical Immunology and Allergy) Action Plan and know what to do if you have a reaction.

Below are links to some food allergen resources for consumers.

**Consumer resources**

- Allergy & Anaphylaxis Australia, [www.allergyfacts.org.au](http://www.allergyfacts.org.au)
- Allergy New Zealand, [www.allergy.org.nz](http://www.allergy.org.nz)

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anaphylaxis, but traces can still be a problem for the most sensitive people who must avoid all contact.”

He prefers a harder line: “Food companies should be forced to use ‘may be contaminated with’ rather than the less confronting ‘may contain’. This would spur the food industry to put more effort into developing allergen-free foods, which would make it easier for consumers to trust the labels.”

**BETTER INDUSTRY EDUCATION**

Maria Said from Allergy & Anaphylaxis Australia applauds the efforts of the Allergen Bureau and the food industry to improve labelling, but explains VITAL is still a work in progress to make warnings more believable for consumers.

The big players in the food industry are making an effort, Said says, but it’s the resource-poor smaller businesses that need more information and support from Food Standards Australia and New Zealand about how to label their products correctly.

“While a ‘may contain’ label may be less than perfect, a product with no precautionary label can be more dangerous if the manufacturer isn’t educated about the risks of cross-contamination.”

**ANAPHYLACTIC SHOCK**

“Food labelling in Australia has made great strides and is leading the world,” says Said. “But the danger for people at risk of anaphylaxis lies less with labelling than with the food service industry, schools, and in private homes, where poor communication and/or lack of understanding of the risks can lead to severe and, sometimes fatal, reactions. “In 2012, an eight-year-old girl with a milk allergy died when given a piece of cake that she was told contained no milk.”

Said also cites an incident in NSW where a man with a milk allergy was served a meal with cheese. He asked for a replacement dish containing no milk products, but was allegedly served the same dish again, suffered anaphylactic shock and was hospitalised.

Many people in the food service industry don’t understand that when a customer says they have an allergy, it is illegal to serve them food containing allergens.

“State health authorities responsible for enforcing Food Standards regulations are overloaded, and the council inspectors who investigate events often aren’t trained to investigate food allergy incidents properly,” she says.

Said is calling for the food service industry to acknowledge food allergy as a serious safety issue, as well as for a national allergy management education plan.

“Allergic reactions happen all the time. People must report the events to the state food authorities to be investigated. This will help raise awareness of the problem.”

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COELIAC DISEASE
COELIAC AUSTRALIA EXPLAINS THIS COMMON CONDITION

Coeliac disease (pronounced seel-ee-ak) is an immune disease caused by gluten, a protein in wheat, rye, barley and oats. When people with coeliac disease eat gluten, an inappropriate immune reaction causes inflammation and damage to the small bowel (intestine). Untreated, coeliac disease can cause a range of symptoms and health problems. Treatment involves lifelong and strict avoidance of gluten in the diet and leads to healing of the bowel and better health.

The lining of the small bowel is covered with tiny, finger-like projections called villi, which aid the digestion and absorption of nutrients from food. In people with untreated coeliac disease, the villi become inflamed and flattened. This is called “villous atrophy”. Villous atrophy reduces the surface area of the bowel available for nutrient absorption, which can lead to nutrient deficiencies. Inflammation also results in problems that can affect the bones, joints, skin and other organs, such as the liver and brain.

WHO GETS COELIAC DISEASE?

People are born with a genetic predisposition to develop coeliac disease. The most important genes associated with coeliac disease are ‘HLA DQ2’ and ‘HLA DQ8’. One or both of these genes are present in virtually every person with coeliac disease. Other genes and various environmental factors play an important role in triggering or ‘unmasking’ coeliac disease. It can develop at any stage in life, from infancy to old age.

SYMPTOMS

The symptoms of coeliac disease vary considerably. Common complaints include gastrointestinal upset (such as abdominal pain, bloating, flatulence, nausea, vomiting, diarrhoea, and/or constipation), lethargy, mouth ulcers and weight loss. Some people suffer severe symptoms, while others are symptom free. Further investigation for coeliac disease should occur if one or more high risk features are present.

These include:
- Iron deficiency anaemia or other nutrient deficiencies
- Gastrointestinal symptoms
- Osteoporosis (thinning of the bones, which increases fracture risk)
- Autoimmune disease (such as type 1 diabetes or autoimmune thyroid disease)
- Weight loss
- Unexplained infertility or recurrent miscarriage
- A family history of coeliac disease.

Untreated coeliac disease can lead to chronic poor health, osteoporosis, infertility, miscarriage, depression,
liver disease, poor dentition, and an increased risk of autoimmune disease and some forms of cancer. Importantly, appropriate treatment with a strict gluten free diet leads to small bowel healing, resolution of symptoms, and a reduction in the risk of complications.

Although symptoms can vary considerably, everybody with coeliac disease is at risk of complications if they do not adhere strictly to a gluten free diet. Since bowel damage can occur in coeliac disease even when symptoms are absent, everybody with coeliac disease, regardless of symptom severity, needs to adhere strictly to a gluten free diet.

Coeliac disease affects on average 1 in 70 Australians. However, approximately 80% remain undiagnosed. This means that around 330,000 Australians have coeliac disease but aren’t aware of it.

**DIAGNOSIS**

As coeliac disease has significant health implications, a definitive diagnosis is paramount.

The tests for coeliac disease are simple – just follow the steps below.

1. **Keep eating gluten**

   Do not commence a gluten free diet prior to being tested for coeliac disease. If a gluten free diet has already been adopted, the tests used to diagnose coeliac disease are unreliable.

   If gluten has been removed from the diet, a normal diet must be resumed for at least six weeks prior to testing. During this ‘gluten challenge’, four slices of wheat based bread (or equivalent) should be consumed each day (for adults). A gluten challenge can be a daunting prospect for some people who experience unpleasant symptoms. While symptoms may be fairly severe for the first few days of the challenge, they often reduce over time. It is important the gluten challenge is carried out properly to ensure reliable testing results.

2. **Blood tests are used for screening**

   Blood tests (coeliac serology) are used to screen for coeliac disease. Coeliac serology measures antibody levels in the blood which are typically elevated in people with untreated coeliac disease. The antibodies measured include:

   - Anti-tissue transglutaminase antibodies (tTG-IgA).
   - Deamidated gliadin peptide (DGP) IgA and IgG.
   - Anti-endomysial antibodies (EMA). EMA is similar to tTG but is less commonly tested nowadays.

   Total immunoglobulin (IgA) levels are often measured to exclude the 3% of people with coeliac disease who are deficient in IgA. IgA deficiency renders the tTG-IgA test unreliable. In children under the age of four years the tTG-IgA test is also less reliable. As antibody levels can fluctuate in children, it is suggested the antibody tests be performed on two occasions three months apart.

   Importantly, blood tests are prone to error and a diagnosis of coeliac disease should not be made on the basis of blood test alone.

   While a normal coeliac antibody result suggests that coeliac disease is unlikely, it can be falsely negative in up to 20% of cases. Doctors should consider further investigation of people who have risk-factors for coeliac disease irrespective of their antibody result.

3. **A small bowel biopsy is essential**

   A diagnosis of coeliac disease can only be made by demonstrating the typical small bowel changes of coeliac disease (villous atrophy). This involves a gastroscopy (or endoscopy) in which several tiny samples (biopsies) of the small bowel are taken. A gastroscopy is a simple day procedure done under light anaesthetic sedation that takes about 10 minutes. In the majority of cases, the bowel damage present in those with untreated coeliac disease is not visible to the naked eye. The biopsies are examined under a microscope to confirm the presence of villous atrophy.

   A repeat biopsy should occur approximately 18-24 months after commencing treatment with a gluten free diet to confirm small bowel healing. A healthy looking biopsy is good and means the gluten free diet is being followed adequately – but it does not mean coeliac disease has been cured. Relapse will occur if gluten is reintroduced to the diet. Coeliac disease is for life, and a gluten free diet needs to be followed lifelong to maintain health.

**GENE TESTING (HLA GENES)**

Gene (HLA) testing is a useful test in select cases when the diagnosis of coeliac disease is unclear. This can occur if the blood or small bowel biopsy results are difficult to interpret, or if adequate gluten was not being consumed to make the test reliable. It is performed on a blood test or cheek (buccal) scraping and can be ordered through your local doctor.

A negative gene test for HLA DQ2 and HLA DQ8 effectively rules out a diagnosis of coeliac disease.
However, a positive gene test only indicates susceptibility to coeliac disease. Just one in 30 people who possess HLA DQ2 or HLA DQ8 will develop the condition, so most people who are gene positive will never get coeliac disease. Thus the gene test on its own cannot diagnose coeliac disease and a gluten free diet should never be commenced based solely on a positive gene test. A gluten free diet should only be started after confirmation of coeliac disease by small bowel biopsy.

As the gene test is not dependent on gluten intake, it can be used when people have already commenced a gluten free diet. If the gene test is negative for HLA DQ2 and HLA DQ8 then coeliac disease can be excluded. If the gene test is positive, then a gluten challenge followed by small bowel biopsy will be required to test for coeliac disease.

Note: It is recommended that a copy of all coeliac tests including antibody, gene and biopsy results, be kept by those diagnosed with coeliac disease.

BEWARE OF UNORTHODOX DIAGNOSIS TECHNIQUES
There are a number of tests and treatments for allergy, intolerance and coeliac disease that are used in the absence of any scientific rationale. These tests and treatments have been shown to be unreliable when subjected to careful study. Unproven testing methods provide misleading results, delay correct diagnosis and lead to unnecessary and ineffective treatment. The Australasian Society of Clinical Immunology and Allergy (ASCIA) advise against the use of such tests for diagnosis or to guide medical treatment. Such methods may include stool-based tests, Vega testing, iridology, hair analysis or the inappropriate use of tests for food-specific immunoglobulin. For a full list and more information about unorthodox tests and treatments, visit the ASCIA website, www.allergy.org.au

THE BENEFITS OF DIAGNOSIS
As coeliac disease is a serious medical condition with lifelong implications, a definitive diagnosis is essential. The gluten free diet is not a trivial undertaking and involves lifestyle changes and learning new skills such as reading and interpreting food labels. It should only be undertaken after the diagnosis of coeliac disease has been properly medically established.

• A strict gluten free diet has positive implications for health by reducing the long-term risks associated with coeliac disease. People who have been properly medically diagnosed are more likely to maintain the strictness required to remain healthy.
• By obtaining a proper diagnosis, you can be assured that your symptoms are caused by coeliac disease and not by another more sinister condition.
• As a genetic condition, there could be implications for your family once a diagnosis of coeliac disease is made. Following a diagnosis of coeliac disease, immediate family members should be screened.
• On diagnosis of coeliac disease, screening for complications and associated conditions such as osteoporosis or other autoimmune disease should occur. Being diagnosed appropriately will ensure this important medical assessment takes place.
• In the future, it is likely that any potential non-dietary therapy for coeliac disease, such as a therapeutic vaccine, will only be available to those who have coeliac disease properly proven by biopsy.

ONCE YOU ARE DIAGNOSED ...
Coeliac Australia is here to help you manage your gluten free diet. Your state organisation provides support and information on the disease, the gluten free diet, ingredients, where to buy, cooking and recipes, overseas travel and education and research material. Specific resources for children requiring a gluten free diet are also available.

Adjusting to the gluten free diet may seem difficult at first but as your knowledge and confidence grows, managing the diet becomes easier. Advice from a specialist dietitian is invaluable and can greatly enhance the enjoyment to be had from a gluten free lifestyle.


For more information or to become a member of a state coeliac organisation
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www.coeliac.org.au

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Coeliac Australia is not a medical organisation. Persons reading this material should not act solely on it. The advice of a medical practitioner should always be obtained.
WORKSHEETS AND ACTIVITIES

The Exploring Issues section comprises a range of ready-to-use worksheets featuring activities which relate to facts and views raised in this book.

The exercises presented in these worksheets are suitable for use by students at middle secondary school level and beyond. Some of the activities may be explored either individually or as a group.

As the information in this book is compiled from a number of different sources, readers are prompted to consider the origin of the text and to critically evaluate the questions presented.

Is the information cited from a primary or secondary source? Are you being presented with facts or opinions?

Is there any evidence of a particular bias or agenda? What are your own views after having explored the issues?

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Brainstorm, individually or as a group, to find out what you know about food safety.

1. What is food safety, and why is it important?

2. What is food poisoning, and how can you reduce the risk? (include examples)

3. What is the difference between a food allergy and a food intolerance? (include examples)

4. What are food additives, and why are they used? (include examples)
Complete the following activity on a separate sheet of paper if more space is required.

More than 250 foodborne diseases have been identified so far, and food poisoning bacteria can grow and multiply on some types of food more easily than others.

Listed below are a few common bacterial and/or viral causes of food poisoning. Write one to two paragraphs on each – include whether they are bacterial or viral, where they are most commonly found, any foods they may be associated with, and how to avoid them.

HEPATITIS A

SALMONELLA

E. COLI

STAPHYLOCOCCUS AUREUS

NOROVIRUSES
Complete the following activities on a separate sheet of paper if more space is required.

1. Coeliac disease affects on average 1 in 70 Australians. However, approximately 80% remain undiagnosed. This means that around 330,000 Australians have coeliac disease but aren’t aware of it. Research the symptoms, what can be done to diagnose coeliac disease, and include information on foods that should be avoided. Include relevant resources and compile a list of helpful websites to provide more information on the subject.

2. Food allergies can be life-threatening and the only way to manage a food allergy is by avoiding the food allergen. An allergy/immunology specialist or doctor with experience in food allergy can assist with identification and ongoing management. Research and make a list of common food allergens. Also include online resources for further information on each of the allergens identified in your list.
Complete the following activity on a separate sheet of paper if more space is required.

Food poisoning is frequently caused by bacteria from foods that have been incorrectly stored, prepared, handled or cooked. Food contaminated with food-poisoning bacteria may look, smell and taste normal.

In groups of two or more, write a design brief for a series of educational posters to be displayed in places where food is handled in order to explain ways to reduce the chances of food poisoning. Address each of the following topics and include relevant text and images. Share your ideas with other groups in the class.

STORAGE

PREPARATION

HANDLING

COOKING
Complete the following activity on a separate sheet of paper if more space is required.

Whether it’s gluten, nuts, dairy or any other substance that you’re allergic to or intolerant of, you need to know which foods contain the offending substance. But many labels are warning that a food ‘may’ contain the allergen, rather than definitively stating that it does. But how real is the risk of accidental allergen contamination?

Form into groups of two or more people and identify at least five packaged food products with allergen warnings. Using the space provided below compile a list that includes the food product, the type of warning and the allergen (include if they state whether the product ‘may’ contain, or does contain the allergen). Do you feel each label represents a ‘real’ warning to the consumer, and why? Include any possible symptoms for allergic reactions specific to the identified allergens. Discuss your ideas with other groups in the class.

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Complete the following multiple choice questionnaire by circling or matching your preferred responses. The answers are at the end of the next page.

1. What is the temperature range known as the Temperature Danger Zone?
   a. -15°C to 0°C  
   b. 0°C to 50°C  
   c. 5°C to 60°C  
   d. 15°C to 60°C  
   e. 50°C to 75°C  
   f. 75°C or above

2. What temperature should high-risk foods be cooked to?
   a. 5°C or above  
   b. 15°C or above  
   c. 35°C or above  
   d. 50°C or above  
   e. 60°C or above  
   f. 75°C or above

3. How can you tell if food is carrying enough bacteria to cause food poisoning?
   a. It will have obvious discolourations.  
   b. It will give off a distinct smell. 
   c. It will have a distinctly awful taste.  
   d. It will be covered in mould.  
   e. The food texture will have changed.  
   f. You can’t only tell by the smell, look, taste or texture.

4. From the following list select the nine foods that cause 90% of food allergic reactions. (select all that apply)
   a. Avocado  
   b. Cacao  
   c. Coconut milk  
   d. Cow’s milk  
   e. Egg  
   f. Fish  
   g. Kale  
   h. Lettuce  
   i. Peanuts  
   j. Quinoa  
   k. Rice  
   l. Root vegetables  
   m. Sesame  
   n. Shellfish  
   o. Soy  
   p. Tree nuts  
   q. Water  
   r. Wheat
5. Match the following food additive to its correct definition:

1. Acids/acidity regulators/alkalis  a. Imparts a coating to the external surface of the food e.g. to improve its appearance.

2. Anti-caking agents  b. Modifies the texture of the food through gel formation.

3. Antioxidants  c. Reduces the tendency of individual food particles to adhere and improve flow characteristics.

4. Bulking agents  d. Enhances the existing taste and/or odour of a food.

5. Colourings  e. Contributes to the volume of the food, without contributing significantly to its available energy.

6. Emulsifiers  f. Adds or restores colour to foods.

7. Firming agents/stabilisers  g. Facilitates or maintains oil and water from separating into layers.

8. Flavour enhancers  h. Maintains the uniform dispersion of substances in solid and semi-solid foods.

9. Foaming agents  i. Helps to maintain a constant acid level in food. This is important for taste, as well as to influence how other substances in the food function.

10. Gelling agents  j. Reduces moisture loss in foods e.g. prevent it from drying out.


12. Humectants  l. Retards or prevents the oxidative deterioration of foods.
There are 3 levels of government in the food regulatory system and each level of government plays a role in protecting public health and safety through regulating food (including imported food) for human consumption (Department of Agriculture, *Who is responsible for food safety in Australia?*). (p.1)

Imported food must comply with the *Imported Food Control Act 1992* which also requires imported food to comply with the *Food Standards Code* (FSANZ, *The safe food system*). (p.4)

Diarrhoeal diseases alone kill an estimated 1.5 million children annually, and most of these illnesses are attributed to contaminated food or drinking water (WHO, *10 facts on food safety*). (p.5)

Antimicrobial-resistant bacteria in animals may be transmitted to humans via food (ibid). (p.6)

Food poisoning bacteria are often naturally present in food, and in the right conditions a single bacterium can grow into more than 2 million bacteria in just 7 hours (Department of Health, *Your guide to food safety*). (p.7)

Wet hands are more likely to transmit bacteria (ibid). (p.9)

Food poisoning is frequently caused by bacteria from food that has been poorly handled, stored or cooked. The food may look, taste and smell normal (ibid). (p.10)

The temperature range between 5°C and 60°C is known as the Temperature Danger Zone. This is because in this zone bacteria can grow to unsafe levels (Food Safety Information Council, *Temperature danger zone 5°C to 60°C – keep hot food hot and cold food cold*). (p.11)

Each year, there are an estimated 4.1 million cases of food poisoning in Australia. Of those, around a third are thought to be caused by food handling mistakes in the home (Food Safety Information Council, *How you cook can make you and others crook*). (p.13)

Food-poisoning bacteria can grow in frozen food while it is thawing, so thawing frozen food in the temperature danger zone should be avoided (Better Health Channel, *Food safety – storage*). (p.14)

Food contamination is not just limited to foods you may consider risky, such as chicken or fish. Prepared fruits, vegetables and salads can also be potentially dangerous (Better Health Channel, *Food poisoning – prevention*). (p.18)

Pathogenic *Listeria* bacteria may cause miscarriage or meningitis in susceptible people (ibid). (p.19)

On average, each Australian has an episode of foodborne gastroenteritis once every 5 years (ANU, *Foodborne illness on the decline*). (p.20)

China is Australia’s third largest importer but its food is tested more than any other origin country. In one year, Australia inspected 2,706 lines of food imported from China – 9% of total food inspections (Blumer, *C, Frozen berries hepatitis A scare: How Australia checks imported food*). (pp. 22–23)

Australia does not routinely test imported foods for hepatitis A, or any other virus. The inspectors test for microorganisms, or bacteria, like *E. coli* and *salmonella*, but these are mainly tested in animal products like seafood (ibid). (p.23)

We’ve been using ingredients to help us preserve and improve the taste of food for centuries and without certain additives many processed foods would be unsafe to eat (Nogradi, B, *The hard facts on food additives*). (p.25)

Around 5% of the general population are sensitive to one or more food additives (ibid). (p.26)

Many substances used as additives also occur naturally, such as vitamin C or ascorbic acid in fruit, or lecithin, which is present in egg yolks, soya beans, peanuts and maize. The human body cannot distinguish between a chemical naturally present in a food and that same chemical present as an additive (FSANZ, *Additives*). (p.27)

Sulphites found in wine, beer and dried fruit, are known to trigger asthmaic episodes and cause migraines in people who are sensitive to them (Nogradi, B, *The hard facts on food additives*). (p.28)

Proven food allergies occur in approximately 1 in 20 children and about 1 in 100 adults (myDr, *Food allergy*). (p.33)

Most children who have an allergy to soy, wheat, milk or eggs grow out of this by the time they start school, whereas an allergy to seafood or nuts is likely to be severe and last for life (ibid). (p.34)

There are more than 170 foods known to have triggered severe allergic reactions. Examples include kiwi fruit, banana, chicken, mustard and celery (Allergy & Anaphylaxis Australia, *Food Allergy Basics*). (p.37)

An estimated 10 people die from anaphylactic reactions each year in Australia and some of these may have been triggered by food (ibid). (p.37)

The most common food allergy triggers are egg, cow’s milk, peanut, tree nuts, seafood, sesame, soy, fish and wheat (ASCIA, *Food allergy*). (p.38)

It’s mandatory for peanuts, tree nuts, milk, eggs and peanut out of this by the time they start school, whereas an allergy to seafood or nuts is likely to be severe and last for life (ibid). (p.34)

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It’s mandatory for peanuts, tree nuts, milk, eggs, sesame seeds, fish, shellfish, soy, wheat, royal jelly and sulphites (more than 10 mg/kg) to be listed as allergens on food packaging if they are included as an ingredient (Herron, M, *Warning: unclear labellings ‘may drive you nuts’*). (p.42)

90% of the top 5 foods at risk of contamination – chocolates, breakfast cereals, muesli bars and savoury and sweet biscuits – now carry some form of precautionary statement (ibid). (p.42)

Coeliac disease affects on average 1 in 70 Australians. However, approximately 80% remain undiagnosed. This means that around 330,000 Australians have coeliac disease but aren’t aware of it (Coeliac Australia, *Coeliac disease*). (p.47)
Food Safety

**Allergen**
A substance in the environment that produces allergy which is usually harmless (e.g. food, pollen, animal dander and dust mite), or bites, stings and medications.

**Allergic reaction**
When someone develops symptoms following exposure to an allergen, such as hives, swelling of the lips, eyes or face, vomiting or wheeze. It is important to note that only some people with allergy antibodies will develop symptoms following exposure to the allergen, hence confirmation of allergy by a clinical immunology/allergy specialist is required. Allergic reactions range from mild to severe. Anaphylaxis is the most severe form of allergic reaction.

**Allergy**
When the immune system reacts to a substance (allergen) in the environment which is usually harmless (e.g. food, pollen, animal dander and dust mite), or bites, stings and medications. This results in the production of allergy antibodies which are proteins in the immune system which identify and react with foreign substances.

**Anaphylaxis**
A severe, sudden, life-threatening allergic reaction is called anaphylaxis. Anaphylaxis is a medical emergency that needs immediate treatment.

**Bacteria**
Commonly known as germs, bacteria are microorganisms found in and on food, people, surfaces, untreated water, dirt, soil, plants, animals and pests.

**Best before date**
Indicates that the product may lose some of its quality after this date passes. Foods are still safe to eat after the date as long as they are not perished, damaged or deteriorated. Foods can be legally sold after a ‘best before’ date as long as they are not perished, damaged or deteriorated.

**Contaminant**
Biological, chemical or physical matter that may lead to a food safety risk (for example, physical matter such as glass in food) or an allergen.

**Contamination**
The introduction or occurrence of a contaminant in food.

**Cross-contamination**
Occurs when harmful bacteria or allergens spread to food from other food, surfaces, hands or equipment. This can lead to food poisoning.

**Food additive**
Any substance that is not normally consumed as a food in itself and is not normally an ingredient, but which is allowed to be there if it fulfils a technological function in the final food.

**Food allergy**
A food allergy involves a reaction of your immune system, whereas a food intolerance does not. If you have a food allergy your immune system makes antibodies against a particular (normally harmless) food. It’s as if your immune system mistakes that type of food for a harmful foreign invader.

**Foodborne disease**
A disease that is likely to be transmitted through consumption of contaminated food.

**Food handler**
A person who directly engages in the handling of food, or who handles surfaces likely to come into contact with food, for a food business.

**Food intolerance**
Does not involve your immune system and symptoms can appear within minutes of eating the food, or more usually several hours. Food chemicals or additives (such as flavours or preservatives) are often the cause of food intolerances.

**Food poisoning**
Caused by eating contaminated food. The risk can be minimised by taking simple precautions. Some people are more at risk, including pregnant women, the elderly, young children and anyone with an illness. *E. coli*, *Salmonella*, *Listeria* and *Campylobacter* are some bacteria that cause food poisoning. Symptoms include nausea, stomach cramps, vomiting, diarrhoea, fever and headaches.

**Food safety**
The concept that food will not cause harm to the consumer when prepared and/or eaten according to its intended use.

**Food safety policy**
Overall intentions and direction of an organisation related to food safety, as formally expressed by top management.

**Food safety standards**
Developed to provide more effective and nationally uniform food safety legislation for Australia. The standards are contained within the Australia New Zealand Food Standards Code.

**High-risk foods**
Food that supports the growth of bacteria and/or microbes, such as meat, dairy, or eggs. Certain foods become high-risk when they are cooked, such as noodles, rice, pasta and similar dry foods. High-risk foods are also known as ‘potentially hazardous’ foods.

**Microorganisms**
Any living organism that can survive as a single cell, including bacteria, viruses, yeasts and moulds.

**Temperature control**
Methods used to maintain the temperature of food at 5°C or below for chilled foods and 60°C or higher for hot foods.

**Use-by date**
Use-by dates are commonly found on short shelf life foods and perishables. After this date foods may be unsafe to eat even if they look fine, because the nutrients in the food may become unstable or a build-up of bacteria may occur. Foods must be used or thrown away by this date. It is illegal to sell foods after a ‘use-by’ date.
Websites with further information on the topic

Australian Competition and Consumer Commission (product safety recalls – food & groceries)  www.recalls.gov.au/content/index.phtml/itemId/952823
Department of Health  www.health.gov.au
Department of Health and Human Services, Tasmania (food safety)  www.dhhs.tas.gov.au/publichealth/food_safety
Department of Health, Western Australia (food)  www.public.health.wa.gov.au/2/1061/2/food.pm
Food Safety Centre  www.foodsafetycentre.com.au
Food Safety Information Council  www.foodsafety.asn.au
Food Standards Australia New Zealand  www.foodstandards.gov.au
NSW Food Authority  www.foodauthority.nsw.gov.au
Queensland Health (food safety)  www.health.qld.gov.au/foodsafety
SA Health (food safety)  www.sahealth.sa.gov.au/wps/wcm/connect/Public+Content/SA+Health+Internet/Health+topics/Health+conditions+prevention+and+treatment/Food+safety/Food+safety
Safe Food Queensland  www.safefood.qld.gov.au

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THANK YOU
› Better Health Channel
› Department of Health, Victoria
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