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## Introduction to this unit

### Application

This unit describes the performance outcomes, skills and knowledge required to use personal hygiene practices to prevent contamination of food that might cause food-borne illnesses. It requires the ability to follow predetermined organisational procedures and to identify and control food hazards.

The unit applies to all organisations with permanent or temporary kitchen premises or smaller food preparation or bar areas.

This includes restaurants, cafes, clubs, hotels, and bars; tour operators; attractions; function, event, exhibition and conference catering; educational institutions; aged care facilities; correctional centres; hospitals; defence forces; cafeterias, kiosks, canteens and fast food outlets; residential catering; in-flight and other transport catering.

It applies to food handlers who directly handle food or food contact surfaces such as cutlery, plates and bowls during the course of their daily work activities. This includes cooks, chefs, caterers, kitchen stewards, kitchen hands, bar, and food and beverage attendants, and sometimes room attendants and front office staff.

Food handlers must comply with the requirements contained within the Australia New Zealand Food Standards Code.

In some States and Territories businesses are required to designate a food safety supervisor who is required to be certified as competent in this unit through a registered training organisation.

Food safety legislative and knowledge requirements may differ across borders. Those developing training to support this unit must consult the relevant state or territory food safety authority to determine any accreditation arrangements for courses, trainers and assessors.

### Competency Field

Food Safety

**ELEMENTS**

Elements describe the essential outcomes.

1. Follow hygiene procedures and identify food hazards.

2. Report any personal health issues.

3. Prevent food contamination.

4. Prevent cross-contamination by washing hands.

**PERFORMANCE CRITERIA**

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1. Follow organisational hygiene procedures.
- 1.2. Report unsafe practices that breach hygiene procedures promptly.
- 1.3. Identify food hazards that may affect the health and safety of customers, colleagues and self.
- 1.4. Remove or minimise the hygiene hazard and report as appropriate for follow-up.

- 2.1. Report personal health issues likely to cause a hygiene risk.
- 2.2. Report incidents of food contamination resulting from personal health issues.
- 2.3. Cease participation in food handling activities where own health issue may cause food contamination.

- 3.1. Maintain clean clothes, wear required personal protective clothing, and only use organisation-approved bandages and dressings.
- 3.2. Prevent food contamination from clothing and other items worn.
- 3.3. Prevent unnecessary direct contact with ready to eat food.
- 3.4. Ensure hygienic personal contact with food and food contact surfaces.
- 3.5. Use hygienic cleaning practices that prevent food-borne illnesses.

- 4.1. Wash hands at appropriate times and follow hand washing procedures consistently.
- 4.2. Wash hands using appropriate facilities.

## Performance Evidence

Evidence of the ability to complete tasks outlined in elements and performance criteria of this unit in the context of the job role, and:

- demonstrate use of safe food handling practices in food handling work functions in line with organisational hygiene procedures on at least three occasions
- demonstrate procedures to:
  - identify food hazards
  - report unsafe practices
  - report incidents of food contamination.

## Knowledge Evidence

Demonstrated knowledge required to complete the tasks outlined in elements and performance criteria of this unit:

- basic aspects of commonwealth, state or territory food safety laws, standards and codes as follows:
  - meaning of contaminant, contamination and potentially hazardous foods as defined by the Australia New Zealand Food Standards Code
  - employee and employer responsibility to participate in hygienic practices
  - reasons for food safety programs and what they must contain
  - role of local government regulators
  - ramifications of failure to observe food safety law and organisational policies and procedures
- health issues likely to cause a hygiene risk relevant to food safety:
  - airborne diseases
  - food-borne diseases
  - infectious diseases
- hygiene actions that must be adhered to in order to avoid food-borne illnesses
- hand washing practices:
  - before commencing or recommencing work with food
  - immediately after:
    - handling raw food
    - smoking, coughing, sneezing or blowing the nose
    - eating or drinking
    - touching the hair, scalp or any wound
    - using the toilet
- basic aspects of hazard analysis and critical control points (HACCP) method of controlling food safety
- specific industry sector and organisation:
  - major causes of food contamination and food-borne illnesses
  - sources and effects of microbiological contamination of food
  - workplace hygiene hazards when handling food and food contact surfaces
  - basic content of organisational food safety programs
  - contents of organisational hygiene and food safety procedures
  - hygienic work practices for individual job roles and responsibilities.

## Introduction

All food handlers and managers of food preparation areas have a legal responsibility to ensure that the food they serve or sell is fit for human consumption. Due to people in today's society commonly eating food away from home, the time between preparing food and actually cooking and eating food has grown longer. This increases the risk of a food contamination or poisoning incident.

All food handlers need to have a thorough understanding of good food hygiene practices, how food becomes contaminated and a basic understanding of the laws involved. Many states now have a requirement for a 'Food Safety Supervisor' and this unit will form part of the training for a Food Safety Supervisor. Best practice would be for all food handlers to be competent in this unit at a minimum.

In September 2015, the NSW Food Authority highlighted three food safety issues which need to be addressed 1) Safe egg management 2) Food allergens 3) Cleaning and sanitising practices.

Food safety itself has not changed much over the years, but we have become better informed and educated of food safety issues and practices. This enables us to serve bulk food in a safe and consistent manner.

Each year, health authorities are notified of tens of thousands of cases of food related illnesses. Many more cases are not reported; food poisoning is an illness that can affect anyone.

Good food hygiene practices are essential for the wellbeing of consumers and the success of businesses. Any food business, which makes its consumers ill, is likely to suffer commercially and legally. The cost of neglecting correct food hygiene practices can be immense.



## Real life Case Study 1

### Raw eggs in aioli – January 2010

179 people who ate at a retail burger bar were struck down with gastroenteritis through salmonella food poisoning. Interviews with the victims indicated that a housemade mayonnaise based aioli was a common food consumed. Scientific testing confirmed the salmonella link between the clinical samples and the burger bar.

The aioli was made on the premises using raw egg as an ingredient and did not undergo any cooking processes as is standard in the recipe for mayonnaise. Tests showed that salmonella was present in a sample of the aioli and a sample taken from plastic chopping boards at the business. The business was closed for two weeks and instructed to cease serving this type of product.

### Reports on the incident showed:

- The eggs were sourced from a local hobby farmer rather than a dedicated egg supplier and the hobby farmer had no quality control system in place, reused egg cartons and eggs were not washed prior to selling.
- Eggs were not stored under refrigeration.
- Most outbreaks of food poisoning from raw eggs also involve poor food handling practices.
- The practice of pooling large quantities of raw egg to make a mayonnaise product increases the likelihood of contamination from the shell of the egg.
- The sanitiser in use at the business was not of a commercial grade.

### The business should have:

- Sourced eggs and egg products from a recognised egg supplier with quality control systems in place.
- Use a pasteurised egg product in place of the raw egg ingredient.
- Store the eggs below 5°C in a refrigerator.
- Use a commercial grade sanitiser in the kitchen.

Source: NSW Food Authority website September 2015.

## Real life Case Study 2

### Asparagus sauce accused of killing diner!

An elderly man died just hours after being served up a sauce with fatally high levels of the toxic pathogen 'Bacillus Cereus' by an award-winning Sydney restaurant, an inquest heard yesterday.

A coronial inquest into the death of the 81 year old heard he had eaten fish of the day with an asparagus cream based sauce at the restaurant in Sydney suburbs on the night of Friday, January 12, 2007.

Tests on the sauce carried out after the man's death, by the Division of Analytical Laboratories found there was a presence of Bacillus Cereus at 9.8 million per 10 million parts. Levels of 1.0 million parts per 10 million are toxic, the inquest heard.

The build up of bacteria could have been caused by the sauce being left out on the bench in a 30°C kitchen for up to seven hours and possibly reheated and re-refrigerated a number of times over a 48 hour period, the inquest heard.

Restaurant owners both denied during their evidence to the inquest that the sauce would have been out for any more than four hours.

They said it would only have been served to customers that day and possibly for the following days' lunch.

A chef with about 30 years experience, the owner admitted he had no formal food safety training, but said he believed his taste and smell test was enough to ascertain its safety.

The man started complaining of severe stomach pains and began vomiting within half an hour of leaving the restaurant on January 12, 2007. His wife found his body lying on the bathroom floor of their home about 6.30am the next day.

Daily Telegraph March 27, 2008

### **MISTAKE**

**You cannot see poisoning, you cannot smell food poisoning, and you cannot taste food poisoning!**

## Real Life Case Study 3

Twenty two people at an elite sporting event in 2012 suffered from staphylococcal food poisoning after eating at a buffet with food produced by a commercial caterer. The 22 people were part of a group to eat early in the evening out of a total of about 500 people that were catered for.

They fell ill within hours of eating the food and suffered symptoms of vomiting, diarrhoea and stomach cramps; six people were hospitalised. It was only this early group of people that were affected and interviews with the victims indicated that a chicken stir fry dish and fried rice were most likely responsibility however no biological tests on the suspected foods were possible.

Tests have shown that some victims had been infected with the staphylococcus aureus bacteria, a common food poisoning bacteria spread by poor personal hygiene of food handlers.

The caterer had food safety policies in place and investigations revealed that there had been no temperature or food safety abuse.

Small mistakes in personal hygiene may have led to the outbreak.

Source: Australian Government Department of Health website.

### **MISTAKE – (most likely)**

**Poor personal hygiene.**

**Reuse of food (by being the early seating of the buffet it may indicate reuse of food left over from lunch).**



## Real Life Case Study 4

Salmonella in sandwiches wraps and rolls, January 2018

Food poisoning was reported when 35+ people were sick after eating food from a South Australian bakery. Food authorities linked the poisoning to filled sandwiches, rolls, wraps and focaccias sold at the bakery. Authorities said that the most likely cause was cross contamination from chicken to the ready made sandwich products and they were expecting the numbers of sick people to rise.

Authorities view the problem to be at the bakery and not as the result of contained product coming into the bakery.

At the time of publication, nine people had been hospitalised including two children.

The bakery had also had a salmonella food poisoning outbreak in 2016

Source: ABC news 3 January 2018

### **MISTAKE**

**Poor personal and kitchen hygiene in the food preparation area where raw chicken has been involved in cross contamination to ready to eat sandwich products.**

**As this is the second outbreak, serious training, hygiene and supervision issues are of a major concern.**

## Food Law

Australia has a national 'Food Standards Code'. This code has been produced by Food Standards Australia New Zealand known as FSANZ and can be found at:

[www.foodstandards.gov.au](http://www.foodstandards.gov.au)



Food Standards

All states and territories in Australia accept the code and its aim is to standardise food laws across Australia and New Zealand. Each state and territory in Australia also have their own legislation in the form of a Food Act.

### The Food Safety Code has four parts:

1. General food standards.
2. Food product standards.
3. Food safety standards.
4. Primary production standards.

The food laws and guidelines help ensure that all food for sale for human consumption is handled, prepared, stored and served without contamination and the premises in which food is prepared, stored or sold are clean and sanitary with the appropriate equipment available.

Section 3.2.2 of the Food Standards Code states that all persons handling food or supervising food handling must have:

1. Skills in food safety and food hygiene matters.
2. Knowledge of food safety and food hygiene matters.

It is important that all food handlers not only know how to follow good hygiene practices, but also understand why they are practicing them and the possible consequences if they do not.

## Environmental health officers (EHO)

Local governments in Australia employ inspectors to visit and inspect food businesses; these inspectors are called 'Health Inspectors' or 'Environmental Health Officers (EHO)'.

EHO's are very powerful people and it is best that food businesses cooperate with their local EHO and keep their business clean and hygienic. EHO's are there to enforce the law and check on food premises to ensure they comply with the Food Act and other local regulations.

Breaches of food laws may result in large fines, adverse publicity and even closure of the business until problems have been rectified and the premises are safe once again to process and serve foods. In severe cases or cases resulting in the death of a person, the law allows for a jail term of the people that are held responsible.

## Why follow good hygiene practices?

Today's media are constantly reporting about cases where people have suffered illness or have even died as a result of poorly handled food and / or beverages.

Even a small outbreak of food poisoning can ultimately lead to a business going broke. After all, if the newspapers and TV reported an outbreak of food poisoning at your local restaurant would you want to go and eat there?

Bad publicity will mean customers will stay away from your restaurant or hotel. If there are fewer customers there will be less financial turnover, therefore less profits and eventually the business will go broke and you will be out of a job.

You can reduce these risks by having staff trained on how to handle and store food right way and know how to follow good hygiene practices, understand why they are following them and the consequences if they do not follow good hygiene practices.

We need to implement and maintain good hygiene practices to keep the workplace clean, store food correctly, handle and prepare food ingredients safely, control the use of chemicals and produce the highest standard of food possible.

## Major aspects of food safety

<b>Personal hygiene</b>	The personal hygiene of the food handler and the cleanliness of the uniform they wear has a major impact on the safety of the food that a food handler prepares.
<b>Being healthy</b>	A food handler that is sick with a contagious disease or has open wounds will very likely pass contamination onto the food and the people who consume that food.
<b>Temperature control</b>	Correct temperature control of foods will be a vital part in keeping food fresh and safe.
<b>Food safety program</b>	A business that has an active HACCP food safety program in place will have greatly reduced their risk of a food poisoning incident.
<b>Cleaning and sanitising</b>	Having clean and sanitised food preparation areas and equipment will help produce clean safe food. The use of a commercial grade sanitiser is vital in this area.
<b>Training</b>	Having food handlers and supervisors trained in food safety is an important part of the food safety program at the business and part of the skill necessary to comply with the Food Standards Code and good business practice.
<b>Allergens</b>	Having food handlers who are aware of the different types of food allergies and intolerances that customers will may present with will help to be able to prepare safe food for these customers.
<b>Egg safety</b>	Many food poisoning incidents involve the handling and use of raw eggs and health authorities have recently placed special emphasis on knowledge in this area as a priority for food safety.
<b>Hand washing</b>	Good hand wash facilities and the use of food handling gloves for appropriate food handling tasks will help prevent cross contamination and contamination from hands.

## What are good food hygiene practices?

Sometimes it may seem confusing to understand what good food hygiene practices are. Below are some examples and why they are a good idea:

Examples of good hygiene practices	Why they should be followed
Regular hand washing	To prevent bacteria from our hands being spread onto food.
Clean uniform	To prevent dirt and bacteria being transferred from a dirty uniform to the food or food preparation equipment.
Wearing hats or tying long hair back	To minimise the risk of hair falling into the food.
Using clean equipment and utensils	To stop bacteria from being spread from dirty tools and equipment to food.
Taking the rubbish out regularly	To stop the build-up of waste in the kitchen where bacteria can grow and possibly contaminate the food.
Keeping lids on rubbish bins when possible	To keep the garbage in the bin and to stop any pests which may want to eat the garbage from getting in.
Storing high risk chilled foods below 5°C and hot foods above 60°C	To stop the unacceptable growth of food poisoning and food spoilage bacteria.
Keeping lids on food	To stop the food getting out of the container and to stop anything getting into the container and causing possible contamination.
Clearly dating and labelling foods in containers	So you know what the food is and how old it is.

## Advantages of following good hygiene practices

Following good hygiene practices is not only a legal requirement; it is also good business practice. Here we will look at the bigger advantages of following good hygiene practices and the possible consequences if these practices are not followed.

Advantages of good hygiene practices	Consequences of poor hygiene practices
Minimises the risks of food poisoning.	Increased risks of giving food poisoning to your customers.
Minimises the risks of bad publicity for the food business.	More risk of bad publicity from an outbreak of food poisoning.
Correct storage of food means the safety and quality of the food is better, so you have more chance of selling it.	Poorly stored food will mean more will be thrown away which results in an increase in food wastage.
Better stored and handled food results in a better quality product and a better reputation through good 'word of mouth' advertising.	Poorly stored food means a poorer quality product resulting in bad 'word of mouth' advertising.
Better handling of your food through properly trained staff means a more consistent product.	Poorer handling by untrained staff results in an inconsistent product.
A better reputation for your business meaning increased patronage and more profits.	Bad reputation for your business causing loss in sales and profits.
Increased profits lead to better job security.	Loss of profits leads to staff being cut due to a fall in business and less job security.

You can see from the above examples that by following good hygiene practices not only will you be protecting your customers from the possibility of food poisoning, but you will be protecting your job as well.

## What is Food?

When we talk about food, we are talking about almost anything that will be consumed including:

- ❖ chewing gum
- ❖ coffee
- ❖ ice
- ❖ meals
- ❖ beverages
- ❖ spices and condiments

All these food items must be stored, handled and served in a safe and hygienic manner to ensure they do not become contaminated and lead to possible illness.



## Hygiene Policies and Procedures

Larger hospitality organisations, such as five star hotels and large catering organisations, will have written policies and procedures for things such as food handling, receiving deliveries and personal hygiene. If the business has a 'HACCP Food Safety Program', these policies and procedures would form the basis of best practice within the organisation.

Many smaller businesses run on a less formal basis and may have few written policies and procedures; some food businesses may be required by law to have a 'Hazard Analysis Critical Control Point (HACCP') based food safety program in place.

If you are unaware of these food safety policies and procedures, you should talk to your supervisor so that you are aware of and able to follow the policies and procedures in your workplace.

If there is a food safety program in place, ask your supervisor if you can read it during a break.  
Report poor hygiene practices



## Report poor hygiene practices

To play your part in the safe preparation and service of food in your workplace you have a responsibility to report bad practices to your supervisor or manager.

Often a supervisor or manager has a lot of things on their mind and may not be aware of some of the fine details of how things are being done in the business, so you should report what you see as poor practices to your supervisor. You should always bear in mind that you should be polite and diplomatic when discussing things with your supervisor or manager.





## Food Safety Programs

A 'Food Safety Program' is a system, which identifies, evaluates monitors and controls hazards or risks, which may affect the safety of food.

The concept of HACCP food safety programs for retail food outlets such as restaurants and hotels is worldwide and many hospitality businesses now operate a HACCP based food safety program to manage the risks associated with giving their customers food poisoning.

HACCP is now an important management tool for chefs and cooks worldwide and it is important to understand how it works and how it affects you in your day to day tasks.

## HACCP

What is HACCP? – HACCP stands for 'Hazard Analysis Critical Control Point' and is an international food safety system.

It involves looking at how you handle food, thinking about all the things that can go wrong and developing a plan to ensure that you control the processes so that things do not go wrong. It also involves monitoring procedures to show you have processes under control.

HACCP is a straightforward and logical system of control based on the prevention of problems- a common sense approach to food safety management.

HACCP is a key element of a complete food safety program and is applied by following a number of easy steps:

1. Look at the process from start to finish.
2. Decide where hazards could occur.
3. Put in controls and monitor them.
4. Write it all down and keep records.
5. Ensure that it continues to work effectively.

## HACCP Policies and procedures

One of the fundamental rules of HACCP is that there is to be a written program which has written policies and procedures that cooks can follow to prepare, cook and serve safe food.

This means if you look around the kitchen of a business that has a HACCP food safety program you will find a book or folder with all the written policies, procedures and records.

Staff should be aware of and trained in these policies and procedures so that correct food safety techniques become second nature and a normal part of food handling.

Ask the chef about the HACCP program they will know.



## Follow HACCP Policies and procedures

HACCP policies and procedures are not just for fun; you are meant to actually follow the instructions to carefully prepare and serve safe food.

These policies and procedures have been carefully thought through to give the safest food possible.

### These policies and procedures will include:

- ❖ Procedures to clean food preparation areas.
- ❖ Procedures to check and record the temperatures of food storage areas.
- ❖ Procedures to control pests such as mice and flies.
- ❖ Procedures to accept food deliveries.
- ❖ Procedures to train staff in food safety.
- ❖ A business food safety policy.
- ❖ Procedures to prepare food.
- ❖ Procedures to record temperatures.
- ❖ Procedures how to handle customer complaints and food safety incidents.

## Activity 1

As workers in the food service industry, the way we handle food and maintain our food premises has a direct effect on many people.

Below, list five advantages of following good hygiene practices and five possible consequences if good hygiene practices are not followed.

Think about how it will affect staff, customers and the company you work for or a food handling business.

### Advantages of following good hygiene practices:

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

### Consequences of poor hygiene practices:

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

## Your health

The health of a food handler is very important.

If the food handler is sick, it is easy to transfer bacteria into the food that they are preparing. These bacteria can then spread from the food handler to people who eat that food. Contagious diseases like gastroenteritis are a good example of this, as gastroenteritis is very easy to pass from person to person through food.

If you are sick, keep your supervisor or manager informed and do not work if you are infected with a contagious food borne illness.

### **If a food handler knows or suspects he or she might have contaminated some food.**

- ❖ Food handlers must inform their supervisor if they know or think they may have made any food unsafe or unsuitable to eat. Such as where the food handler may have sneezed over the food which they are preparing or cut themselves while preparing food.



## **If a food handler has a food-borne illness:**

- ❖ Food handlers must inform their work supervisor if they have any of the following symptoms while they are at work - Vomiting, diarrhoea, a fever or a sore throat with a fever. The only exception to this is if the food handler knows that he/she has these symptoms for a different reason. For example, a food handler may be vomiting at work because of pregnancy.
- ❖ Food handlers must also inform their supervisor if they have been diagnosed as having or carrying a food-borne illness.
- ❖ As well as reporting the food-borne illness, the food handler must not handle any food where there is a chance they might make the food unsafe or unsuitable because of their illness. Also, if a food handler stays on at work to do other work, he or she must do everything reasonable to make sure that they do not contaminate any food.

## **Illnesses that can be passed on through food include:**

- ❖ Hepatitis.
- ❖ Giardia.
- ❖ Salmonella.
- ❖ Campylobacter.

## **If a food handler has skin injuries or sores or is otherwise unwell:**

- ❖ Food handlers must inform their supervisor about any infections or conditions such as a cold or other problem that may result in discharges from their ears or nose or eyes. If there is any chance that they might make food unsafe or unsuitable for people to eat as a result of their condition, they must inform their supervisor at once.
- ❖ Also, if they continue to handle food with such a condition, food handlers must do whatever is reasonable to make sure that they do not contaminate any food. For example, an infected sore could be completely covered by a bandage and clothing or by a waterproof covering if on an area of bare skin, and medication can be used to dry up any discharges.

## Exclusion of food handlers

All food handlers with the following disease or symptoms must be excluded from food handling.

### Disease/Organism and period of exclusion for each illness

#### Gastroenteritis

(Acute vomiting and/or diarrhoea)

(a) When the organism is unknown:

Any person with gastroenteritis must be excluded from food handling until at least 48 hours after symptoms have ceased.

(b) When the organism is known to be:

**Norwalk or Norwalk like virus** and other viral gastroenteritis should be excluded from work until 48 hours after symptoms have ceased and you have obtained a certificate from your doctor declaring you are safe to return to work.

#### Salmonella (non typhoid)

Excluded from food handling at least until symptoms have ceased and have a doctor's certificate declaring illness has passed before returning to work.

#### Typhoid and Paratyphoid

Exclude from food handling until three consecutive negative specimens of faeces have been cleared by a doctor. Specimens should be taken each week for 3 weeks. If the urine was positive on initial diagnosis or the person has a history of urinary tract disease.

A person who is a typhoid carrier (i.e. any person who continues to excrete Salmonella typhi organisms for 90 days or longer), must not engage in the preparation, manufacturing or handling of food for consumption by others (Health (Infectious Diseases) Regulations 1990 S24).

#### Cholera, Shigella and VTEC

Exclude until 2 consecutive faecal specimens taken at least 24 hours apart are found to be negative.

## All others including:

### **Other bacterial gastroenteritis (Campylobacter, Yesinia and others)**

Exclude at least until symptoms have ceased and have obtained a doctor's certificate declaring illness has passed and it is safe to return to work.

This includes all toxins producing bacteria, such as *Staphylococcus aureus*, *Clostridium perfringens*, and *Bacillus cereus*.

### **Parasites**

(*Cryptosporidium*, *Entamoeba histolytica*, Amoebiasis, *Giardia lamblia*)

### **Hepatitis A (and hepatitis E)**

Exclude from food handling until one week after the onset of jaundice.

(Any person with acute hepatitis must be excluded from work until the laboratory tests have revealed the condition not to be Hepatitis A or E.)

### **Boils, abscesses, and other**

Exclude unless the lesion is covered with a waterproof dressing.



## Groups at risk

Each year in Australia there are tens of thousands of cases of food poisoning.

**The people who are most likely to suffer from food poisoning are:**

- ❖ people who are already ill
- ❖ the elderly
- ❖ the very young
- ❖ pregnant women

This is because these groups in society have a much weaker immune system than normal everyday people. Because of this they are not as strong and able to fight off infection as well as other people and can become sick much more easily.

If you are preparing or cooking for any of these groups of people you **MUST** take extra care.





## Food Allergies and Anaphylaxis

Somewhere between 180,000 and 360,000 Australians have a life threatening allergy, or are anaphylactic.

A food allergy is quite different to intolerance as it is caused by the body producing anti bodies to some food proteins. The most dangerous foods for this group of people include the following:

- ❖ peanuts
- ❖ tree nuts
- ❖ shellfish
- ❖ fish
- ❖ milk
- ❖ sesame seeds
- ❖ soy
- ❖ eggs



This group of food products cause 90% of all anaphylactic reactions but there are other foods that can also cause the same reaction including vinegars, mushrooms, and tomato.

An anaphylactic reaction, or anaphylactic shock, is particularly dangerous and the slightest contact or trace of these food products may cause death to the affected person in a very short time. If a customer says they have a food allergy, take it VERY seriously.

To give an example of how little food is required to cause anaphylactic shock, in some individuals a reaction may be caused with only 1/5000<sup>th</sup> of a teaspoon of peanut butter. Some foods which contain sulphite preservatives such as dried fruits and MSG may also cause asthma to affected persons.

**The basic rule of thumb is if in doubt ask and leave it out!**

Some foods which contain sulphite preservatives such as dried fruits and MSG may cause asthma to affected persons.

## Medical diets and intolerances

### Gluten free

Coeliac condition is a lifelong dietary intolerance to the gluten in wheat starch resulting in damage to the lining of the intestine so that food is not absorbed properly. It can cause poor weight gain in young children, weight loss in older children and adults, chronic diarrhoea, chronic anaemia, tiredness and vomiting; left untreated it can cause death.

### Lactose Intolerance

Lactose is the sugar in milk. Lactose intolerance is a problem for people who have stomach or bowel trouble when they consume lactose. It is caused by a deficiency of the enzyme Lactase and results in diarrhoea when milk or other products containing lactose are consumed.

### Diabetes

Diabetes is a disease in which the body cannot make proper use of carbohydrates, such as sugar and starch.

There are two main types of diabetics:

1. Insulin dependant
2. Non-insulin dependant

Insulin is a natural enzyme produced by the body which aids the breakdown of starches and sugars. An Insulin dependent diabetic will need to have daily injections of manufactured insulin prescribed by a doctor. A non-insulin dependent diabetic will need to control their blood sugar through a strict diet.

### Fructose malabsorption

Fructose is a sugar found in many foods such as onions, apples, honey, dried fruits, garlic, cherries, melons and sweet wines. Consuming fructose by a person who suffers from Fructose malabsorption will cause them to be sick with stomach pains and bowel problems.

## Symptoms of Food Poisoning

The symptoms of food poisoning include:

- ❖ vomiting
- ❖ diarrhoea
- ❖ nausea
- ❖ headaches
- ❖ cramps
- ❖ high temperatures
- ❖ stomach pains



Food poisoning can be very dangerous; most of the time people just suffer from some vomiting and diarrhoea for a few days but in extreme cases people can die.

The reason for this is that two of the symptoms of food poisoning are diarrhoea and vomiting; these two symptoms cause the body to dehydrate very quickly. If the body dehydrates too much, then major organs in the body, such as the liver or kidneys stop working and this can lead to death.

This is why in extreme cases; people who have food poisoning have to be taken to hospital as soon as possible.



## Food Spoilage & Poisoning

There is often confusion between 'Food Poisoning' and 'Food Spoilage'. There is a large misconception that they are the same thing and that when food has 'gone off' that this is food poisoning. This is NOT the case.

It is important for all food handlers to understand the differences between food spoilage and food poisoning.

### Food Spoilage

Foods, both raw and processed, deteriorate over time and eventually will become unsuitable for humans to eat. This refers to the food we call 'off'. This means food looks bad, is mouldy, slimy or smells bad or has an 'off' taste.

We can detect when food has gone off (food spoilage) so we throw it away as no one eats food that has gone bad.

### Food Poisoning

Food poisoning occurs when a person has become ill after eating or drinking contaminated food, which may have tasted, looked and smelt fine.

The major difference between food poisoning and food spoilage is we can tell when food is spoilt but we cannot tell when food is poisoned, because food poisoning bacteria are completely undetectable.

In other words:

**You cannot see food poisoning!**

**You cannot smell food poisoning!**

**You cannot taste food poisoning!**

This is why we must maintain high standards of food hygiene to reduce the risks of food becoming contaminated with food poisoning bacteria and store all high risk foods below 5°C to stop any bacteria, which is on the food (but we cannot detect) from growing to numbers large enough to cause illness.

## What can make food dangerous?

Food becomes dangerous when it is contaminated, so let's define 'Contaminant' and 'Contamination' first.

**Contaminant** - Any biological or chemical agent, foreign matter, or other substances that may compromise food safety or suitability.

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

Food is usually contaminated one of three ways.

**These are:**

1. Chemical contamination.
2. Physical contamination.
3. Microbiological contamination.

### Chemical Contamination

Many chemicals that are used in food production can seriously affect the human body and cause serious illness. Most chemical contamination occurs when harmful chemicals get into the food via:

- ❖ fertilisers
- ❖ cleaning chemicals
- ❖ incorrect use of chemicals
- ❖ insecticides



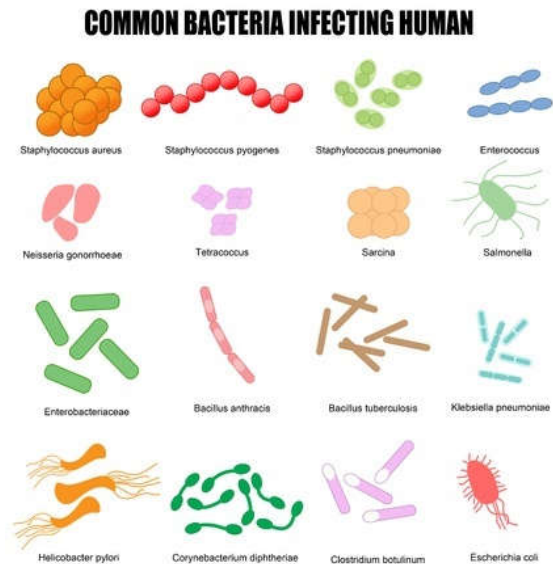
You can help avoid chemical poisoning by washing fruit and vegetables before you use them and by ensuring correct storage and labelling of all cleaning chemicals. Staff must also be adequately trained on how to use chemicals correctly, so they do not use them incorrectly and contaminate food.

## Microbiological Contamination

Microbiological organisms are small living creatures that can only be seen under a microscope; you may think of them as bugs or germs.

Microbiological contamination occurs when these microorganisms come into contact with food and spoil or even poison it.

They can make food go ‘off’ and render it poisonous.



## Physical Contamination

Food can be contaminated by physical sources; this occurs when objects fall into the food at any stage of the production.

**Examples may include:**

- ❖ glass
- ❖ hair
- ❖ insects
- ❖ metal shavings
- ❖ wood shavings



## Activity 2

Name the four groups in the community most at risk from food poisoning:

1 \_\_\_\_\_ 2 \_\_\_\_\_

3 \_\_\_\_\_ 4 \_\_\_\_\_

Name the three types of food contamination:

1 \_\_\_\_\_

2 \_\_\_\_\_

3 \_\_\_\_\_

Name two types of cleaning chemicals used in your food business:

1 \_\_\_\_\_

2 \_\_\_\_\_

Does food have to spoil first before it becomes poisonous? Explain your answer:

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## Activity 2 (cont.)

Complete the following three different answers.

Food poisoning you cannot \_\_\_\_\_ it

Food poisoning you cannot \_\_\_\_\_ it

Food poisoning you cannot \_\_\_\_\_ it

Are spices considered a food?

---

Is beer considered a food?

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Give four symptoms of food poisoning:

1 \_\_\_\_\_

2 \_\_\_\_\_

3 \_\_\_\_\_

4 \_\_\_\_\_

The state government food laws your state are called?

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The website for the food standards code is:

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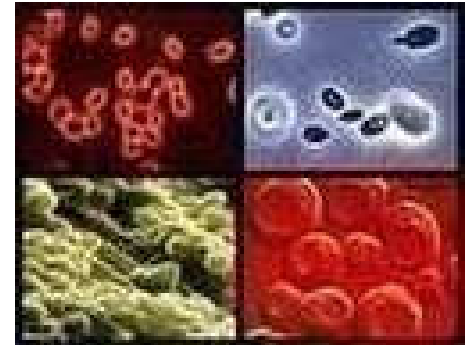
## Microorganisms that affect food

There are four main kinds of microorganisms associated with food poisoning and food spoilage. These are:

### Yeasts

Yeasts are found naturally in the air and on foods. Yeasts do not cause food poisoning, but some types of yeasts will cause food spoilage.

These foods are usually high in sugar and are slightly acidic and yeast may grow either with or without oxygen.



### Example:

Fruit juices and yoghurts that become 'fizzy' with an alcoholic taste or wines that become acidified (vinegary) have been contaminated by yeasts.

### Moulds

Moulds are easy to see. They appear in a variety of forms such as powdery blue-green-white patches on lemons, tomato paste, bread, etc. Some moulds cause illness due to the production of mycotoxins (poisonous substances).

These mycotoxins may cause liver disease if eaten over a period of time.

Moulds generally grow on dry or acidic foods, such as grains, nuts and citrus fruits when stored in damp conditions at warm temperatures.



## Viruses

During food preparation contamination can occur by people transferring viruses from themselves to food and then to the person who eats the food. Viruses can only multiply in living tissue and cause vomiting and diarrhoea when consumed.

Some raw foods such as oysters, clams and mussels, which are 'filter feeders', if harvested from sewage polluted water they will have a lot of bacteria and viruses in their flesh which will cause viral food poisoning.



This is why it is important to only purchase your fish and seafood from reputable suppliers.

Examples of viruses include the Flu and Hepatitis A.

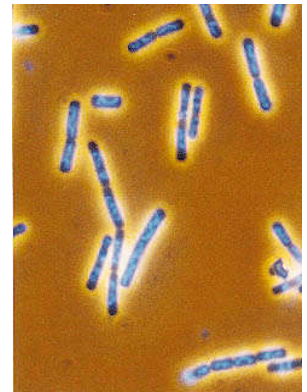
It is important to remember that most food borne viruses are easily destroyed by heat, so if you cook your foods thoroughly than any viruses present will be killed.

## Bacteria

Bacteria are the most common cause of food poisoning. Bacteria that cause disease and illness are called pathogens. Small numbers of pathogenic bacteria can be consumed without making you sick because the body's immune system kills them before they can grow to large numbers; but if large numbers of bacteria are consumed, they will overwhelm our immune system and cause food poisoning. Bacteria can poison us in two ways:

**1. Infection** - If large numbers of some types of bacteria are eaten our body's normal defence mechanisms are unable to cope and we become sick e.g. Salmonella, Clostridium.

**2. Intoxication** - Because bacteria are living creatures they eat and produce waste products; some of these waste products are poisonous. These are called toxins and can cause illness if consumed, even in small quantities.



## Naturally poisonous foods

Some foods contain naturally occurring toxins and poisons and should be avoided at all costs. These include:

### Fungi

Many types of fungi and mushrooms are poisonous. You cannot just pick wild fungi and eat it unless you know which ones are safe. E.g. The death cap fungus is usually fatal from eating only one.



### Green potatoes

These contain a poison called solanine, which is a toxin and is not killed by cooking.

### Berries

Just as you cannot pick and eat all wild mushrooms, many berries are poisonous. Only use berries from a registered fruit and vegetable supplier.



### Rhubarb Leaves

The leaves of rhubarb contain oxalic acid, which is poisonous.

### Bitter almonds, apricot kernels, apple seeds

These contain cyanide.

### Fish

Some types of fish can be poisonous so always buy your fish from a reputable supplier.

### Undercooked red kidney beans

Red kidney beans need to be boiled for at least 10 minutes to kill the naturally occurring poison in them, otherwise they cause vomiting.



## Spores

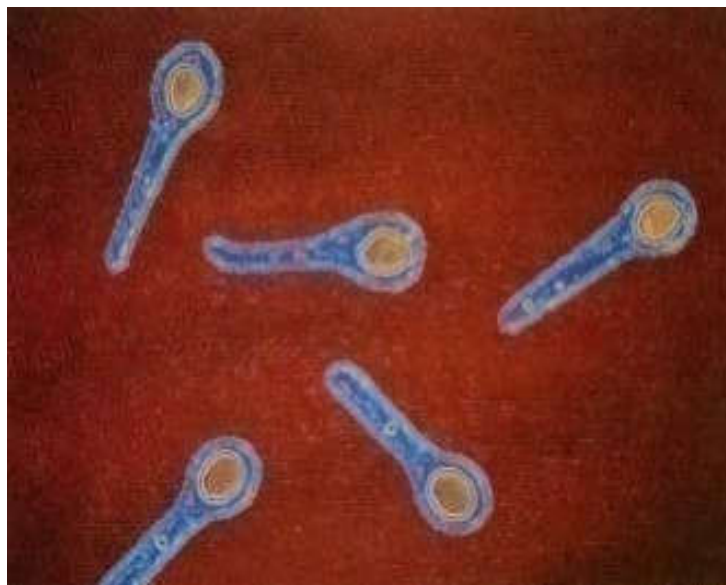
Some bacteria are very smart and can sense when conditions are changing. When they sense that conditions are becoming dangerous for survival they form spores and become dormant (asleep).

This is like a bacteria forming a protective coating around itself, which protects the bacteria from dangers such as heat, lack of moisture, lack of oxygen or change in pH levels of the food (pickling or salting foods).

Spores can survive for many years in this dormant state and cannot easily be destroyed easily by heat, cold, sanitisers or chemical additives.

Because it is difficult to kill these bacteria it is important to observe the correct heating, cooling and cooking times to control their growth so they do not grow too large amounts, which can cause food poisoning.

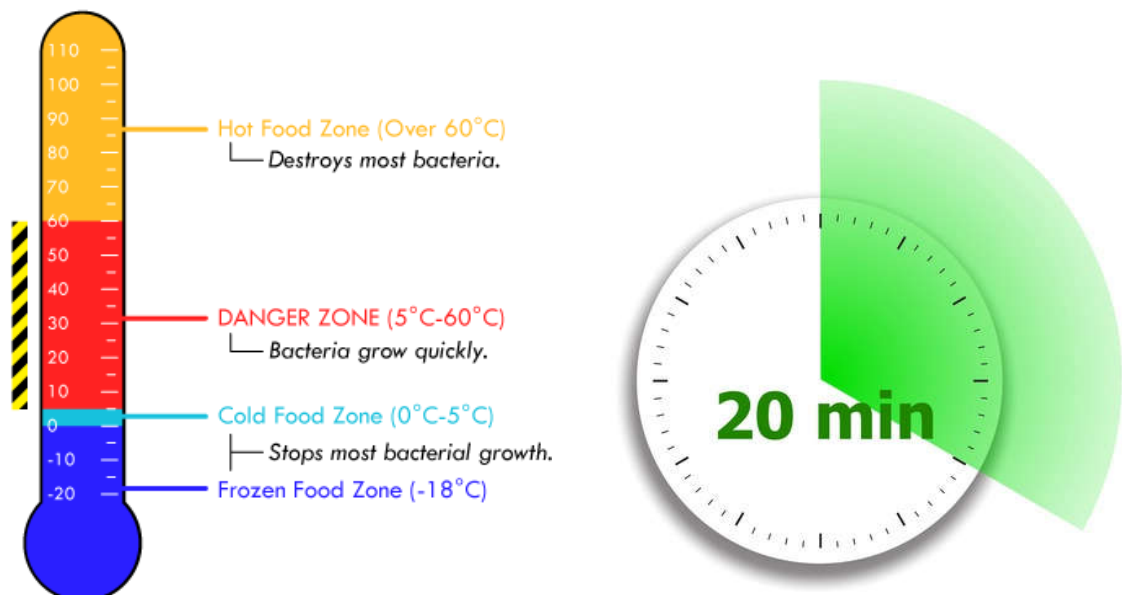
Spore forming bacteria are most commonly found on raw vegetables, in processed meats, dried herbs and spices and in dried products such as rice, pasta or polenta.



## Conditions necessary for bacteria to grow

To survive and multiply, food poisoning bacteria require certain environmental conditions. These are:

1. Warmth (a suitable temperature).
2. Moisture.
3. Food (suitable types of food).
4. Time.
5. Suitable pH (not too acid or alkali).



## Temperature

Bacteria have a minimum and a maximum temperature for growth, between which, there is an optimum temperature when bacteria can multiply very quickly.

Most bacteria below 5°C will be dormant (asleep) but will not die.

Temperatures over 60°C will begin to kill most bacteria.  
The higher the temperature the more bacteria will be killed.

It is important to note that temperatures *over 60°C* will kill some types of bacteria but not all types of bacteria!

## The Danger Zone

Temperature control is one of the most important things you can do to prevent food poisoning. Most bacteria like to grow and reproduce between 5°C and 60°C. This is known as the 'Danger Zone'.

**This is the temperature zone where:**

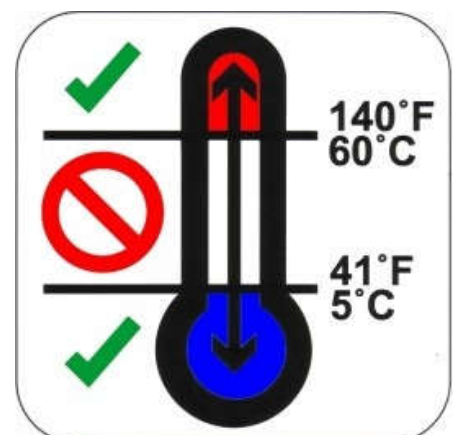
- ❖ bacteria will survive.
- ❖ bacteria will grow rapidly in large numbers.

You can stop dangerous bacteria building up in large numbers by keeping food out of the danger zone as much as possible. Remember bacteria reproduce faster at around 37°C which is normal human body temperature.

Bacteria surviving at this temperature will double in size every 20 minutes and if not controlled, may grow in numbers large enough to cause illness.

Cold does not kill bacteria, but heat does, the hotter the temperature and the longer the time, the more you kill.

Most bacteria are killed when you heat to above 75°C.





## Moisture

All bacteria require moisture to grow.

Dry foods such as dehydrated foods, rice, dry pasta and flour are low risk foods for bacterial growth, but some food poisoning bacteria can survive on these foods as spores.

It is important to remember that low moisture does not kill food poisoning bacteria.

Other foods such as meats, fish, poultry and dairy products have sufficient moisture to promote bacterial growth.

## Nutrients (High Risk Foods)

Food poisoning bacteria prefer food which is high in protein.

These types of food are called 'High Risk' foods.

**High risk foods include:**

- ❖ raw meats
- ❖ cooked meats
- ❖ raw poultry
- ❖ cooked poultry
- ❖ raw fish and seafood
- ❖ cooked fish and seafood
- ❖ dairy products
- ❖ cooked rice
- ❖ soups and sauces



## Food poisoning bacteria do not like:

- ❖ fatty foods
- ❖ acidic foods (pickled foods)
- ❖ very salty foods (salted and cured foods)
- ❖ very sweet foods

High concentrations of salt and sugar provide poor growing conditions for bacteria. This is why meat salting before refrigeration was invented, and glazed cherries, which have high sugar content will ‘keep’.

**High risk foods** are those that are not too salty or acidic, are high in protein and contain enough moisture to support bacterial growth.

This is why milk, eggs, custard, soft cheeses, cooked rice and pasta, and foods with gelatine go ‘off’ quite quickly; whereas you can keep a tub of margarine, butter or a bottle of olive oil for a very long time.

## How Low Risk Foods become High Risk Foods

Some foods which are dried or dehydrated offer poor growing conditions for food poisoning bacteria. These foods though, can become ‘high risk’ if we add liquid to rehydrate them or through the cooking process.

### Examples include:

Uncooked rice is low risk but after cooking and with the addition of water it becomes a high risk.

Dried herbs and spices are low risk but if contaminated with spores they become high risk when added to food (nutrients, moisture).

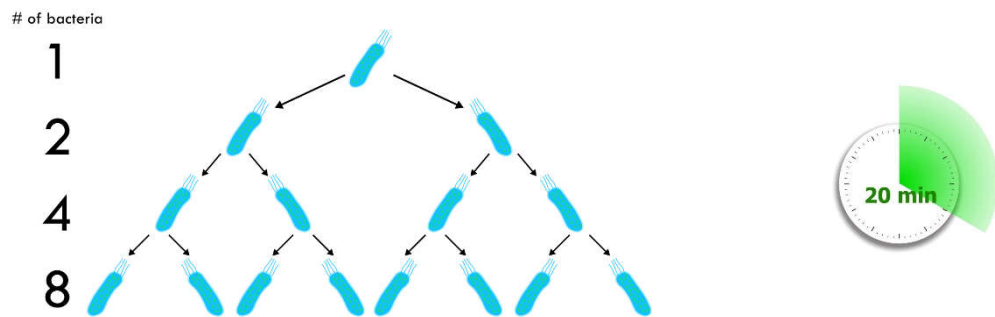
Dehydrated foods such as custard powder or stuffing mix are low risk but when reconstituted, become high risk foods.



## Time

Given the right food, temperature and the right amount of moisture, bacteria can generally double in size every 20 minutes and it may only take a few hours for the levels of bacteria to reach harmful levels; which will cause food poisoning.

Bacteria reproduce according to a process known as 'Binary Fission' i.e. the bacteria grow to a certain size then split into two individual cells. Under ideal circumstances binary fission can take place every 20 minutes.



Time	Number of bacterial cells	Time passed
9.00	1	0 mins
9.20	2	20 mins
9.40	4	40mins
10.00	8	1 hour
11.00	64	2 hours
13.00	4096	4 hours
15.00	262144	6 hours
16.00	2097152	7 hours

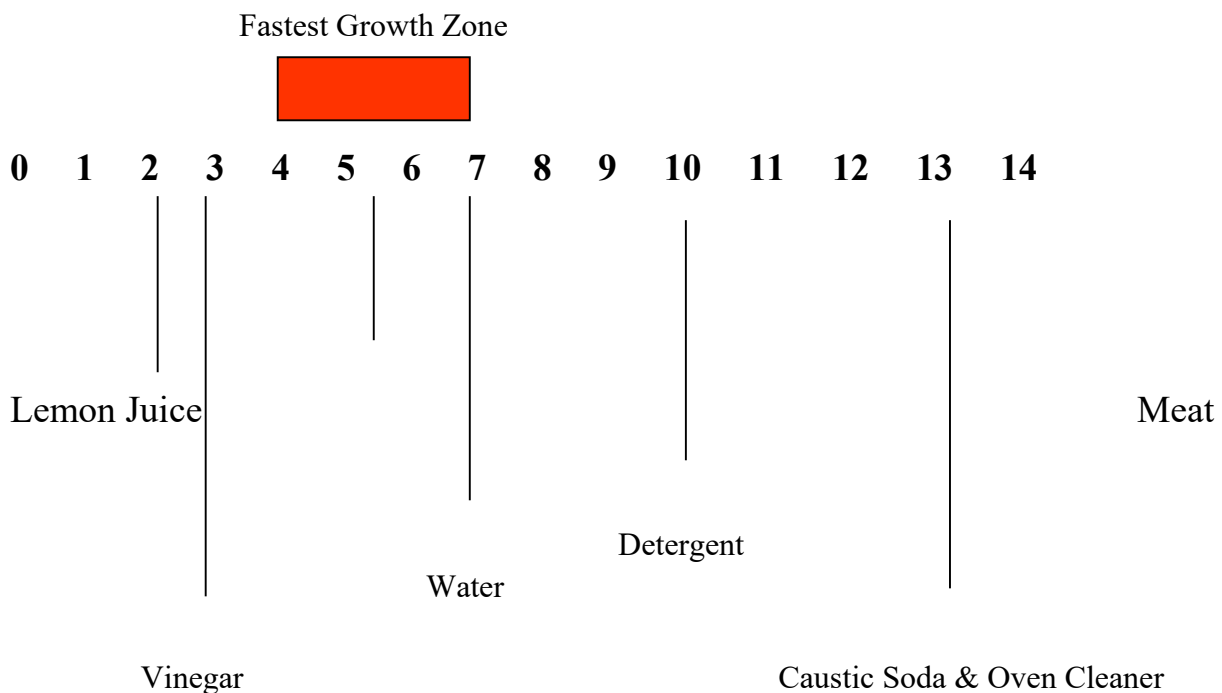
## pH Level

The pH of a food is measured on a scale of 0 to 14. Acidic foods have pH values of less than 7, with alkaline foods above 7. The pH value of 7 is neutral.

- ❖ pH is a measure of acidity and is a scale between 1 and 14.
- ❖ 1 is a very strong acid and 14 is a very strong alkaline.
- ❖ Water is neutral and has a pH of 7.
- ❖ Food poisoning bacteria like to grow in food with a pH of between 4.6 and 7.

Food poisoning bacteria generally do not like food that is too acidic, such as pickled foods or too alkaline, such as salted and cured foods.

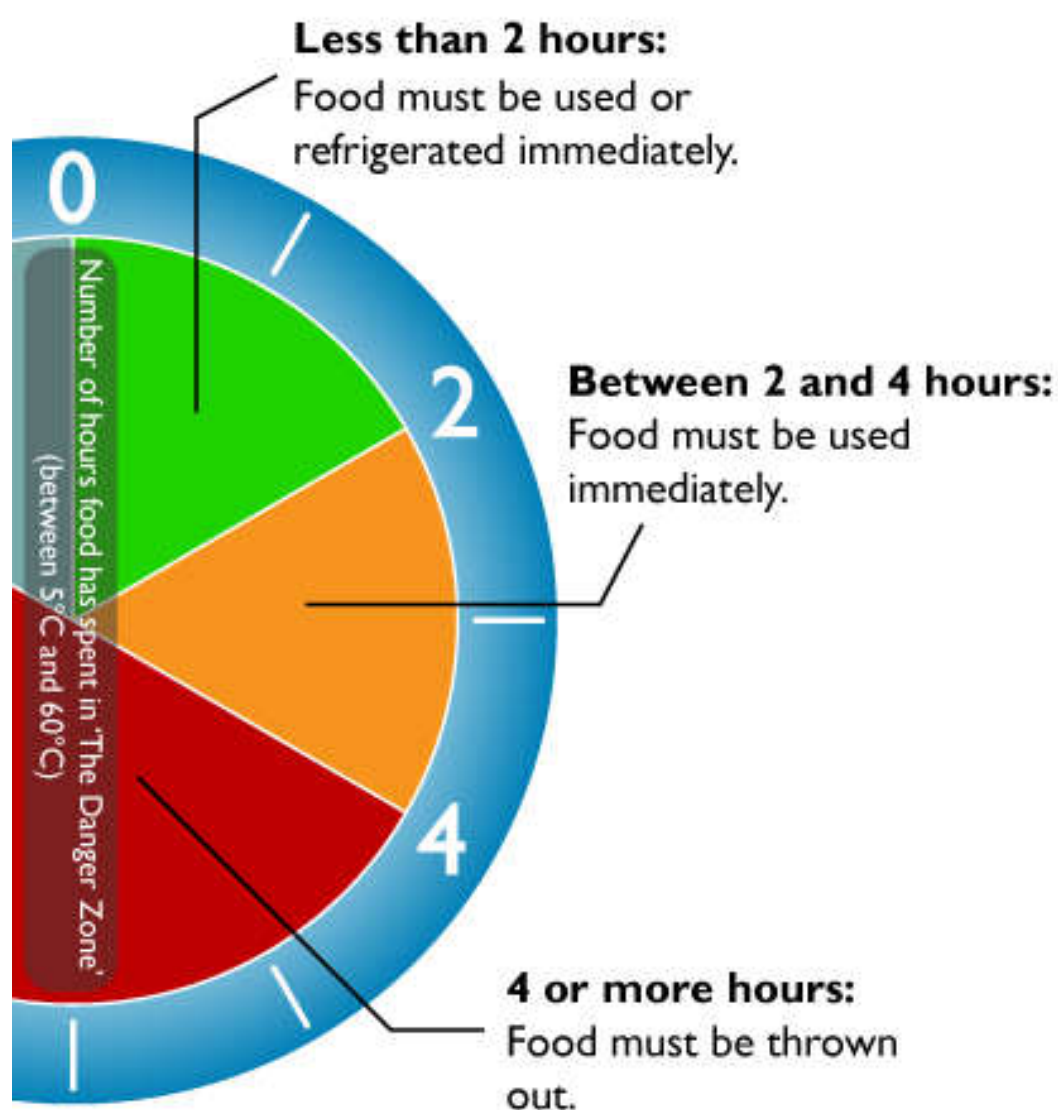
## pH:



## The 2-hour/4-hour rule

**Food Standards Code guidelines state:**

Any ready-to-eat is potentially hazardous food if it has been at temperatures between 5°C and 60°C:



## Activity 3

What are the four main types of microorganisms associated with food?

1 \_\_\_\_\_ 2 \_\_\_\_\_

3 \_\_\_\_\_ 4 \_\_\_\_\_

What temperature range is called the 'Danger Zone'?

\_\_\_\_\_

Why is this range called the 'Danger Zone'?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Why do breakfast cereals such as cornflakes not spoil?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

If bacteria in food have the right conditions for strong bacterial growth and it starts with 100 bacteria per gram in the food, approximately how many bacteria will it have after 1 hour per gram in the food?

\_\_\_\_\_

Most bacteria are killed when food is heated above what temperature?

\_\_\_\_\_

## High Risk Foods

Not all foods will support bacterial growth. It is only foods which contain the nutrients that bacteria require for growth.

For example, dairy and meat products that contain high levels of protein and moisture are considered high-risk foods.



## Eggs

Unfortunately, the use of raw eggs in food production is a regular source of food poisoning in food. It can also be an issue where an egg may be cooked but at a low temperature and may not fully cook the whole egg in the process; such as eggs sauces like hollandaise and béarnaise.

### These products include:

- ❖ raw egg mayonnaise
- ❖ raw egg dressings
- ❖ raw eggs desserts such as mousse and custards
- ❖ egg sauces such as hollandaise and béarnaise sauce

Commercial egg producers now provide a range of pasteurised egg products which can be used instead of raw eggs in the shell. This will greatly reduce the risk of salmonella contamination from the shell and is a much safer alternative for food products such as mayonnaise, hollandaise, desserts and drinks containing raw egg.

Care should also be taken to avoid purchasing eggs from non-commercial suppliers without quality control and egg washing programs in place. It's easy for a cook to think that they are getting a higher quality egg straight from a farmer but it will greatly increase the risk of salmonella food poisoning from dirty and cracked eggs.

- ❖ Don't use egg shells to separate eggs, use an egg separator device.
- ❖ Store eggs in the refrigerator below 5°C.
- ❖ Only purchase eggs that are clean, have clean packaging, are not cracked and have a quality control stamp.
- ❖ Clean and sanitise the kitchen area.
- ❖ Use lemon juice and vinegar to acidify the egg.
- ❖ Don't use cracked or broken eggs.



### Egg Safety Video

<https://www.youtube.com/watch?v=GWiu2tY4Oto>

## Major Food Poisoning Bacteria

### Salmonellosis

**Causative Organism** — Salmonella (facultative bacteria) (bacteria; more than 2000 kinds).

Caused by infection.

**Source of Illness** — May be found in poultry, eggs, meats, fish, milk and milk products. Multiplies rapidly at room temperature.

**Symptoms** — Onset 6 -72 hours. Lasts 2-3 days. Nausea, fever, headache, abdominal cramps, diarrhoea, and sometimes vomiting. Can be fatal in infants and in elderly and immune-compromised individuals.

**Prevention Methods** — Avoid cross contamination of foods, ensure thorough cooking of foods, prompt and proper refrigeration of foods, practice good personal hygiene.

### Campylobacteriosis

**Causative Organism** - Campylobacter (facultative) limited oxygen.

Caused by infection.

**Source of Illness** — Bacteria found in poultry, cattle, and sheep can contaminate the meat and milk of these animals. Chief food sources: raw poultry, meat, and un-pasteurised milk.

**Symptoms** — Onset 2-5 days. Lasts 7-10 days; relapses are not uncommon. Diarrhoea, fever, abdominal pain, nausea, headache, muscle pain, and sometimes bloody stools.

**Prevention Methods** — Cook foods thoroughly, avoid cross contamination of foods, avoid unpasteurised milk.

## Listeriosis

**Causative Organism** — *Listeria Monocytogenes* (reduced oxygen) Caused by infection.

**Source of Illness** — Found in animal intestines, soil, milk, leafy vegetables such as lettuce, poultry, meats, seafood, and prepared chilled, ready to eat foods. Grows in the refrigerator where other bacteria are dormant.

**Symptoms** — Onset is 1 day to 3 weeks. Duration is indefinite, depends on treatment. Has a high fatality in immune-compromised individuals. Flu like symptoms: nausea, vomiting, headache, fever, backache, respiratory distress, meningitis.

**Prevention Methods** — Avoid raw milk, cheese from unpasteurised milk, cook foods to proper temperatures, avoid cross contamination, clean and disinfect. High risk groups follow 'Keep refrigerated', 'Sell by' and 'Use by' dates on Sous-Vide foods.

## Botulism

**Causative Organism** — *Clostridium botulinum* (anaerobic). Caused by intoxication. Spore Former.

**Source of Illness** — Common in soil and water. The bacterium produces a toxin in oxygen free and low acid environments. Found in canned low acid foods, garlic in oil, sautéed onions, leftover potatoes, stews, meat and poultry loaves.

**Symptoms** — Onset 8-36 hours. Lasts several days to a year. Neurotoxic symptoms, including double vision, inability to swallow, speech difficulty, and progressive paralysis of the respiratory system. Obtain medical help immediately as this may be fatal.

**Prevention Methods** — Avoid home canned products, purchase garlic in oil in small quantities and refrigerate, sauté onions to order, practice time and temperature controls for Sous Vide items and large bulky foods, cool leftovers rapidly. Avoid using bulged canned goods.



## Staphylococcus

**Causative Organism** — *Staphylococcus aureus* (facultative).

Caused by intoxication.

**Source of Illness** — The toxin is produced when contaminated food is left too long in the temperature danger zone. Bacteria are found in human skin, nose, throat, infected sores, and in animals. Grows well in meats and protein foods, leftovers, salads and cream fillings.

**Symptoms** — Onset 1 -8 hours. Lasts 24-48 hours. Mimics the flu. Causes diarrhoea, vomiting, nausea, abdominal cramps and physical exhaustion. It is rarely fatal.

**Prevention Method** — Avoid contamination from hands, exclude food handlers with skin infections from preparation, ensure proper refrigeration, rapid cooling of prepared foods.

## Clostridium Perfringens Enteritis

**Causative Organism** — *Clostridium perfringens* (anaerobic) Caused by toxin-mediated intoxication, spore former.

**Source of Illness** — Bacteria are widespread in the environment, generally found in meat and poultry and dishes made with them. Multiply rapidly at room temperature.

**Symptoms** - Onset 8-22 hours (usually 12). Lasts 24 hours. Causes abdominal pain and diarrhoea, sometimes nausea and vomiting. Symptoms last a day or less and are usually mild. Can be serious in the young, elderly, and immune-compromised individuals.

**Prevention Methods** — Follow time and temperature controls in cooling and reheating foods. Rapidly reheat foods to 75°C.

## Bacillus Cereus

**Causative Organism** — *Bacillus cereus* (facultative) Caused by intoxication. Spore former.

**Source of Illness** — Illness may be caused by the bacteria, which is widespread in the environment, or by a toxin created by the bacteria. Found in rice and pasta dishes, spices, dry food mixes, cereal products, sauces, vegetable dishes, and salads.

**Symptoms** — Onset: 1-5 hours. Lasts 6 -24 hours. Include abdominal pain, diarrhoea, nausea and vomiting.

**Prevention Methods** - Follow time and temperature controls: rapidly cool foods, hot hold foods above 60°C, rapidly reheat foods to 75°C or above.

## E. Coli 0157:H7

**Causative Organism** — *Escherichia coli* caused by toxin-mediated infection.

**Source of Illness** — Found in cattle. Implicated foods are raw and undercooked ground beef, unpasteurised milk and cheeses, and faecally contaminated water and foods.

**Symptoms** - Onset 12-72 hours. Lasts 1 -8 days. Causes severe abdominal pain, diarrhoea (often bloody), nausea, vomiting. The illness is usually self-limiting, can be fatal in young, elderly, and immune-compromised individuals.

**Prevention Methods** —Cook ground beef thoroughly, avoid cross contamination, practice good personal hygiene.

## Activity 4

Identifying food poisoning bacteria.

Identify where they come from and how they can be controlled:

NAME OF BACTERIA	SOURCE	CONTROL METHOD
<b>SALMONELLA</b>		
<b>STAPHYLOCOCCUS AUREUS</b>		
<b>LISTERIOSIS</b>		
<b>CLOSTRIDIUM BOTULINUM</b>		
<b>BACILLUS CEREUS</b>		

## Personal Hygiene

Maintaining good personal hygiene standards when handling food is very important in reducing the risks of contaminating the food and causing food poisoning. Good personal hygiene practices include:

**Hair** - We lose a lot of hair each day; which can fall into food. The electric charges in hair attract bacteria so even if you wash hair regularly it can contain a lot of bacteria; be extra careful with rubbing hands through hair.

**After the Toilet** - Very serious types of bacteria live in our intestines so we need to wash our hands thoroughly after the toilet and remove aprons before going to the toilet.

**Jewellery** - Jewellery can harbour bacteria in the finest pieces and cracks. Stones can fall off into food as well as bacteria building up underneath the piece of jewellery.

**Uniform** - The uniform is to protect the food from you. It is important to have a clean uniform and wash the uniform after each shift. Personal clothes pick up contamination and it is easy to pass that onto the food. Uniforms also help to present hospitality workers in a clean professional manner that gives confidence to customers.

**Saliva** - Saliva contains millions of bacteria so use a clean spoon each time you taste the food.

**Hands** - You need to maintain clean hands, short nails and no nail polish. Hands also pick up contamination by rubbing or touching hair, face, nose, mouths, door handles, equipment and packaging.

**Cuts** - Cover cuts with a bright coloured Band-Aid or bandage and a disposable glove. Blue is the usual colour for food businesses. (No food is blue colour).

**Sickness** - The law dictates that if you are sick and your illness is contagious you must cease working with food. Speak to your doctor about when you are safe to return to work.

## Washing hands

One of the biggest causes of food poisoning is from food handlers' transferring bacteria to food from unclean hands. Because of this it is very important to practice regular and correct hand washing procedures. Hands should be washed properly using:

- ❖ Warm - Hot Water.
- ❖ Antibacterial soap (not a bar or fragrant soap from the supermarket).
- ❖ Rub your hands together to lather.
- ❖ Rinse thoroughly.
- ❖ Dry thoroughly using a hand dryer or single use towel.
- ❖ Never use an apron or t-towel to dry your hands.



**Hands should also be washed regularly. Including:**

- ❖ On arrival; when starting the shift.
- ❖ After going to the toilet.
- ❖ After handling rubbish or garbage bins.
- ❖ After sneezing, coughing or using a handkerchief.
- ❖ After rubbing or touching the face or body.
- ❖ After smoking.
- ❖ After handling money.
- ❖ Before resuming work after a break or change of duties.
- ❖ Before handling cooked or ready to eat food after handling raw foods.

## Appropriate hand washing facilities

To wash your hands correctly in the workplace, the workplace needs to provide the appropriate facilities. Without the correct facilities, staff cannot wash their hands properly.

### Appropriate facilities include:

Section 3.2.2 of the Food Standards Code outlines what is viewed as appropriate hand wash facilities and this part of the code should be viewed as the minimum standards required.

### Hand washing facilities (From the food standards code)

- (1) Subject to subclause (4), food premises must have hand washing facilities that are located where they can be easily accessed by food handlers -
  - (a) Within areas where food handlers work if their hands are likely to be a source of contamination of food; and
  - (b) If there are toilets on the food premises — Immediately adjacent to the toilets or toilet cubicles.
- (2) Subject to subclauses within the code, hand washing facilities must be -
  - (a) Permanent fixtures;
  - (b) Connected to, or otherwise provided with, a supply of warm running potable water;
  - (c) Of a size that allows easy and effective hand washing; and
  - (d) Clearly designated for the sole purpose of washing hands, arms and face.

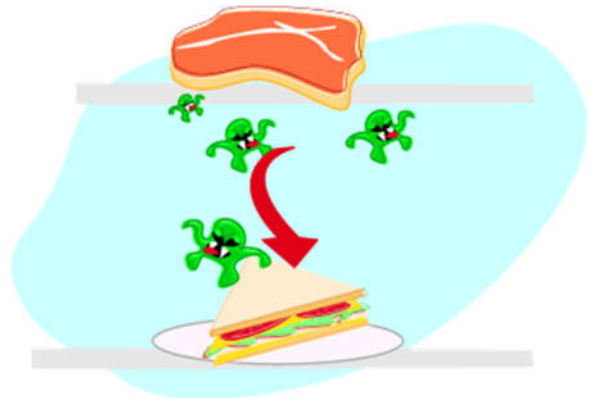
## Cross Contamination

Cross contamination is the transfer of one or more contaminants, chemical, physical or microbiological, from one food or area to another food or area.

### Example:

- ❖ A dirty chopping board will cross contaminate the next food placed on it.
- ❖ If you touch raw food like chicken, then touch ready to eat food like a sandwich without washing hands or changing gloves (also wash hands); you transfer bacteria onto the sandwich.
- ❖ Storing raw meats above cooked food in a cool room may result in the meat dripping onto the cooked food.
- ❖ Not washing knives or utensils between tasks.

Whenever there is a change in products there must be a full cleaning and sanitising process to avoid cross contamination.



Colour coded chopping boards will help to prevent cross contamination as each colour is used for a particular product. E.g. Yellow for raw chicken and blue for raw seafood.



## Gloves for food handling

Disposable food handling gloves used in the correct way are very useful and can add to the safety and hygiene of the food. However, disposable food handling gloves used in an inappropriate manner may in fact harm the food and cause cross contamination.

Gloves are mainly used on 'Ready to eat' foods. That is foods, which will not undergo a processing stage like cooking that can kill bacteria. Examples of ready to eat food are salads, sandwiches, cold desserts, cut fruit and in general most cold food items.

Gloves are used when handling these items because any bacteria or contamination added to the food from handling the food will go directly to the person who eats the food and may cause illness.

In general, gloves are used less often when handling food, which is intended to be cooked such as portioning steaks, boning chicken pieces or filleting fish. Good clean hands are well suited to this type of activities.



Gloves still need to be treated like hands and must be clean and hygienic at all times.

Remember gloves get contaminated the same as hands and need to be replaced regularly.

It is good practice to replace gloves and wash hands after each task.





## Activity 5

What is a good jewellery policy for a food handling business?

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Give two examples of cross contamination:

1 

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2 

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What colour bandaid should be used by food handlers?

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Give four occasions a food handler should wash their hands:

1 

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2 

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3 

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4 

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## First in–First out (FIFO)

In the hospitality industry, the term FIFO refers to stock rotation. That means the stock that was delivered first gets used before new stock that has just been delivered.

### First In–First Out

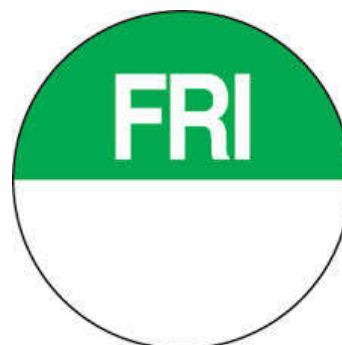
To perform FIFO effectively, it is a good idea to date label the food as you prepare food or when the food is delivered. Some items such as packaged cans and bags of food may already have a use by or best before date that can be referred to.

FIFO helps ensure that food does not just sit there and become old, off and unusable.

**Product** \_\_\_\_\_

**Date**\_\_\_\_\_ **Use By**\_\_\_\_\_

**By**\_\_\_\_\_ **Mgr.** \_\_\_\_\_

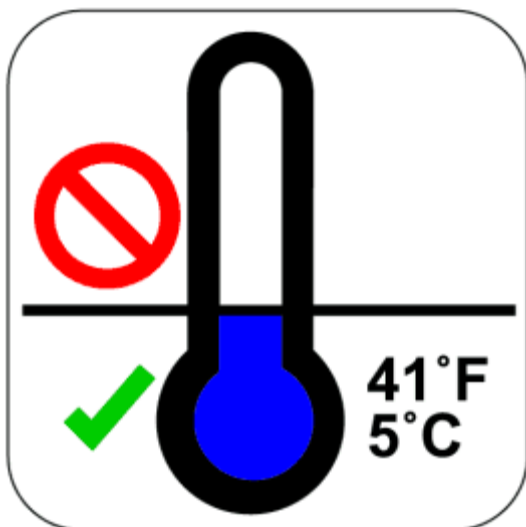


## Refrigeration

### Temperature 0°C to 5°C

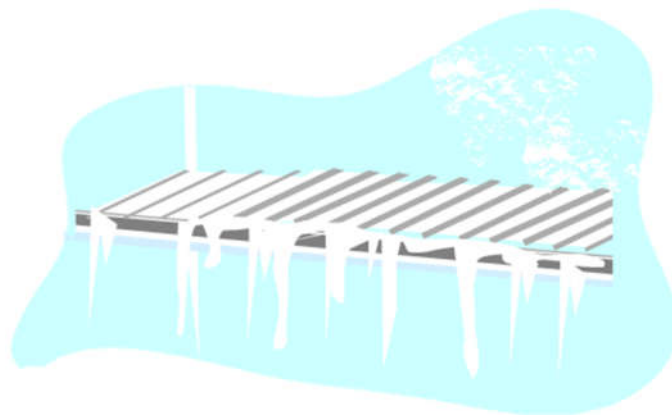
Store foods such as dairy, raw meats, poultry, eggs, cooked meats and fish.

- ❖ Keep raw food below cooked food.
- ❖ Check and record the temperature regularly.
- ❖ Cover and date the food.
- ❖ Do not pack food too tightly, allow air to circulate.
- ❖ Clean regularly.
- ❖ Check for mould on shelves, seals and walls.
- ❖ Store foods which may contain soil such as vegetables on the bottom, so soil cannot fall onto other foods.



## Freezer

- ❖ For maintaining safety and quality of the food store at or below -18°C.
- ❖ Only freeze good quality food; food that has started to spoil will not improve by freezing.
- ❖ Check and record the temperature of your freezer regularly (Food Safety Program).
- ❖ Never refreeze thawed food.

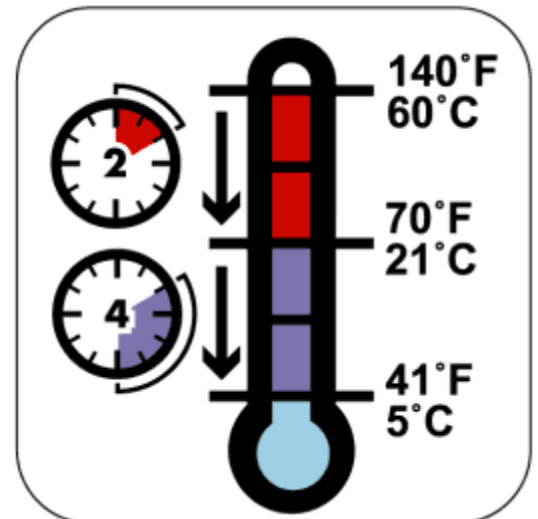


## Dry storeroom

- ❖ Store dry foods in a clean, dry and ventilated room.
- ❖ Dry storeroom should be well lit but not have direct sunlight.
- ❖ Dry storeroom is designed for protection from pests and insects.
- ❖ Food to be placed in sealed containers.
- ❖ Store dirty vegetables such as potatoes away from other foods.
- ❖ Inspect cans for leaks, dints or fractures when you receive them and when you use them.
- ❖ Check that all products are sealed when you receive them.
- ❖ Check for evidence of mice or cockroaches or other pests.

## Rules for Cooling Food

- ❖ Transfer food into shallow containers as it cools faster.
- ❖ Transfer large quantities of food to multiple containers to cool as smaller quantities cool faster.
- ❖ Stir food regularly to help cooling.
- ❖ Stand the containers in ice or cold water.
- ❖ Aim to cool food as fast as possible.
- ❖ Follow Food Standards Code guidelines:
  - Cool food to 21°C in 2 hours then to 5°C in another 4 hours.



## Rules for defrosting food

- ❖ Always defrost foods in the refrigerator.
- ❖ Use cold running water if in a hurry but do not use warm or hot water.
- ❖ Do not defrost foods on the kitchen bench.
- ❖ Do not defrost in warm places.
- ❖ If you defrost the food in a microwave you must cook the food immediately.

## Rules for reheating food

- ❖ Reheat food as quickly as possible.
- ❖ Reheat in small quantities.
- ❖ Stir food to heat faster and prevent burning.
- ❖ Use a thermometer to check food has reached at least 75°C in the centre.
- ❖ Use care when using a microwave so the food reaches the temperature required.
- ❖ Do not freeze food that has been reheated.
- ❖ Do not cool reheated food to reheat again.

## Rules for keeping food hot

- ❖ Always reheat food to above 75°C before placing hot food in a bain marie.
- ❖ Check and record the temperature of hot food to make sure food is kept above 60°C.
- ❖ Throw away leftover food.
- ❖ Do not mix fresh food with the old food.
- ❖ Do not put large quantities of food in a bain marie.
- ❖ Always preheat the bain marie before placing hot food into it.



## Cleaning and Sanitising

Things are not always what they appear. Equipment may look clean but still contain harmful bacteria. We usually talk about cleaning on two levels.

**Cleaning** - This is when we clean equipment to remove visible dirt, dust and food scraps. To do this we use a detergent.

**Sanitising** - This involves reducing the number of micro-organisms by killing them and controlling their growth.

## Detergents and Sanitisers

### Detergents

Detergents are chemicals designed to lift food, grease and dirt; they also help wash away micro-organisms but do not kill them. To clean properly you need to know the correct level of concentration for the detergent.

### Sanitisers

Sanitisers are agents designed to kill or control the growth of micro-organisms. We can use heat or chemicals to sanitise utensils. Heat over 75°C will kill most micro-organisms. The hotter the heat the shorter the contact time.

**When chemicals are used a number of things must be considered including:**

- ❖ concentration
- ❖ contact time
- ❖ temperature
- ❖ method of application
- ❖ cleanliness of surface

Never mix different types of chemicals as dangerous may occur and make sure you have adequate training to use the chemicals in your kitchen or workplace.

## Cloths and towels

Dirty and moist cloths and towels are a large source of contamination in the kitchen. A moist or wet towel that has been used for wiping food areas will contain all the necessary elements for bacterial growth.

In essence, they can become a bacteria factory and if used over a period of time they will cause more harm than good. Make sure you practice the following:

- ❖ Always ensure you have lots of clean cloths or towels.
- ❖ Use disposable paper towels in some circumstances.
- ❖ Soaking cloths in a chlorine bleach solution will act as a sanitiser.

Solutions with 4% available (free) chlorine can be diluted using the table below to achieve the concentrations shown:

Concentration Required			
Volume of water added to chlorine	50 ppm	100 ppm	200 ppm
5 litres	6.25 ml chlorine	12.5 ml chlorine	25 ml chlorine
10 litres	12.5 ml chlorine	25 ml chlorine	50 ml chlorine
50 litres	62.5 ml chlorine	125 ml chlorine	250 ml chlorine

ppm – parts per million.

ml – millilitres

## Cleaning Schedule

A cleaning schedule is a timetable that shows:

- ❖ What gets cleaned?
- ❖ Who cleans it?
- ❖ How they clean it.
- ❖ When they clean it.





## Activity 6

Create a sample cleaning schedule for two items in a hospitality business:

<b>Equipment or Location</b>	<b>When</b>	<b>What with</b>	<b>How</b>	<b>Person responsible</b>

## Basic rules for rubbish disposal

- ❖ always wash your hands after handling rubbish.
- ❖ line rubbish bins with plastic liners.
- ❖ cover rubbish bins with a lid when not in use.
- ❖ make sure rubbish bins are durable, rodent proof and fly proof.
- ❖ always have enough bins to suit your needs.
- ❖ remove rubbish regularly from the work area and the premises.



## Pests in the workplace

Pests in the workplace can damage the stock, spread disease, contaminate food and damage premises. They must be controlled. Some common pests include:

### Rats and Mice

Rats and mice carry Salmonella in their intestines. They also carry bacteria on their fur and feet, causing contamination as they move around food areas and surfaces.

You can tell when they are present with the presence of droppings, smells, urine stains, gnawed food packages and greasy shiny marks on the base of walls.



They can be controlled by poison baits, traps, professional pest control, keeping well maintained premises, using sealed food containers and keeping food areas very clean.

### Cockroaches

Prevention is better than cure for cockroaches. Cockroaches are very dirty creatures and carry a large amount of bacteria.

They like to live in warm, dark and moist areas like near an oven or hot water service.

They leave droppings, smells, urine stains, moult cases and egg capsules. They like to come out at night and eat food scraps. If you see them during the day that means you have a large infestation.



Once you have them they are hard to control. It is best to use professional pest controllers on a regular basis to make sure they do not come back.

## Birds

Birds can be a problem in workplaces because they often contain large numbers of bacteria including salmonella.

Birds also leave food scraps and droppings, which may attract other pests.



## Flies

Flies breed in filth, faeces and other decaying matter. They spread these bacteria from their legs and bodies with food and food preparation surfaces when they land on them. They also eat by vomiting saliva onto the food to break it down before sucking it up.

### Control them with:

- ❖ fly screens
- ❖ covered rubbish bins
- ❖ use electronic insect zappers
- ❖ close doors or use plastic strips on doors
- ❖ keep food covered



## Seven main causes of Food Poisoning

1. Food Handlers suffering from respiratory illness/gastroenteritis.
2. Poor personal hygiene.
3. Inadequate temperature control during transportation, storage and service of food.
4. Incorrect and unsafe food handling practices.
5. Purchasing food from disreputable supplier.
6. Unclean food premises and equipment.
7. Contamination from pests and rodents.



## GLOSSARY OF TERMS

**Adulterated** – Contaminated by germs, chemicals or objects.

**Ambient Temperature** – Temperature of the surroundings usually referred to the room temperature.

**Audit** – A food safety inspection by a licensed independent person. The auditor will inspect and check your food safety procedures to be sure that you are doing what is written in your food safety plan and report the results to you and the local council officer.

**Auditor** – A person with a current licence as a food safety auditor, which makes that person qualified to audit your establishment. The auditor must be independent of your business and local council.

**Bacteria** – Micro-organisms or germs, which can only be seen under a microscope. Bacteria cause food poisoning.

**Calibrate** – To perform a test that shows that a thermometer is recording the correct temperature.

**Carrier** – A person who harbours and may transmit pathogenic organisms without showing signs of illness.

**Cleaning** – The removal of soil, food residues, dirt, grease and other objectionable matter.

**Cleaning schedule** – A plan for cleaning, which includes when, how, who and what they will use to clean.

**Contaminant** - Any biological or chemical agent, foreign matter, or other substances that may compromise food safety or suitability.

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

**Control** – An action, which keeps possible hazards from becoming real hazards.

**Control Point (CP)** - A point, step or procedure in the food production chain where, were there to be a loss of control, it may result in an economic or quality loss and/or a low probability of a health risk.

**Corrective Action** – Action taken to correct a problem or address an item that is not up to standard.

**Critical Control Point (CCP)** - A point, step or procedure in the food production chain where, were there to be a loss of control of the process, there would be a high probability of a health risk to the food.

**Critical Limit** - A limit or value which determines acceptability from unacceptability.

**Cross Contamination** – This has occurred when germs are passed from one food, person or area to another food such as from raw food to cooked food.

**Danger Zone** – The temperature range within which multiplication of bacteria is possible (5°C to 60°C).

**Defective** – Defective food is food which is faulty, such as a broken packet.

**Deviation** - Difference from the critical control limits that have been established.

**Environmental Health Officer (EHO)** – A person trained and qualified in food safety, hygiene and public health, employed by a local council to inspect and advise food business proprietors.

**Flow Chart** – A drawing which shows the correct order of the steps you take in preparing and handling food.

**Food Handling** – Any operation in the production, preparation, processing, packaging, storage, transport, distribution and sale of food.

**Food Poisoning** – Illness caused by consumption of food that has been made unsafe by bacteria or adulteration.

**Food Safety Supervisor** – A nominated person in each food business, which has been trained in food handling skills and knowledge of food safety. This person is responsible for the food safety training and hygiene matters in a food business.

**Food Transport Vehicle** – A car, truck or van used to carry food. It should be licensed with local council and have appropriate equipment to store food at correct temperatures.

**Foreign Object** – Anything in the food that is not meant to be there e.g. hair or glass.

**Gastroenteritis** – An inflammation of the stomach and intestinal tract that normally results in diarrhoea.

**HACCP**- Hazard Analysis Critical Control Point.

**Hazard** - A potential to cause harm to the food. A hazard can be biological, chemical or physical.

**Hazard Analysis** - An analysis of the steps in a process flow diagram for hazards.

**High-risk Foods** - Foods which can become unsafe very easily because they support the growth of bacteria.

**Hygiene** - Things we do to keep clean.

**Internal Auditing** – A self-inspection or audit of a business to identify areas of concern or where policy is not being followed.

**Mildew** – A type of fungus similar to mould.

**Monitoring** - A planned observation or measurement of critical limits designed to establish if a Critical Control Point is under control.

**Moulds** – Microscopic plants (fungi) that may appear as woolly patches on food.

**Pathogen** – Disease producing organism.

**Pesticide** – A chemical used to kill pests.

**Potentially Hazardous Food** – Food that has a possibility of being infected by bacteria.

**Procedure** – A method of performing tasks the same way each time.

**Process** – In relation to food, means activity conducted to prepare food for sale or consumption, including chopping, cooking, drying, fermenting, heating, pasteurising, thawing and washing, or a combination of these activities

**Process Flow Diagram (PFD)** - A flowchart diagram used to illustrate the flow and steps in food production.

**Quality Log** – Log Sheet used to record details of action taken relating to quality, maintenance, pest control and approved suppliers.

**Ready-to-eat Food** – Food that is ordinarily consumed in the same state in which it is sold. This does not include nuts in the shell and whole, raw fruits and vegetables that are intended for hulling, peeling or washing by the consumer.

**Record** – To write down information or measurements as part of the Food Safety Program e.g. temperature checks.

**Risk** - An estimate of the likely occurrence of a hazard.

**Safety Limit** - A limit or value which determines acceptability from unacceptability.

**Safety Point** - A point, step or procedure in the food production chain where, were there to be a loss of control, it may result in an economic or quality loss and/or a low probability of a health risk.

**Sanitise** - The killing of most bacteria and their resistant seeds and spores.

**Sanitiser** – A chemical agent used for cleansing and disinfecting surfaces and equipment.

**Spores** – A resistant resting-phase of bacteria protecting them against adverse conditions, such as high temperatures.

**Toxins** – Poisons produced by pathogens.

**Viruses** – Microscopic pathogens that can multiply in living cells.



## Important Assessment Note

The 'Performance Evidence' criteria for this unit requires the student to submit evidence of the student:

- Demonstrating use of safe food handling practices in food handling work functions in line with organisational hygiene procedures on at least **THREE** occasions

The student will need to ensure that these criteria is satisfied.

Please ensure that you read in full both the 'Performance Evidence' and the 'Knowledge Evidence' in the training package for the unit to be aware of ALL assessment criteria required.

This information is located at the beginning of the student resource.

## Assignment Activity

This assignment is designed to gather evidence as to how you are able to use hygienic practices for food safety, not just the theory, but how you do it on a practical level in your particular workplace.

This assignment will form part of the assessment for this subject and must be completed with an **original and professional manner**.

The assignment **MUST** be your own work using your **OWN** words and may be completed in the spaces provided or with a printed computer based document.

If it is completed using a computer based printed document, please include a heading stating this assignment is:

- ❖ **SITXFSA001 Use hygienic practices for food safety**
- ❖ **Your name**
- ❖ **Date**

## Assignment Activity

Q1. Why does a bacterial spore not die when it is cooked?

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Q2. Name two bacteria that can form spores:

1 

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2 

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Q3. When working as a food handler when should you change your gloves?

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Q4. If raw chicken often contains salmonella bacteria, how do we avoid salmonella food poisoning in chicken dishes?

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Q5. Briefly explain how you rotate stock that is placed in the coolroom/refrigerator?

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Q6. Why shouldn't cooked and ready to eat food be stored below raw food in the coolroom/refrigerator?

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Q7. Why are chemicals stored well away from food?

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Q8. When should you wash and sanitise utensils, knives, chopping boards, food mixers, bar mixers and slicers?

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Q9. Given the right conditions bacteria double their number in 20 minutes. If food started with 250 bacteria per gram of food, after 3 hours how many bacteria would there be?

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Q10. Which bacteria can grow in the refrigerator or cool room?

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Q11. If a food handler was suffering from the flu virus, how can this virus be transferred to the customers who eat the food?

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Q12. Give three ways to control pests in a food business:

1 

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2 

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3 

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Q13. Whom should food safety issues be reported to at your venue?

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Q14. Give three foods that a person who is gluten intolerant should avoid eating.

- 1 \_\_\_\_\_
- 2 \_\_\_\_\_
- 3 \_\_\_\_\_

Q15 Name three foods that are often associated with food allergies

- 1 \_\_\_\_\_
- 2 \_\_\_\_\_
- 3 \_\_\_\_\_

Q16. What type of bacteria is most commonly associated with raw egg and often causes food poisoning in dishes containing raw egg

\_\_\_\_\_

Q17. Briefly detail three good practices for purchasing and handling eggs.

- 1 \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- 2 \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- 3 \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

<b>Use hygienic practices for food safety log sheet – 1</b>				
Unit code and title	SITXFSA001 Use hygienic practices for food safety			
Student name				
Student number				
Date				
Situation				
Brief description of the use of hygienic food practices and the tasks being carried out.				
The evidence presented is	Valid <input type="checkbox"/>	Sufficient <input type="checkbox"/>	Authentic <input type="checkbox"/>	Reliable <input type="checkbox"/>
Student signature				Date
Trainer/assessor signature and name				Date

<b>Use hygienic practices for food safety log sheet – 2</b>				
Unit code and title	SITXFSA001 Use hygienic practices for food safety			
Student name				
Student number				
Date				
Situation				
Brief description of the use of hygienic food practices and the task being carried out.				
The evidence presented is	Valid <input type="checkbox"/>	Sufficient <input type="checkbox"/>	Authentic <input type="checkbox"/>	Reliable <input type="checkbox"/>
Student signature				Date
Trainer/assessor signature and name				Date

<b>Use hygienic practices for food safety log sheet – 3</b>				
<b>Unit code and title</b>	SITXFSA001 Use hygienic practices for food safety			
<b>Student name</b>				
<b>Student number</b>				
<b>Date</b>				
<b>Situation</b>				
<b>Brief description of the use of hygienic food practices and the task being carried out.</b>				
<b>The evidence presented is</b>	<b>Valid</b>	<b>Sufficient</b>	<b>Authentic</b>	<b>Reliable</b>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Student signature</b>				<b>Date</b>
<b>Trainer/assessor signature and name</b>				<b>Date</b>