

Screen 1



Introduction to food hygiene

Screen description

This screen shows a kitchen scene with a number of hazards to food safety. As a starting point students are encouraged to look at the screen and suggest things that might be potentially hazardous.

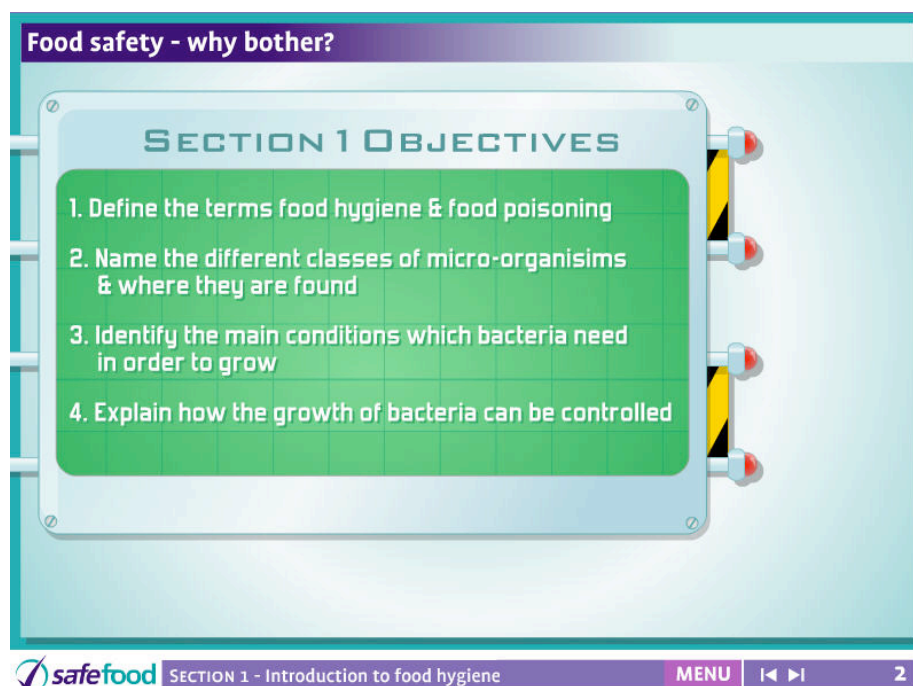
5. Cleaning product stored beside food on table
6. Dirty dishes lying around
7. Rubbish allowed to build up
8. Feeding pets from the table

Teacher

Hazards include

1. Open fridge
2. Raw meat on the top shelf of the fridge
3. The raw meat is not placed on a tray or plate and not covered to prevent cross contamination
4. Open window cooling food - no screen to prevent insects contaminating food

Screen 2



Food safety – why bother?

Screen description

This screen lists the objectives of the chapter

1. Define the terms food hygiene and food poisoning
2. Name the different classes of micro-organisms and where they are found
3. Identify the main conditions which bacteria need in order to grow
4. Explain how the growth of bacteria can be controlled

Teacher

To begin the discussion ask the students the questions below and then outline the objectives of Session 1.

1. What is food hygiene?
2. Why is there a need for food hygiene?

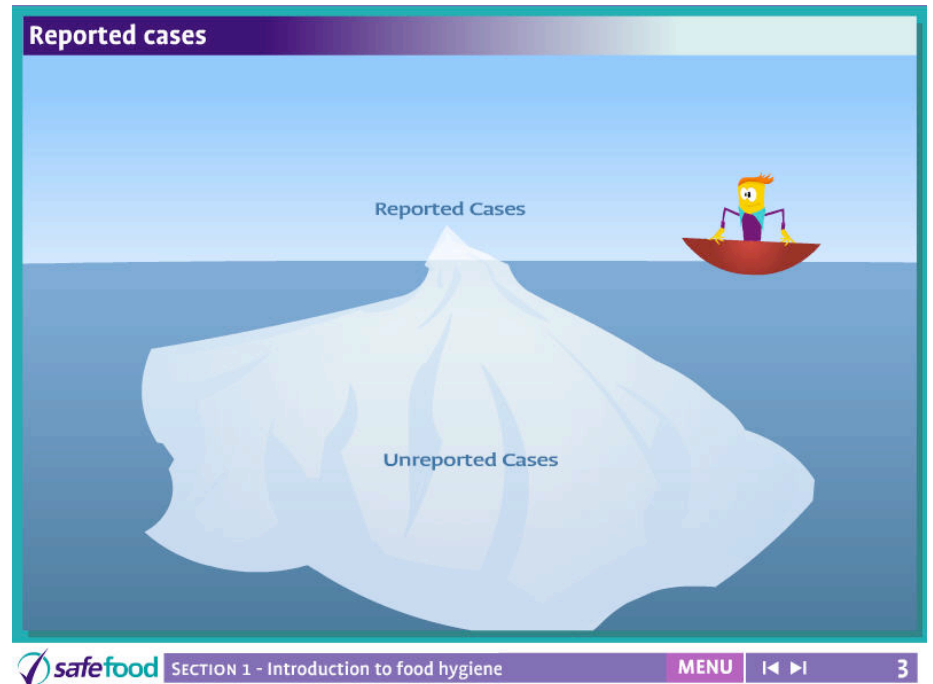
Food poisoning causes symptoms such as nausea, vomiting, cramps and diarrhoea. While people of all ages can contract food poisoning, young children, the elderly, people with underlying illnesses and expectant mothers are the most at risk from severe symptoms.

Government agencies and health authorities devote a lot of time and resources to the prevention of food poisoning. One of the ways in which we can all play our part in reducing the incidence of food poisoning is by using good food handling practices.

Teacher's Note:

There were over 1600 cases of food poisoning officially reported in 2004. However, this figure is believed to be only the tip of the iceberg with many cases going unreported. *safefood* has funded an all-Island survey to estimate the level of self-reported gastroenteritis or food poisoning incidence in the population. The survey was being carried out by telephone over a 12-month period interviewing 10,000 people north and south. This showed that 29.2% of those with acute gastroenteritis sought medical care. The results have provided a benchmark to base future policies on health and food safety programmes and are available at www.safefood.eu.

Screen 3



Food poisoning – reported cases

Screen description

The screen shows that the reported cases of food poisoning are only the tip of the iceberg.

Teacher

This screen will most likely demonstrate the findings of the *safefood* funded survey, discussed in the previous screen, that there are a lot more cases of food poisoning than reported.

Screen 4



Food Safety in the news

Screen description

This screen shows the relevance of food safety by showing some shocking newspaper headlines.

Teacher

The students could be asked to relate any stories they have heard, or to bring in some of their own articles.

These articles can be viewed in full on the student section.

Screen 5

What is a food handler?



A food handler

A Food Handler is "anyone whose work involves food, or whose action or inaction could compromise the safety of food". This means a proprietor, employee, or any other person who works in or in connection with a food business where food is processed, prepared, stored, distributed or exposed for sale.

Food Safety

The protection of consumer health and well being by safeguarding food from anything that can cause harm



 SECTION 1 - Introduction to food hygiene **MENU** 5

What is a food handler?

Screen description

This screen gives a definition of a food handler.

Teacher

Much of the course talks about food safety in relation to food workers. This screen is to clarify what we mean by a food handler.

Food workers have a moral and legal responsibility to ensure that they do not contaminate food.

Food Safety

The protection of consumer health and well being by safeguarding food from anything that can cause harm

Food handler

A food handler is anyone whose work involves food, or whose action or inaction could compromise the safety of food. This means a proprietor, employee, or any other person who works in or in connection with a food business where food is processed, prepared, stored, distributed or exposed for sale.

Interactive exercise:

Ask:

- Are you a food handler?
- Is a kitchen porter a food handler?
- Is a bar person a food handler?

screen 6



Legal Requirements of Food Handlers

Screen Description

The screen shows a series of images, cataloging the legal requirements of a food handler.

Teacher;

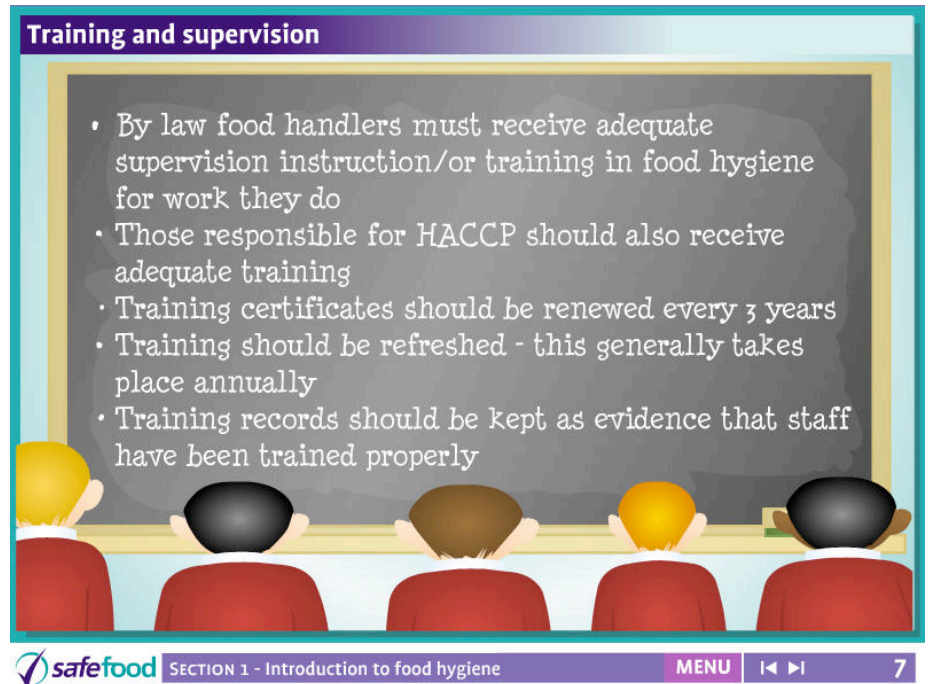
Explain to the students that food handlers are required by law to adhere to certain standards and practices.

- Tell your employer if you are suffering from, or are a carrier of, a food borne disease

Legal Requirements of Food Handlers

- Keep yourself clean
- Keep the workplace clean
- Protect food from contamination or anything that could cause harm
- Follow good personal hygiene practices- e.g hand washing
- Wear appropriate protective clothing

7 screen



Training and supervision

Screen Description

The screen gives information on training.

Teacher;

Ask the students why they think training is an important aspect of food safety.

Training and supervision

- By law food handlers must receive adequate supervision instruction/or training in food hygiene for work they do
- Those responsible for HACCP should also receive adequate training
- Training certificates should be renewed every 3 years
- Training should be refreshed –this generally takes place annually
- Training records should be kept as evidence that staff have been trained properly

8 Screen

Food hygiene may be defined as..?

PREVENTION MEASURES

1. Protecting food from contamination
2. Preventing bacterial multiplication
3. Destroying harmful bacteria
4. Ensuring food is safe, sound and wholesome

STUDENT NAME:

SUGGESTION:

SUBMIT

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Hygiene may be defined as:

Screen description

This is an interactive screen that displays the students' suggestions before the definitive answers are revealed.

Teacher

Type in the student's first name in the top box, and the suggestion on the lower box. Click to submit, the suggestion and the name will appear from the side.

When you have entered all the students' suggestions; click the 'Show definition' button to reveal the definitive answers.

Food hygiene may be defined as:

All the practical measures involved in keeping food safe and wholesome through all the stages of production to point of sale or consumption.

This means

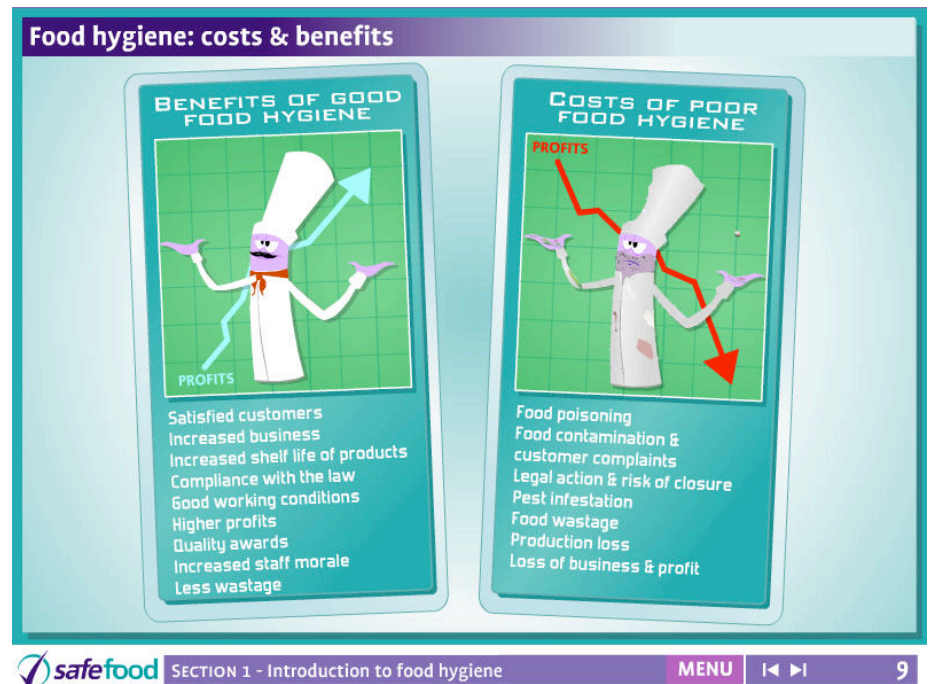
1. Protecting food from spoilage and harmful bacteria.

- Foreign objects including nuts/bolts, insects, hair etc.
 - Poisons including chemicals, cleaning agents and pesticides etc.
 - Bacteria that may cause illness or cause food to go off or spoil.
2. Preventing any bacteria present in food from multiplying to an extent which would result in illness to consumers
 3. Destroying any harmful bacteria in the food by thorough cooking or processing
 4. Ensuring food is safe, sound and wholesome when it reaches the consumer.

Interactive exercise:

Ask the students to explain in their own words the meaning of the words **contamination** and **multiplication**.

Screen 9



Food Hygiene: cost and benefits

Screen description

This screen lists the costs and benefits of good and poor food hygiene.

Teacher

Ask: Why would there be any relationship between the law and food hygiene?

Answer = It is in the interest of the consumer that we minimise the risk of food poisoning as its effects are potentially very serious and costly and there needs to be a penalty for offenders.

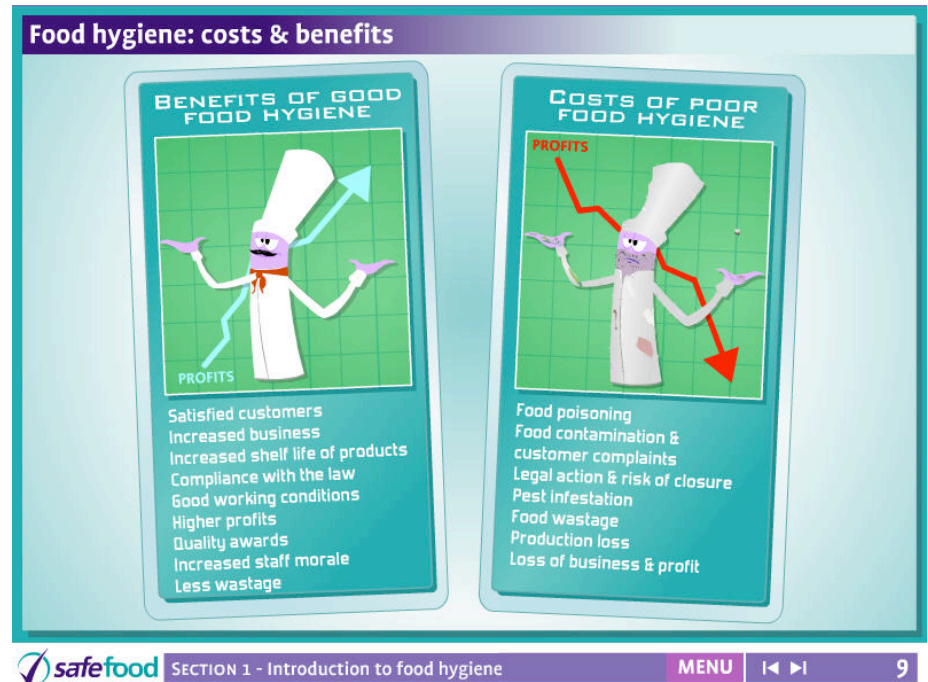
Benefits of good food hygiene

By providing staff with a comprehensive hygiene training programme, the food business should be able to achieve the following benefits:

1. Satisfied customers

2. Good reputation and therefore increased business
3. Increased shelf life of products
4. Compliance with the law
5. Good working conditions, higher staff morale and lower staff turnover
6. Higher profits
7. Quality awards
8. Staff have increased pride in their work place and therefore increased staff morale
9. Less wastage

Screen 9



Food Hygiene: cost and benefits

Costs of poor food hygiene

The cost of poor hygiene could include:

1. Food poisoning outbreaks, potentially resulting in serious illness or even death
2. Physical contamination and customer complaints, e.g., a hair in a sandwich, insects in food, nuts and bolts in food
3. Legal action and risk of closure
4. Pest infestation and therefore possible contamination of food
5. Wasted food due to spoilage resulting in higher running costs
6. Civil action taken by customers
7. Loss of production
8. Lower profits
9. The costs of rectifying food hygiene faults far out weigh the costs of preventing them

10. Loss of reputation

11. Possible redundancies and closure

Teacher should include, where possible, local examples covered by the media.

Interactive exercise:

Discuss the point that ultimately a business could close and the owner could become bankrupt. Ask the students if they know of any local examples.

Screen 10



What is food poisoning/Food-borne illness?

Screen description

This screen shows a definition and some possible symptoms of food poisoning/food-borne illness.

Teacher

Class discussion

Using the results of the survey carried out earlier, for those who had food poisoning/food-borne illness ask the following questions

1. Has anyone in the class suffered from food poisoning/food-borne illness?
2. If so
 - a) How did it affect you?
 - b) Can you identify source/cause

Food Poisoning/food-borne illness

Definition: *Type of illness caused by eating contaminated food.*

Food poisoning/food-borne illness is a common, but frequently preventable illness. The symptoms can range from a mild upset to

life-threatening conditions requiring medical attention. The burden within the community is twofold – there is a human cost in terms of discomfort and suffering, as well as a cost to the health services for those requiring treatment.

Rigorous enforcement of food hygiene legislation is important but is not, in itself, sufficient to prevent food poisoning/food-borne illness.

For a healthy adult the probability of getting sick from contaminated food is dependent on both the type and number of harmful micro-organisms present in the food. For those who are susceptible, namely the very young, and those who are sick or pregnant, where their immune systems are less effective, lower numbers of microorganisms may be required to cause illness.

Screen 11



Susceptible Groups

Screen Description

The screen shows icons representing susceptible groups.

Teacher

Explain to the students the groups who are susceptible to food poisoning and food-borne illness.

Susceptible groups

Vulnerable groups including the elderly, the very young i.e. babies and toddlers, pregnant women and individuals who are immunocompromised

Screen 12



Due Diligence

Screen Description

This screen shows a definition of due diligence.

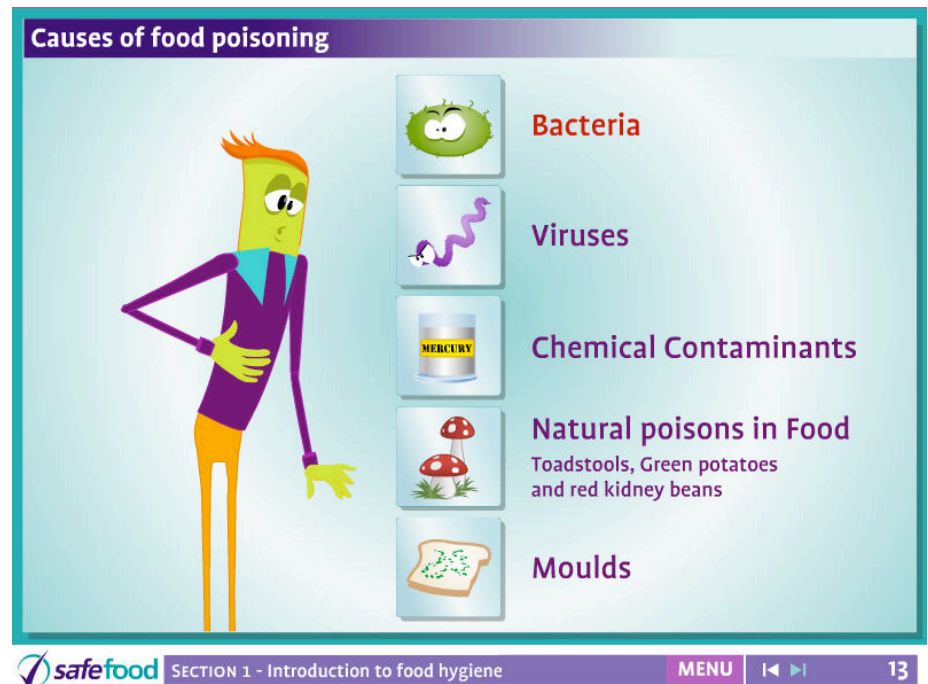
Teacher;

Ask the students what they understand by 'safeguard consumer health'.

Due Diligence

A food business must be able to demonstrate that it has done everything within its power to safeguard consumer health.

Screen 13



Causes of food poisoning

Screen description

This screen lists the causes of food poisoning.

Teacher

Ask the students to invent a short funny sentence using the capital letters of the words in the list.

e.g. **B**illy **V**omits **C**onstantly **A**fter **M**ouldy pies

Causes of food poisoning:

1. Bacteria
2. Viruses
3. Chemical contaminants including metals, insecticides and cleaning agents.
4. Natural Poisons in Food – Toadstools, Green potatoes and red kidney beans
5. Moulds

Bacterial food poisoning is the most commonly recognised and will result from bacteria

multiplying within the food if it is left in conditions which would support the growth of bacteria.

Screen 14

Spore formation and cooking

Bacteria such as *Clostridium perfringens* and *Bacillus cereus* produce spores.

It takes a very high (>122° C) temperature, often in association with pressure to kill spores.

When the food has been cooked and re-enters the danger zone (5 -63° C) as it cools, spores can revert back to their normal (vegetative) state where they can multiply in the right conditions.

It is vital therefore that food is kept out of the danger zone as far as possible.

Furthermore, following cooking foods should be cooled as rapidly as possible and placed in a refrigerator.

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Spore formation & cooking

Screen Description

This screen shows how it takes very high temperatures to kill spores.

Teacher;

Explain to the students the importance of spore formation in relation to cooking cooling and re-heating of foods.

Spore formation & cooking

Bacteria such as *Clostridium perfringens* and *Bacillus cereus* produce spores. It takes a very high (>122° C) temperature, often in association with pressure to kill spores – the canning industry is based upon killing *Clostridium botulinum* spores.

When the food has been cooked and re-enters the danger zone (5° C -63° C) as it cools, spores can revert back to their normal (vegetative) state when they can multiply in the right conditions.

It is vital therefore that food is kept out of the danger zone as far as possible.

Furthermore, following cooking foods should be cooled as rapidly as possible and placed in a refrigerator.

Screen 15

Micro-organisms

Drag the labels below to the correct row.

	Advantages	Disadvantages
	Used in the manufacture of cheese, yoghurt etc. Help with digestion	Spoil food Cause food poisoning
	Used in the manufacture of cheese, antibiotics	Spoil food
	Used in the manufacture of beer and bread	Spoil food
	Can be eaten	Can be poisonous
	Used in medical research	Cause illness

BACTERIA YEASTS FUNGI MOULDS VIRUSES

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Microbiology

Screen description

This screen shows the advantages and disadvantages of various microorganisms.

Teacher

The screen shows advantages and disadvantages of various microorganisms. To begin with the advantages and disadvantages are displayed without the name of the micro-organism.

Ask the students to suggest which label belongs where, the teacher can then click and drag the label to the correct position.

Microbiology is the study of very small living cells called microorganisms. These are minute and invisible to the naked eye. They are found everywhere apart from artificially created sterile environments or products, e.g. sterile drips.

There are five main classes of microorganisms, namely:

1. Bacteria
2. Viruses
3. Moulds
4. Yeasts
5. Fungi

The majority of microorganisms are harmless having no effect on humans; many are beneficial.

However, some microorganisms are harmful and these are the ones we are mainly concerned with in the context of food hygiene.

There are 3 types of Bacteria

Pathogenic: Cause illness

Helpful: Used to make beer cheese yoghurt

Spoilage: Causes food to perish or rot

Microbiology

	ADVANTAGES	DISADVANTAGES
BACTERIA	<ul style="list-style-type: none">• Used in the manufacture of cheese, yoghurt, vinegar• Helps with digestion of food• Used in the manufacture of medicinal drugs	Spoils food, causes food poisoning and illness
MOULDS	Used in the manufacture of cheeses, e.g. stilton (veined types) antibiotics, e.g. penicillin	Spoil food, e.g. Mould growth on bread and tomatoes
YEASTS	Used in the manufacture of bread and beer	Spoil fats
FUNGI	Can be eaten, e.g. mushrooms	Can be poisonous - toadstools
VIRUSES	Used in medical research	Cause illness

Moulds and fungi do not contribute to large numbers of food poisoning cases because we can see the mould on food and throw it out and because regulations require that foods are tested for the presence of the toxic substance 'mycotoxin' released by moulds, and withdrawn from the food chain.

The main class of microorganism with which we are concerned is bacteria. Some bacteria do not cause illness but can cause food spoilage, for example, the souring of milk. Bacteria that can cause illness are called pathogenic/harmful bacteria.

Bacteria that cause food poisoning do not change the colour, taste, texture or appearance of food (i.e. no warnings are given to the consumer).

It is only when we eat the food and become ill that we are aware that something was wrong with the food.

Screen 16

Bacteria


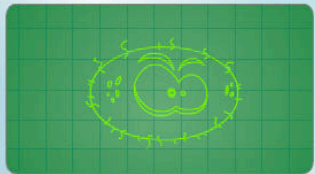
BACTERIA

WHAT ARE THEY?
Tiny living organisms, commonly referred to as germs.

WHAT SIZE ARE THEY?
Most are about 1/1000 of a millimetre in diameter. A full-stop on a page could hold millions of bacteria.

SHAPE?
They may be round, rod or spiral shaped.

WHERE ARE THEY FOUND?
They are found almost everywhere – on humans, animals, plants, air, water and soil..



Bacteria on the tip of a pin.

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Bacteria

Screen description

This screen describes bacteria.

Teacher

Group discussion

Ask: How can we transfer bacteria to food?

Bacteria

What are they?

Tiny living organisms, commonly referred to as germs.

What size are they?

Most are about 1/1000 of a millimetre in diameter. A full-stop on a page could hold millions of bacteria.

Shape?

They may be round, rod or spiral shaped.

Where are they found?

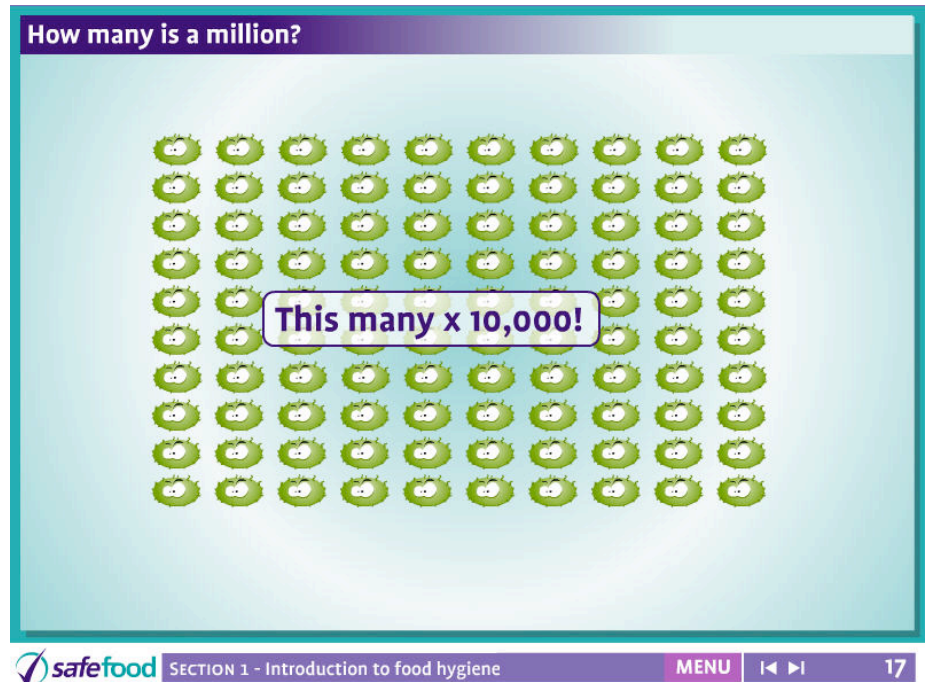
They are found almost everywhere – on humans, animals, plants, air, water and soil.

Everything is naturally covered in a layer of bacteria. Most of these are harmless. Some, however, can be quite harmful.

Bacteria can be found in our hair, nose, ears, cuts, hands, mouth and skin, e.g., *Staphylococcus aureus*.

We also carry bacteria in our intestines such as *E.coli* and some people can carry *Salmonella*. Every time we go to the toilet we excrete some bacteria which can penetrate through toilet paper and get onto our hands. If we handle food or equipment after using the toilet and without washing our hands we can transfer bacteria onto them.

Screen 17



Bacteria

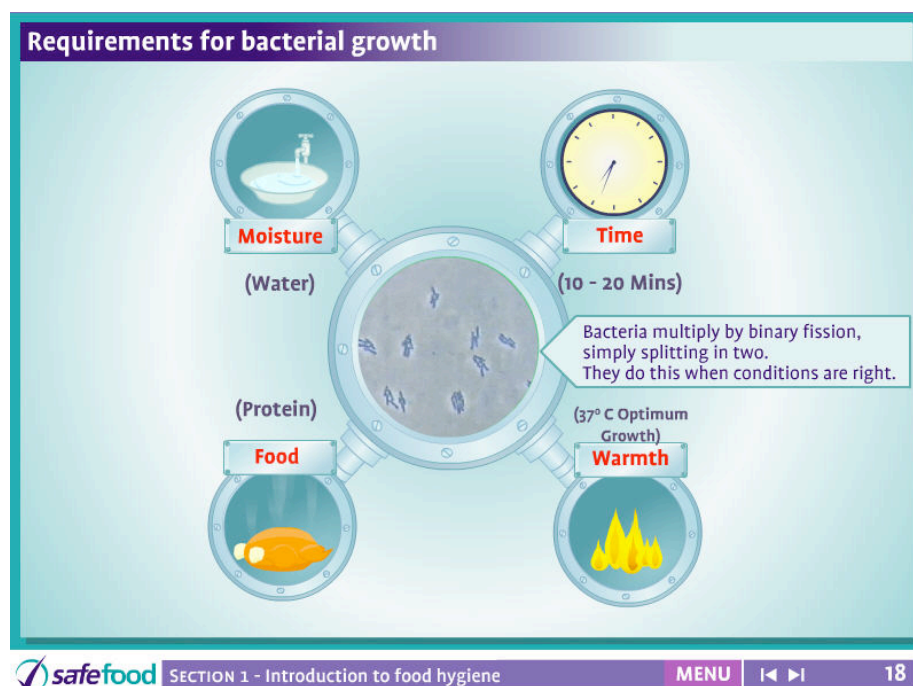
Screen description

This screen tries to portray to the students how many a million is.

Teacher

Bacteria are always spoken about in millions. This screen is an attempt to convey the size of such a number.

Screen 18



Requirements for growth

Screen description

This screen shows the four main requirements for bacterial growth.

Teacher

The middle section is a video clip of bacteria multiplying by binary fission.

Requirements for growth

Bacteria, like humans, are living organisms and therefore require certain conditions in order to grow.

These include:

1. Food
2. Moisture
3. Time
4. Warmth

Food

Bacteria, like all living things, need food to grow. They live and grow particularly well in foods that are high in protein and moisture, e.g. meat, poultry, eggs, milk, cream, sauces and dairy products. These are perishable foods and may be termed high risk foods. Bacteria are naturally present on food, and if the food is stored under favourable conditions, the

bacteria will grow and multiply. If there are any food poisoning organisms present, then these may also grow to dangerous levels making the food a greater risk.

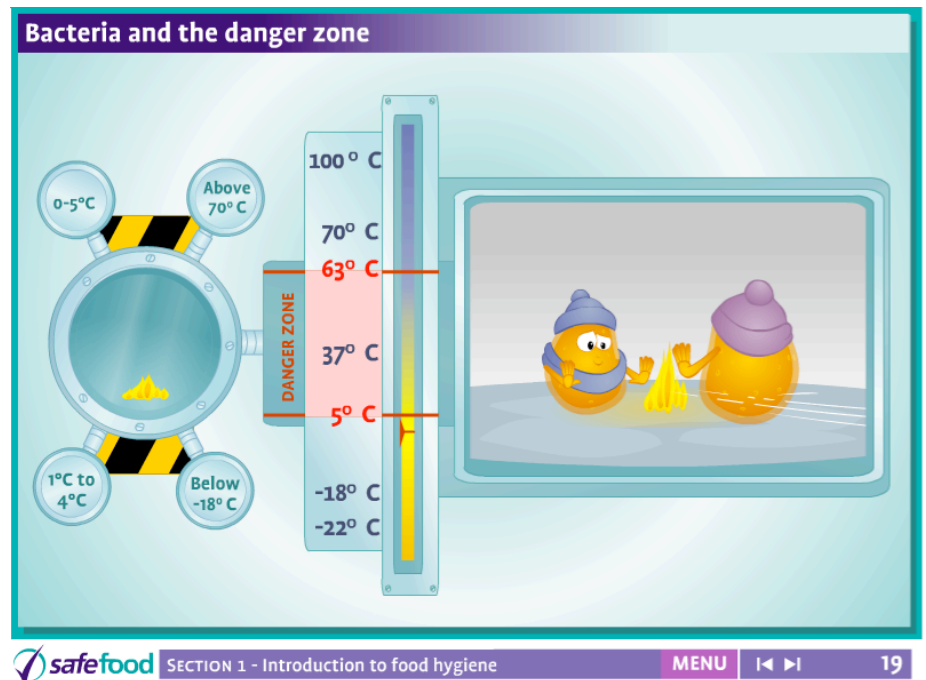
Moisture

Bacteria need moisture/water to grow. Most foods contain sufficient amounts of moisture to support the growth of bacteria. Drying of foods, e.g. packet soups, i.e., removing of moisture, prevents the growth of bacteria, but will not kill bacteria. The bacteria will be dormant and on rehydration of the food, will be reactivated. Teacher should explain terms 'dormant' and 'rehydration'

Time

Bacteria multiply very rapidly by simply splitting in two. This process is known as binary fission. They multiply if the conditions are favourable to support their growth. In the most favourable conditions bacteria can double in number every 20 minutes. Within a few hours, it is possible for one bacterium to lead to the production of millions of cells.

Screen 19



Bacteria & the danger zone (warmth)

Screen description

This screen shows how four different temperature ranges affect bacterial growth.

Teacher

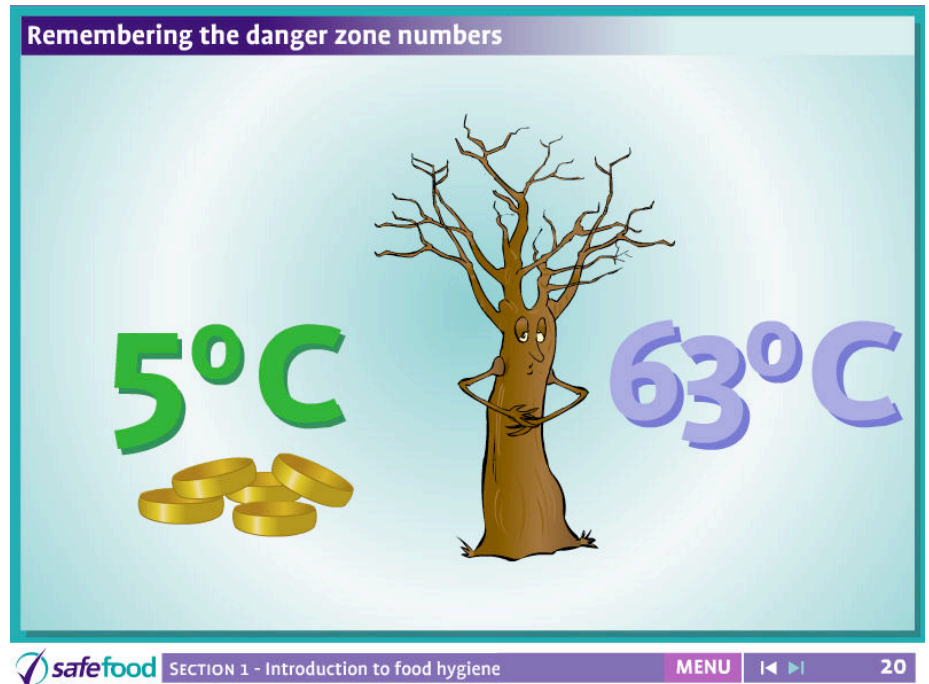
Click on the temperature buttons on the right to display the animations that show how the temperature affects bacterial growth.

Most food poisoning bacteria multiply in the temperature range 5-63°C and this is called the danger zone. Therefore food left in warm kitchens (where temperature is in the danger zone) will allow bacteria to grow and multiply much more quickly than food stored under refrigerated conditions.

The ideal temperature for the growth of bacteria is the same as our body temperature, i.e., 37°C. They are most active at this temperature and will double in number every 20 minutes. As the temperature increases or decreases, the growth rate slows down.

THE DANGER ZONE: 5°C TO 63°C

Screen 20



Remembering the danger zone

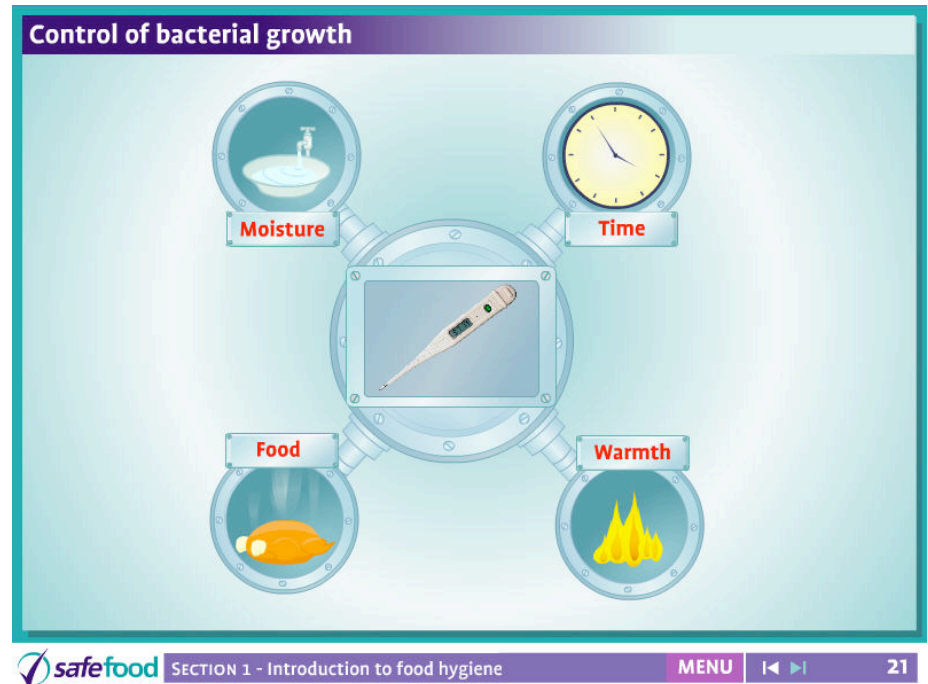
Screen description

This screen suggests a fun way to remember the danger zone numbers, using Five Gold Rings for 5, and a play on words 'Sick Tree' - Sixty-Three.

Teacher

It's proved that an unusual imagery can be effective in remembering facts and figures. Ask the students to suggest some of their own.

Screen 21



Control of bacterial growth

Screen description

This screen suggests controls for bacterial growth.

Teacher

Simple bullet point screen.

By eliminating one or more of the requirements for growth, we can control the multiplication of bacteria.

Time
Temperature
Moisture
Food

These factors can be controlled in foods though:

Moisture – The removal of moisture from food by drying

Temperature Control – The use of low temperature (refrigeration or freezing) or high

temperature (hot holding) to restrict bacterial growth.

Food – Certain foods are good sources of nutrition for bacteria and are potentially susceptible to the growth of food poisoning bacteria. These are known as high risk foods.

Time – Properly stored food should remain in good condition during the designated shelf life.

Screen 22

Methods of food preservation

- Heat treatment :	cooking, canning, bottling, sterilising, pasteurising and Ultra Heat Treatment (UHT)
- Low temperature :	freezing and refrigeration
- Drying (dehydrating) :	fish, meat, fruit, vegetable soup
- Chemical preservation :	curing, salting, pickling
- Vacuum sealing/packing :	meat, fish, poultry
- Smoking	fish, meat, cheese
- Irradiation	herbs and spices



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Preservation

Screen description

Screen shows information on food preservation.

Teacher

Explain points to the class.

Some common methods of preservation operate by limiting the requirements for growth. Others use treatments to kill bacteria, such as irradiation, or to prevent them growing such as chemical preservation or vacuum packing.

Bacteria, moulds and yeasts that cause spoilage need food, moisture, warmth and time to reproduce. Covering food, cleanliness, moisture levels and length of time in storage all play a part in delaying spoilage and keeping food safe to eat.

A number of preservation methods delay spoilage or kill spoilage organisms.

These are;

- Heat treatment - cooking, canning, bottling, sterilising, pasteurising and Ultra Heat Treatment (UHT)
- Low temperature - freezing and refrigeration
- Drying (dehydrating) - fish, meat, fruit, vegetables, soup
- Chemical preservation - curing, salting, pickling
- Vacuum sealing /packing - meat, fish, poultry
- Smoking - Fish, meat, cheese
- Irradiation - Herbs and spices

Screen 23

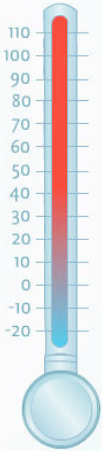
Kitchen temperatures

Class Activity

Check the temperature of different areas of the kitchen,
Include readings for:

	Reading
Refrigerator	
Freezer	
Food cupboard	
Room temperature	

What information does this tell us?



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Class activity

Screen description

This screen shows a sample survey card for carrying out a temperature check of various areas of the kitchen.

Teacher

Get the students to carry out the activity.
Discuss their results.

Check the temperature of different areas of a kitchen where food is stored and used.

Divide the students into pairs and provide them with a thermometer and a chart to record the results.

The students should work in pairs to check the temperature in different areas of the home economics kitchen (or work individually at home). Ask the students to include a reading for the refrigerator, the freezer, the food cupboard and the general room temperature.

The students should record the results carefully, suggesting the locations where bacteria would be able to multiply.

What information does this tell us?

We need to be careful not to leave food at temperatures where bacteria could multiply.

Screen 24



Spores and toxins

Screen description

Screen shows animation of bacteria producing spores and toxins.

Teacher

Bullet point screen.

Some bacteria are able to produce spores which protect them against adverse conditions such as high temperatures, allowing them to survive thorough cooking. They are also resistant to disinfectants.

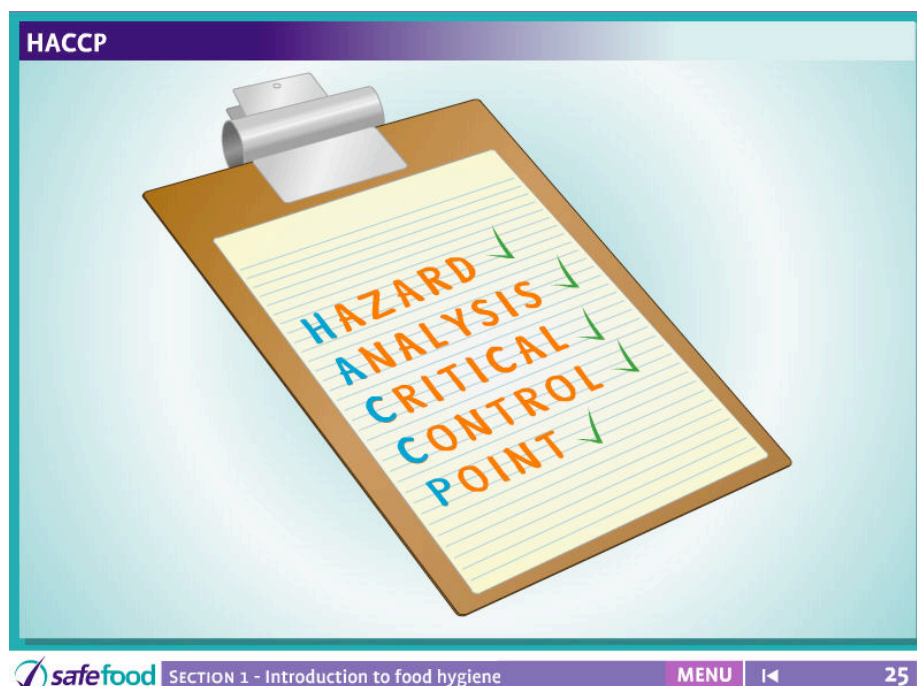
Definition of spores

Spores are small round bodies with thick walls which allow the bacteria to stay dormant but alive, over long periods of time e.g. during freezing, defrosting, cooking and cooling. When conditions become favourable the spores germinate and active bacteria are produced once more.

It can be said, therefore, that cooking does not eliminate the possibility of food poisoning. In order to prevent spores from germinating and subsequent bacterial growth food must be quickly cooled and refrigerated or kept hot.

Toxins are chemicals that can make you ill and are produced by certain types of bacteria e.g. with *Staphylococcus aureus* the toxin is produced in the food before it is eaten and this preformed toxin normally makes you ill very soon after eating the food.

Screen 25



HACCP

Screen description

Screen shows what the letters HACCP stand for.

Teacher

This is just an introduction to HACCP to allow participants to understand the term.

Food hygiene legislation requires that each premises should adopt a HACCP type system. Food workers have a role to play in the implementation of this programme, for example recording temperatures, etc. The system of HACCP will be discussed more fully in Session 8.

The system of hazard analysis and critical control point (HACCP) is now widely accepted in the food sector as a quality assurance system. It is based on the identification and analysis of hazards and the establishment of controls to eliminate or reduce these hazards to a safe level.