

AC 4.1 Food related causes of ill health

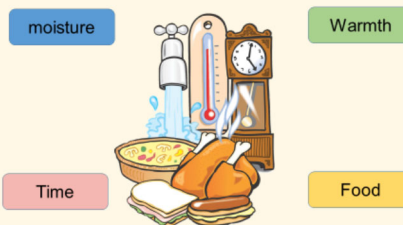
Bacteria

Some bacteria have to be **INSIDE** your body to make you ill. These are consumed in the food

Once inside you, the bacteria attack your body causing illness, some such as Salmonella cling to the gut wall preventing absorption of water and nutrients- this type take hours even days to colonise the gut so symptoms may not show for a few days

Some produce a **TOXIN** (poison) on the food which makes you ill when you eat it. Toxins act on the body rapidly so this type make you ill within minutes to hours of eating them

What do bacteria need to multiply?



Sources of food poisoning bacteria

- People/sewage
- Raw food



Non food poisoning illness

Some microorganisms cause food borne illness which is not classified as food poisoning because of other symptoms they cause

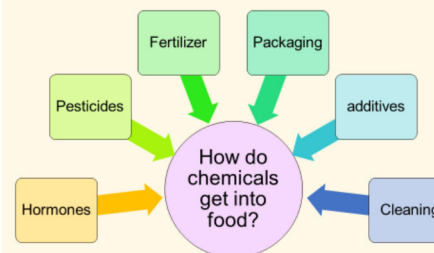
Norovirus

From leafy greens such as lettuce, fresh fruits and foods that are not washed before eating
Causes Diarrhoea, vomiting, fever, body aches, headaches

Toxoplasmosis

From infected meat (also cat poo but you wouldn't eat that)
Causes fever, muscle pain, sore throat, tiredness
Long term the Toxoplasma parasite can invade the eyes causing blindness. Damages unborn baby

Chemicals



Hormones



Animals can be injected with growth hormones and antibiotics to give larger muscle development and higher milk production

Effect on health

Oestrogens could have effects on reproductive system (male and female) possibly cancers.
BANNED- except for the USA

Antibiotics could be absorbed by the body and increase the antibiotic resistance in humans

LO4 Know how food can cause

Additives



Additives in food can be chemical or natural. Give food characteristics like long shelf life or colour or flavour. Used to stop crystallization of sugars, to soften foods etc

Effects on health

Not all food additives are harmful chemicals but some are. Long term effects such as cancers and nerve damage Short term effects like allergies and hyperactivity in children

Cleaning



Foods and equipment are cleaned with chemicals which may stay on the food afterwards. some industrial cleaning chemicals are harsh on machines

Effects on health

Poisoning like symptoms, vomiting, diarrhoea headaches. Could build up with long term exposure such as jobs like cleaners

Naturally occurring

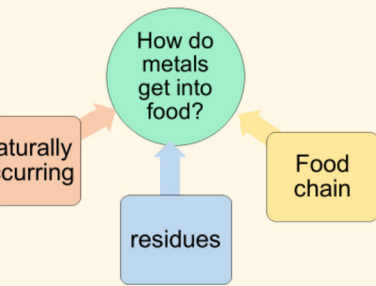


Metals such as iron, zinc, sodium are naturally present in foods and we need them as minerals for good health. Others such as Arsenic, cadmium, lead and mercury are naturally in the environment and get into food

Effects on health

cause ill health

metals



contaminants



Poisonous plants such as some weeds could get into food when being harvested or when eaten by animals

Effects on health

Some cause vomiting, diarrhoea and possibly toxic to humans causing death (but not likely)

naturally occurring

Some plants we eat are naturally poisonous and have to be treated or have the poisonous part removed before we eat them.

• Rhubarb leaves
• Solanine on potatoes
• Kidney beans



Lactose intolerance



- Avoid milk and milk products
- Experience nausea, bloating, pain in the abdomen and diarrhoea
- Eat lactose-reduced products
- Eat goats cheese, soya milk, feta cheese, rice milk
- In the UK, Ireland, 5% of the population is affected,



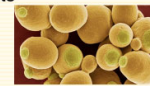
Lactose intolerance



- When planning dishes, read ingredients carefully,
- even foods like margarine can contain milk derivatives which could make the customer ill
- Soya and vegetable products replace milk in a number of foods, milk, cream, cheese, yoghurt can all be made from soya

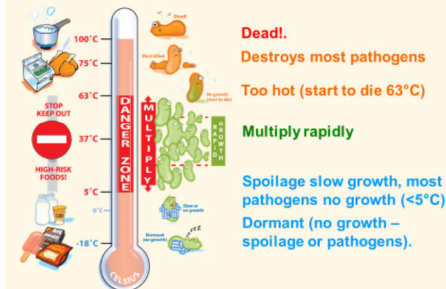
Yeast intolerance

- Yeast is present in a variety of foods, commonly bread, baked products and alcoholic beverages.
- Yeast intolerance has a wide range of symptoms including flatulence, bad breath, fatigue, irritability, cravings for sugary foods, stomach cramps, bad skin and indigestion.
- Fermented foods contain yeasts eg vinegar, wine, salad dressing
- Very ripe fruits contain natural yeasts



- Insects
 - Rodents
 - Soil/dust
 - Refuse/waste
 - Animals/birds
 - Contaminated packaging.
- 

Influence of temperature



Food poisoning

Mouth increase in saliva

Head headache

Skin fever, shivering

Gut abdominal pain, nausea vomiting, diarrhoea

Circulation, low blood pressure, weak pulse, fatigue



Pesticides



Crops are sprayed with herbicides and pesticides to prevent being eaten by insects.

Herbicides kill weeds and unwanted plants in crop

Effects on health

All crops in EU tested for pesticide residues. Higher levels of exposure could cause nerve damage, damage to fetus, dermatitis, possibly cancers, dizziness, headaches, nausea and vomiting in

Packaging



During storage, chemicals can migrate from the packaging into the food if they are stored badly

Effects on health

Under some conditions chemicals such as BPA and Phthalates can leech into foods from packaging. They can affect the endocrine system which produces hormones in the body such as reproductive hormones and insulin

Fertilizer



Plants are fertilized to keep the soil fertile and to give a higher yield of crops for the farmer. NOT IN ORGANIC FERTILIZERS

Effects on health

Nitrates, phosphates and potassium are all toxic to humans in higher amounts, pollution of water table, effects on other organisms eg fish that could then be eaten by humans

Effects on health

Small amounts of mineral metals are needed for GOOD health. Toxic metals such as Arsenic and cadmium could build up in the body Lead and Mercury cause brain damage

Residues

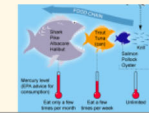


Human activities such as farming, industry or car exhausts could cause metals to remain in the environment and get into food

Effects on health

Long term effects from build up of residues such as brain damage, nerve damage and problems with digestion and body functions

Food chain

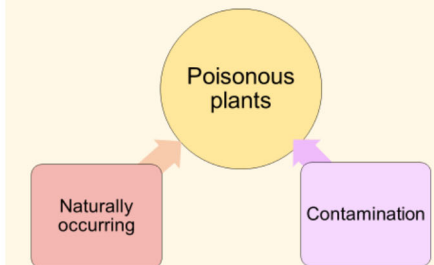


Metals in low concentrations at the bottom of the food chain are concentrated as they go up the chain and can be toxic to the end consumer

Effects on health

Concentrated lead and mercury can cause brain damage and damage to unborn babies. Can cause nerve damage and muscle problem

Poisonous plants



an cause vomiting, diarrhoea and possibly toxic to humans causing death (but not likely)

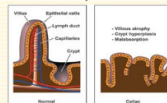
Coeliac/gluten intolerance

- Intolerant to the protein gluten
- Causes diarrhoea, anaemia, weight loss
- Gluten is found in many cereals plants primarily wheat, rye, barley and some oats
- Avoid pasta, bread, cereals flour based foods
- Gluten free products are available



Coeliac disease

- People with coeliac disease must avoid foods that contain gluten, for example, bread cakes, and biscuits. Many foods have small amounts of wheat, barley or rye added, so people with coeliac disease must check food labels carefully.
- Rice, maize and potatoes do not contain gluten so are good sources of starchy carbohydrate, and gluten-free versions of foods such as bread and pasta are available.



Coeliac disease may affect as many as 1 in 100 people in the UK;

AC 4.1

Food related causes of ill health – allergies and intolerances

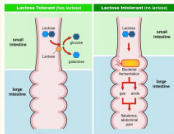
The difference between intolerances and allergies

Food intolerances are more common than food allergies. The symptoms of food intolerance tend to come on more slowly, often many hours after eating the problem food. Typical symptoms include bloating and stomach cramps.

A food allergy is a rapid and potentially serious response to a food by your immune system. It can trigger classic allergy symptoms such as a rash, wheezing and itching.

Reasons for food intolerance

- some people react to certain foods and eating them may cause uncomfortable symptoms or, in rare cases, a severe illness.
- Food intolerance is more common in children than in adults. Children often grow out of the intolerance before they go to school.



Symptoms of food allergies

A food allergy usually occurs between a few minutes and a few hours after eating a particular food.

The symptoms of food allergies vary

- coughing;
- dry, itchy throat and tongue;
- nausea and feeling bloated;
- wheezing and shortness of breath
- swelling of the lips and throat;
- runny or blocked nose;
- sore, red and itchy eyes.



Anaphylaxis

- Anaphylaxis is most commonly caused by food allergies, but can also be caused by other things, such as insect bites and drug allergies.
- Peanuts, milk, eggs and fish are the most common foods to cause anaphylaxis in the UK.

- *Feeling lightheaded or faint.*
- *fast, shallow breathing, wheezing*
- *a fast heartbeat*
- *clammy skin*
- *Confusion and anxiety*
- *collapsing or losing consciousness*



Peanut allergy

- severe allergic reaction called anaphylaxis can cause death.
An example of this is a serious allergy to peanuts or other nuts.
- Peanut allergy has become more common, especially in children. Until recently, the UK government recommends that, where there is a family history of allergy, pregnant mothers should not eat peanuts, and that peanuts are not given to infants.



Food allergies

- A food allergy is one particular type of food intolerance that involves the body's immune system. only true allergies involve the immune system.
- In the UK, the most common food allergies are to eggs, milk, fish, peanuts and tree nuts (such as walnuts, Brazil nuts and almonds). * In the UK, kiwi fruit allergy among children is becoming more common.*
- There are up to 10 recognised deaths from food allergies in the UK every year. *



The allergenic ingredients in special fried rice are:

- Crustacea – prawns
- Soya – in the light soy sauce and in the Chinese roast pork
- Wheat – in the light soy sauce and in the Chinese roast pork
- Eggs
- Molluscs – in the oyster sauce
- Sesame – in the sesame oil



The allergenic ingredients in sweet and sour prawn balls are:

- Crustacea – prawns
- Wheat – in the flour and soy sauce

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The allergenic ingredients in crumbed ham are:

- Sulphites – in the ham
- Wheat – in the breadcrumbs
- Eggs – in the wash which binds the breadcrumbs to the ham



The allergenic ingredients in Scotch eggs are:

- Eggs
- Wheat (gluten) – in the flour and from the rusk in the sausage meat
- Sulphites – in the sausage meat
- Cooking oil can be a blend of several different ingredients, including nuts, peanuts and soya



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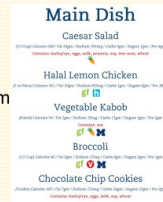
Environmental Health Officer **– roles and responsibilities**

What are the roles and

Preventing allergic reactions

People who have an allergic reaction to foods or ingredients must be particularly careful about what they eat and reading labels and menus carefully is especially important.

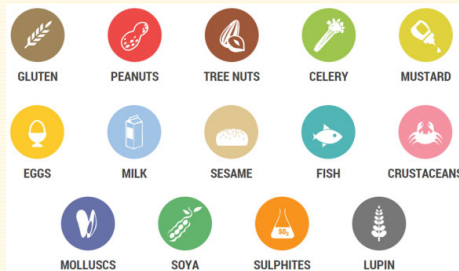
New rules that came into effect from December 2014 include the way allergen information appears on labels and on food that is pre-packed, sold loose or served in a restaurant, café or take-away.



Allergens in Hospitality and Catering

- All menu items must be marked with any of the 14 major allergens they contain
- Wait staff should have a good knowledge of which allergens are present
- Complete allergen check sheet for new menu items
- When using pre prepared ingredients, kitchen staff should check the labels carefully to identify any allergens eg
 - Peanut flour used to thicken the sauce in a takeaway curry;
 - Milk present in a minor ingredient in a pre-packed or catered food.

Major allergens



- wheat – in the flour and soy sauce
- Soya – in the soy sauce
- Cooking oil can contain a blend of several ingredients, including nuts, peanuts and soya



The allergenic ingredients in paella are:

- Milk – in the chorizo
- Wheat (gluten) – from the rusk in the chorizo sausage
- Molluscs – squid, clams
- Crustacea – prawns
- Sulphites – in the wine, chorizo sausage and the pancetta
- Some stock cubes contain mustard and celery



The allergenic ingredients in four seasons pizza are:

- Milk – in the mozzarella cheese
- Sulphites – in the Parma ham
- Wheat – in the flour
- Fish – anchovy

What are the roles and responsibilities of an EHO?

- Be able to state several of the roles of an EHO in basic form
- Explain the main features of each role
- Be able to relate the role of an EHO to the wider industry

What is an Environmental Health Officer?

EHOs are personnel qualified in Environmental Health laws, enforcement and inspection methods. They have a 3 year degree in Environmental Health

Many organisations employ EHOs including

- Local councils
- Private companies
- NHS
- Military
- Food Standards agency



What do EHOs do?

- EHOs deal with a variety of different legislation and enforcement not just related to food.
- EHOs tend to specialise in an particular area of work once qualified- ask Mrs Walker about her MSC



- food safety
- infectious diseases
- environmental protection
- noise, radiation & pollution control
- water standards
- health and safety at work
- animal welfare
- waste management
- housing standards



Inspecting businesses for food safety standards

- Powers of entry at any reasonable time
- Inspect food and premises
- Power to seize and detain food
- Serve notices
- Power to close
- Prosecute



The 3 main areas EHOs inspect are

Food premises

Food handlers

Food hygiene practices

- Be in good health (no upset stomachs)
- Have 'good 'habits, e.g. no coughing or sneezing over food
- Wash their hands after handling raw meat, after blowing nose, after going to the toilet etc
- Cuts should be covered with a blue plaster

Food hygiene practices

- Food deliveries should be checked thoroughly
- Food should be labelled and stored correctly (in freezers, chillers, fridges and dry stores)
- Food should be rotated (first in first out)
- Care should be taken with temperature control in the kitchen (i.e. food kept out of the danger zone of 5-63oc)
- Food should be prepared quickly and as close to cooking time as possible
- Hot food should be maintained at above 63oc
- The core temperature of cooked food needs to be at least 75oc
- Chilled food should be stored below 5oc
- Washing up should be done in hot soapy water if there is no dishwasher available
- Waste should be disposed of safely.

What problems can you see here and why might they cause illness?



What powers does the EHO have if they see unsafe practice like above?

For the bottom photographs – why are these good examples?



- they are complete
 - EHOs can also provide food Hygiene training to businesses either as part of their job or for a small fee
- Levels 1 – 4 are available. Recommended it is updated every 3 years

Consequences of poor inspection results

- Can close dirty premises at no notice
- Notice to improve and re inspection
- Can impose fines of £20,000 or six months imprisonment
- Can take legal action for manslaughter

All premises must be registered with the local authority and can be inspected at any time by an EHO.
A Hygiene Improvement Notice is used to require food businesses to improve something sub-standard

Food Hygiene Rating Scheme

- EHOs issue a rating between 0 and 5 when conducting inspections
- Issued to restaurants, pubs, cafes, mobile catering etc
- Displaying them isn't a requirement yet



Although its not compulsory to display the ratings in England YET do you think it is a good idea for businesses to display them?

Follow up complaints & submitting reports

The EHO investigates complaints from the public about problems when with food/drink. These can be

Physical
Chemical
Biological



The EHO reports back to the customer and the provider – can prosecute supplier if negligent

Follow up outbreaks of food poisoning

- The EHO coordinates with doctors, hospitals, victims and food suppliers to trace and identify sources of food poisoning outbreaks (and single cases)
- They take samples of food, faecal samples, swabs of kitchens and production areas and these are analysed by the Public Health laboratory service to identify the species and likely causes
- EHOs publish a report on the outbreak that gives the timeline and how the outbreak could have happened – publicly available



Collecting samples for testing

EHOs collect samples for testing using *aseptic* methods so no bacteria contaminate the sample

- Foods
- Faecal



Accident Investigation

Accidents must be reported to the Health and Safety Executive via reporting system (RIDDOR).

- Deaths caused by workplace accidents
- Occupational diseases
- fractures, amputations, loss of sight etc
- Over 7 day incapacitation of a worker
- Dangerous occurrences
- Accidents to members of the public where they are taken to hospital.

The EHO receives ALL RIDDOR information in their area. How can the EHO use the information to improve food premises?


ATP Swabs

What is ATP and how is it measured?
All organic matter contains ATP including food, bacteria, mould and microorganisms. The detection of ATP indicates the presence of biological matter.

A sterile swab is used to take approximately a 10cm² sample. ATP uses bioluminescence to take a reflective light unit reading (RLU) from the swab.

Measuring the amount of bioluminescence from an ATP reaction provides a good indication of surface cleanliness

Unclean surface → large amount ATP
→ more light produced → high reading



	Sample location (abbreviation)	Lower limit (Pass)	Upper Limit (Fail)
0	Random test site	50	100
1	Food Contact surface (Food Contact)	20	50
2	Chopping board	20	50
3	Food Preparation surface (Food Prep Surface)	20	50
4	Utensils	20	50
5	Slicing Equipment	20	50
6	Packaging equipment e.g. vacuum packing machines	20	50
7	Hands (Packing Equipment)	100	200
8	Tap	50	100
9	Fridge handle	50	100
10	Microwave door handle / key pad	50	100
11	Door push plate	50	100
12	Cleaning Cloths / Sponges (Cleaning cloths)	100	200



Mr Smith's cafe was closed by food officers with an emergency hygiene order following severe rodent infestation. The officers found rodent droppings on food preparation surfaces, on food items and in

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Food Safety Act 1990

If a person renders (which means makes) a food injurious to health: by adding an article or substance to it; using an article or substance as an ingredient in its preparation; abstracting (which means "taking away") any constituent from it; or subjecting it to any other process, then they are guilty of a

Main provisions of the Food

- It is an offence to supply food that does not comply with food safety requirements
- Strengthened powers of enforcement including detention and seizure
- It requires training in basic food safety for all food handlers
- All food premises must be registered
- Authorises EHOs to issue improvement notices if there is a potential risk
- EHOs can issue emergency prohibition notices to force caterers to stop their business immediately

The Food Safety Act

Food businesses:

- Must ensure that the food served is safe

Cause ill health

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Food Safety Act

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Food Safety Act 1990

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Defence of Due Diligence

- The principal of defence under The Food Safety Act 1990
- A business must be able to demonstrate that it has done everything within its power to safeguard consumer health
- Accurate records are useful in proving this defence; these may include:
 - Temperature control records delivery/storage/cooking
 - Microbiological records
 - Hygiene training for staff
 - Use of HACCP system
 - Pest control records
 - Hygiene manuals, cleaning schedules
 - Hygiene policy



The European Union (EU) adopted the General Food Law Regulation (EC) 178/2002 in 2005.

food safety and hygiene (england) regulations 2013

Safety

Food shall not be placed on the market if it is unsafe, injurious to health

• unfit for human consumption

Presentation

labelling, advertising and presentation, including the setting in which the food is displayed, of food shall not mislead consumers.

Traceability

food business to keep records of food, supplied to their business,.

Withdrawal, recall and notification

withdraw food which is not in compliance with food safety requirements, and to recall the food if has reached the consumer.

Food Safety (General Food Hygiene) Regulations (1995)

Food Safety Training

- Food handlers must receive adequate supervision, instruction and/or training in food hygiene. Each food business must decide what training is needed
- Legal requirement
- Appropriate to tasks undertaken
- Recorded
- Refreshed at given intervals eg yearly

HACCP- legal requirement

Hazard
Analysis
Critical
Control
Point

Hazard – anything that could cause harm to consumers

HACCP is designed to help food companies to minimise the risk from food hazards

Hazard
Analysis
Critical
Control
Points

- Legal requirement
- Identify the most critical (dangerous in terms of bacteria) areas of their business to make sure they are under control

HACCP System

- Swabs of surfaces or workers
- Foods (for composition testing)
- ATP swab testing



In cases where there could be a prosecution the sample is divided so that there is a reference to use if it goes to court



Giving evidence in prosecutions maintaining evidence



- Prosecutions under food safety laws are serious, people can get injured or even die .
- The EHO writes a report for the prosecution service who decide if it is serious enough to take to trial
- The EHO who conducted the investigation gives evidence as an expert witness and explains where the defending party has broken the law
- Evidence is submitted in the form of photos, lab results, and the EHO notes from the investigation



Doctors notify environmental health of suspected cases of **infectious disease**.

- EHO then visits the person to complete a questionnaire sent to PHE who analyse the data
- EHO would investigate any source of infection locally

Campylobacter – Most common cause of food poisoning in the UK

Cryptosporidium – Is a microscopic parasite that causes Cryptosporidiosis

Ecoli 0157 - Is found in the gut of animals; it is a bacterial infection that causes severe stomach pain that can lead to kidney failure



containers.
Mr Smith failed to have systems to control pests and has failed to protect food from foreign bodies, pests and bacteria likely to make the food unfit for human consumption

List four hygiene problems with Joe's café (4)

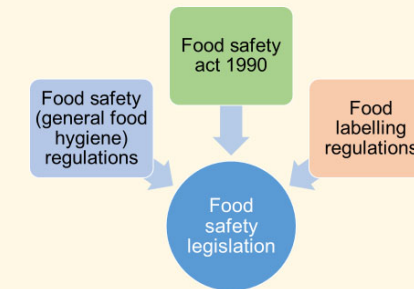
Joe's café is due a visit from the EHO. Give four reasons why Joe's café will not pass the inspection (4)

What might the EHO suggest happens to the café? Give two ideas (2)

AC 4.3

Food safety legislation

What food safety legislation do we need to know?



nature, substance or quality which is expected, e.g. :

- Nature - pollock rather than salmon
- Substance - contains foreign matter, glass or packaging;
- Quality – mouldy bread or stale

- Ensure that the food is labelled, and presented in a way that is not false, e.g. photos on menus that do not represent the food served to customers.

Role and powers of E.H.O.

Environmental Health Officers

- Provide Food Safety advice
- Inspect food premises
- Enforce legislation covering food safety
- Investigate outbreaks of food-borne disease and possible offences

- Powers of entry at any reasonable time
- Inspect food and premises
- Power to seize and detain food
- Serve notices, power to close businesses
- Power to prosecute

Penalties under the Food Safety Act 1990

Food Safety Act 1990	Magistrates court
Selling food that does not comply with the Food Safety Act	6 months in prison or max £20,000 fine
Obstructing an Environmental health Officer	3 months in prison or max £2,000 fine
Other serious offences	6 months in prison or max £20,000 fine

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- Food premises
 - Personal hygiene of staff
 - Hygienic practices
- make sure food is supplied or sold in a hygienic way;
 - identify food safety hazards;
 - know which steps in your activities are critical for food safety;
 - ensure safety controls are in place, maintained and reviewed.

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Food premises should

- be clean and in good condition, made from easy to clean materials
- have potable (drinking) water;
- have pest control measures
- have adequate lighting and ventilation ;
- clean lavatories which do not lead directly into food rooms;
- have adequate hand washing facilities and drainage
- facilities for washing food and equipment;

Food Safety Act

urt	Crown court
	2 years in prison Unlimited £ fine
	2 years in prison or £ unlimited fine

Food Handler – Legal Requirements

- Keep yourself clean
- Keep your workplace clean
- Protect food from contamination or anything that could cause harm
- Follow good personal hygiene practices
- Wear appropriate protective clothing
- Sell food with an expired date mark
- Work with food if they have symptoms of food poisoning or had diarrhoea and sickness in the last 48 hours.

- Food companies need to:
- Analyse the hazards to food safety
 - Assess the level of risk from each hazard
 - Decide the most critical points that require controls
 - Implement appropriate controls
 - Establish a monitoring system
 - Set up procedures to correct problems (corrective action)
 - Review the system when operations change

Hazard Analysis

A hazard is something that has the potential to cause harm.....

Type of hazard	Example
Biological	Salmonella in chicken
Chemical	Contamination from cleaning materials e.g. bleach
Physical	Damaged packaging, glass found in food

Critical Control Points

A critical control point is a step which eliminates or reduces the hazard

Control is essential to reduce the risk of food poisoning.

If a caterer gets it wrong they could be breaking the law all stages from purchasing through to preparation and serving is controlled.

Record Keeping

Legal requirement that certain records are kept as part of the HACCP-based food safety management system, eg:

- Fridge/freezer records
- Cooking/hot-holding temperatures
- Cleaning records
- Training records
- Pest control checks

Penalties for Non-Compliance

- Prohibition from using part of business
- Fines and legal costs
- Prison sentence
- Closure of business
- Prohibition from running a food business
- Criminal record
- Defence of Due diligence also for this regulation



The Food Hygiene regulations 2006

- Applies to high-risk foods
- Cold foods- store below 8°C
- Hot foods – store above 63°C

During service :-

- Cold food max 4hrs at room temperature then discard or refrigerate
- Hot food maximum 2 hrs
- Buffet food 90mins at room temperature

Weight or volume

The weight or volume of the food must be shown on the label. By comparing the weight with the price, consumers can make sure that they are getting value for money.

Some foods such as bread, tea and butter are only sold in standard amounts.



The e mark means it is packed to the average weight system

The name of the food

It is important that the name of the food must be clearly stated and not be ambiguous or misleading with a description if needed.



Ingredients

- Ingredients are listed in order of weight, according to the amounts that were used to make the food, starting with the largest ingredient and ending with the smallest.

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Genetically modified (GM) ingre

The presence of genetically modified organisms (GMOs) or ingredients produced from GMOs must be indicated on the label.



Name & address, packer or s

Consumers can then contact the manufacturer if they have a complaint about a product or if they wish to know more about it

Storage conditions and 'Use by' mark

The label must say how long foods should be stored to store them.

Following storage instructions can reduce the risk of food poisoning and help to make sure that it tastes best when it is eaten.

Foods which spoil quickly (i.e. are highly perishable) cooked meat and fish have a 'Use by' date. If these foods are eaten after the date, they may not taste odd.

'Best before' date

- Other foods have a 'best before' date, after which they may not be at their best, with regard to flavour, colour or texture, even though they will probably be safe if they are eaten. This is indicated on the label.

Cause ill health

Ingredients

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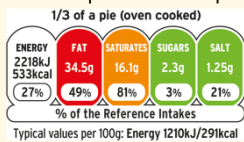
Lot (or batch) mark

- A lot mark is a code which is required by law to appear on the label. It helps to identify batches of food in the event that they need to be recalled by the manufacturer, packer or producer.
- A date mark is sometimes used as a lot mark. Lot marks may be indicated by the letter 'L'.
- Pre-packed red meat and meat products, must carry traceability information for identification of the product through the supply chain back to the farm.



Nutritional labelling

Front of pack nutrition panel



Back of pack nutrition panel

Nutrition				
Typical values	100g	Each size (typical)	% RI*	RI* for an average adult
Energy	985kJ	435kJ		8400kJ
	235kcal	105kcal	5%	2000kcal
Fat	1.5g	0.7g	1%	70g
of which saturates	0.3g	0.1g	1%	20g
Carbohydrate	40.5g	20.0g		
of which sugars	3.8g	1.7g	2%	90g
Fibre	2.8g	1.2g		
Protein	7.7g	3.4g		
Salt	1.0g	0.4g	7%	6g

This pack contains 16 servings
*Reference intake of an average
adult (8400kJ / 2000kcal)



This is a USA nutrition label

Nutrition claims

A nutrition claim describes what a food contains (or does not contain) or contains in

What causes food poisoning?



Be able to state the 7 common types of food poisoning

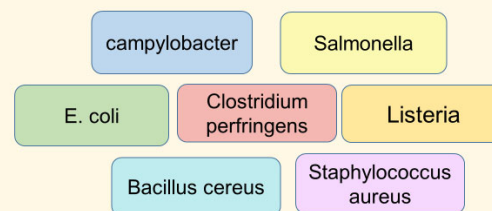


Be able to relate the food poisoning species to food types and symptom types



Be able to identify potential sources of pathogens from description of symptoms and foods consumed

Common types of food poisoning



Correct names of bacteria

capital, the second with lower case

Known as	Full scientific name
Campylobacter	Campylobacter jejuni
Salmonella	Salmonella typhimurium <i>et al</i>
E . coli	Escherichia coli
Cl . perfringens	Clostridium perfringens
Listeria	Listeria monocytogenes
B . Cereus	Bacillus cereus
S . aureus	Staphylococcus aureus

Food labelling regulations 2006

Pre-packaged foods have information on their labels which can help consumers choose between different foods, brands, or flavours.



- Much of the information must be provided by law.
- Additional information may also be provided, such as cooking instructions or serving suggestions.
- In the UK, foods sold loose are currently exempt from many of the food labelling laws

Information that must appear by law on food labels:

- the name of the food;
- weight or volume;
- ingredient list;
- allergen information;
- genetically modified (GM) ingredients;
- date mark and storage conditions;
- preparation instructions;
- name and address of manufacturer, packer or seller;
- place of origin;
- lot (or batch) mark;
- nutrition information

Nutrition				
Typical values	100g food (as supplied)	% contains	100g food (as supplied)	% contains
Energy	2350kJ	45%	1000kJ	19%
fat	1.5g	3%	0.5g	1%
of which saturated	0.5g	1%	0.2g	0.4%
Carbohydrate	45.0g	85%	10.0g	19%
of which sugars	2.8g	5%	0.7g	1.4%
Protein	1.0g	2%	0.2g	0.4%
Salt	1.0g	2%	0.2g	0.4%

*This pack contains 16 servings

†Reference intake of an average adult (8400kJ / 2000kcal)

- Food additives and water must also be included in the list if they have been added.
- Sometimes a particular ingredient is highlighted in the name, e.g. 'Prawn Curry: now with extra prawns'. If so, the minimum amount of the named ingredient must be included in the ingredients list, or next to the name of the food.
- Allergens must be listed in **bold** to highlight them
>

Allergy information

- celery;
- cereals containing gluten (such as wheat, barley, rye);
- crustaceans (lobster and crab);
- eggs;
- fish;
- lupins;
- cow's milk;
- molluscs (mussels and oysters);
- mustard;
- nuts (almonds, hazelnuts, walnuts, Brazil nuts, cashews, pecans);
- peanuts;
- sesame seeds;
- soybeans;
- sulphur dioxide and sulphites (preservatives in some foods and drinks)

Major allergens

Must be highlighted in ingredients list



- Salt only needs to have a year as a best before date if it is stored according to the instructions on the label
- Salt only needs to have a year as a best before date if it is stored according to the instructions on the label



Preparation instructions

- Instructions on how to prepare and cook the food must be given on the label, if they are needed. If the food has to be heated, the temperature of the oven and the cooking time will usually be stated.
- Instructions may also be given for heating in a microwave oven. These instructions should make sure that the food tastes its best and that it will be thoroughly heated to a core temperature of 72°C to help minimise the risk of food poisoning.

Place of origin

- The label must show clearly where the food has come from if it would be misleading not to show it, for example, a tub of 'Greek Yogurt' which was made in France.

Protected Designation of Origin (PDO) is used for food produced, processed and prepared in a given geographical area using recognised know-how, e.g. West Country farmhouse Cheddar cheese and Jersey Royal potatoes.



reduced or increased amounts. Examples include:

- Low fat (less than 3g of fat per 100g food);
- High fibre (at least more than 6g of fibre per 100g food);
- Reduced sugar (30% less than the original product);
- Source of vitamin C (at least 15% of the recommended daily allowance for vitamin C).



Health claims

A health claim may be featured on the packaging if a food or one of its ingredients has been agreed by experts to provide additional health benefits.



Examples of health claims include:

- *Calcium is important for normal growth and development of bones in children.*
- *Beta-glucans from oats help to reduce blood cholesterol.*
- *Xylitol in some sugar-free chewing gum helps neutralise plaque acids.*



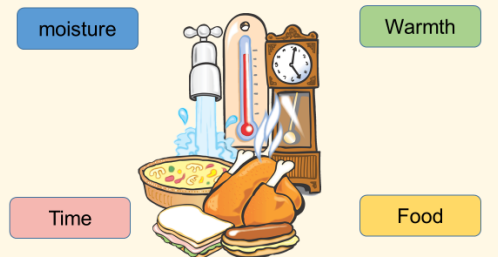
AC 4.4 common types of food poisoning



Common food hygiene faults leading to food poisoning

- Preparation too far in advance and storage at room temperature
- Slow cooling
- Inadequate reheating/cooking
- Contaminated food (cross-contamination or raw)
- Inadequate thawing prior to cooking
- Food handlers (infected/bad personal hygiene).

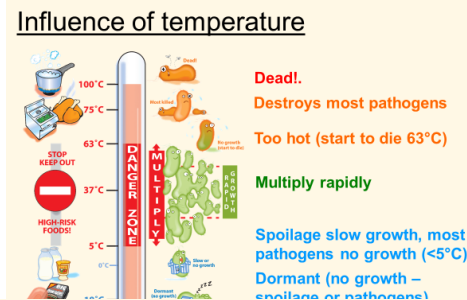
What do bacteria need to multiply?



Sources of food poisoning bacteria

- People/sewage
- Raw food
- Insects
- Rodents
- Soil/dust
- Refuse/waste
- Animals/birds
- Contaminated packaging.





Campylobacter jejuni

Foods it is found in	Poultry, raw meat, unpasteurised milk products, water
Symptoms	Headache, abdominal pain, bloody diarrhoea
Onset	2-5 days after infection
Duration	Up to 10 days
Effects on body	Weakness and dehydration
Special points	Only needs a few bacteria to cause illness

Salmonella group of over 1600 species

Foods it is found in	Raw meat, unwashed vegetables, eggs undercooked chicken
Symptoms	Fever, diarrhoea, vomiting, abdominal pain, blood in poo
Onset	12-72 hours
Duration	4-7 days can be up to 3 weeks

LO4 Know how food can cause ill health

Listeria monocytogenes

Foods it is found in	Raw foods, fridge temperatures, unpasteurised milk, cheese, smoked salmon, pate, raw sprouts
Symptoms	Headache, stiff muscles, confusion, fever, convulsions
Onset	3-70 days (21 typical)
Duration	3 weeks
Effects on body	Damage to central nervous system, miscarriage, meningitis
Special points	Grows at fridge temperatures

Bacillus cereus

Foods it is found in	Rice, leftover food, foods at room temperature, sauces and soups
Symptoms	1) Watery diarrhoea, cramps, 2) vomiting and nausea
Onset	1) 30 min-6 hrs 2) 6-15 hours
Duration	24 hours
Effects on body	Dehydration, fatigue

AC 4.5

Symptoms of food induced ill health

What are the symptoms of food induced ill health?



Be able to state the common symptoms of food induced ill health



Be able to relate the symptoms to possible causes of illness



Be able to identify potential pathogens from descriptions and foods consumed

Symptoms comparison

Intolerance	Allergy
Hours to days to see effect	Can occur within minutes of exposure to food
Digestive system can't process the food	Immune response to allergen
Possible to eat a small amount without effect	Body reacts to tiny amounts of food

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	Poisoning
utes	From 30 min for toxins 12-48 hours bacterial
	Bacteria poison or disrupt digestive system
	Toxins- few bacteria Large amounts colonise gut

Food allergy

- Mouth** swelling of lips, mouth and tongue
- Eyes and nose** stuffy nose, sneezing, swollen eyes, itchy red eyes
- Skin** rash, redness, itching swelling
- Gut** abdominal pain, colic, nausea vomiting, diarrhoea
- Throat** tightening of throat, difficulty swallowing, coughing, sounds when breathing in
- Lungs** short of breath, wheezing, coughing, chest pain
- Circulation**, low blood pressure, weak pulse, turning blue, dizziness fainting, chest pain
- Perception** sense of doom, panic, anxiety



Food poisoning

Mouth increase in saliva

Head headache

Skin fever, shivering

Alex

Alex met Sue from the office at the barbeque, the next weekend she invited him over for a meal. Sue decided to impress Alex by cooking a Chinese stir fry with authentic ingredients like spring onion, ginger and groundnut oil.

Alex liked the stir fry but his lips started to sting after eating it, then his mouth started to swell and he had trouble swallowing and breathing. Sue called the ambulance and their romantic night ended with Alex in a hospital bed on a drip of anti histamine until he felt better

1. What was the reaction that Alex had called?
2. What could have caused him to have the reaction?

Sue

Alex decided to make it up to Sue by taking her to lunch in the works canteen . Alex had the fish and chips and Sue had the Bolognese which was served from a big pan over the spaghetti. It wasn't as hot as Sue would have liked, it was just warm but she ate it anyway. The next morning Sue texted Alex to say that she had been up most of the night with feeling hot and cold, stomach cramps and diarrhoea. Another "romantic" meal ruined!

1. What could have been in the Bolognese that made Sue ill?
2. Sue had food poisoning so why wasn't she vomiting as well?

The wedding

Alex and Sue got in so well they got married the next summer. Alex made sure the caterers knew about his peanut allergy and Steve's lactose intolerance. The day went without a hitch and the guests all loved the food buffet. When they got back from honeymoon, Sue's mum phoned to

Effects on body	Can take months to clear the body, weakness colonises the gut
Special points	Survives refrigeration Some named after locations

Special points	Produced toxins, only a few bacteria needed Can be anaerobic
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Stop eating the food and it goes away	May need adrenalin and anti histamines
Easier to detect the food	Allergens may be small amount in ingredients
Symptoms if you eat a lot or frequently	Symptoms every time even tiny amounts
Moderate to serious illness	Can be fatal

Escherichia coli 0157

Foods it is found in	beef, chicken, lamb, unpasteurised milk cheese, spinach, salads, raw veg
Symptoms	Abdominal cramps, bloody diarrhoea, nausea
Onset	Up to 24 hours
Duration	5-10 days
Effects on body	Kidney damage, pancreas damage, dehydration
Special points	Clings to lower intestine wall

Staphylococcus aureus

Foods it is found in	Foods made by hand and no additional cooking. Salads, ham, tuna chicken, cream pastries, sandwiches, dairy products, meat, eggs
Symptoms	Projectile vomiting, diarrhoea, abdominal cramps, fever
Onset	1-6 hours
Duration	24-48 hours
Effects on body	Dehydration, cramps
Special points	25% of people have it on their body, nose, throat and on infected cuts

Food intolerance

Mouth, may be sore, bad breath

Skin rash, redness, itching, swelling

Gut abdominal pain, bloating, hiccups, cramping, vomiting, diarrhoea or constipation

Lungs chronic cough, wheezing, asthma

Head headache, brain fogging

Perception irritable, moody, panic

Clostridium perfringens

Foods it is found in	Undercooked meats, large volumes of food, casseroles, gravies
Symptoms	Stomach cramps, fever, diarrhoea (not usually vomiting)
Onset	6-24 hours
Duration	Up to 24 hours
Effects on body	Fever, damage to intestines
Special points	Forms toxins in warm food, very few needed to cause illness. Anaerobic

People at high risk



	Runs its course of illness then ends
all s	No smell, no taste, no sign
e	Symptoms if the food is contaminated
	Serious illness to fatal

h

lling eczema


heartburn,

or constipation

g

ss, migraines

nic, depression



CE SYMPTOMS

miting

id reflux or heartburn

itability / moodiness

ain fog

adaches

hing and rashes

Gut abdominal pain, nausea vomiting, diarrhoea

Circulation, low blood pressure, weak pulse, fatigue



Steve

Steve often got diarrhoea at lunchtime at work. One morning he got up really late and skipped breakfast and noticed he didn't have diarrhoea that day. When he thought about it, he didn't get diarrhoea if he had toast and peanut butter for breakfast but he did when he had a bowl of cereals and milk in the morning.

1. What is the most likely cause of Steve's diarrhoea?
2. What else could he have for breakfast to ensure it didn't happen again?

Anna

Anna and Steve went to their company summer barbeque where one of the men from accounts took charge of the cooking. He had bought the sausages the day before and kept them and the salads in the supermarket bag beside the barbeque. When they got back home Anna began to feel ill and then was violently sick. Later Steve had the same sickness. Anna was sure it was something they had eaten. Then Steve told her that there weren't enough sausages and he had a vegetarian hot dog.

1. What could have been the source of the food poisoning?
2. What is the most likely bacterium to have caused the illness?

Which they got back from money. In, the man's period to say that 20 guests had been really ill 2-3 days after the wedding. Auntie Betty had ended up in hospital with dehydration after vomiting and diarrhoea and blamed the undercooked chicken from the buffet. The caterer said he had stored the chicken in the fridge before serving it so it wasn't to blame.

1. Which bacterium could have caused the illness?
2. How did you decide which bacterium?
3. Who should Sue's mum have contacted to investigate?

The investigation

Auntie Betty's doctor was concerned that she was so ill after the wedding and made the phone call to Stentonshire councils Environmental health department.

Sarah the EHO was concerned about the incidents and decided to pay the catering company a visit to inspect them. The caterer wasn't pleased that she turned up unannounced but he let her in to inspect his kitchens

1. Does Sarah (EHO) need to let the catering company know she is going to visit?
2. Which food safety legislation should the caterer be following?
3. Give 6 powers that EHOs have while inspecting premises

The inspection

The EHO carried out the inspection on the caterer's premises and took the samples away to be analysed.

Following the inspection, she issued the caterer with a food hygiene ratings score of 1 and a hygiene improvement notice and closed the kitchens for 14 days to carry out deep cleaning and train the workers in food hygiene. The samples were tested and the laboratory confirmed that the cause of the food poisoning incident was Salmonella. The caterer made such an improvement to his kitchens that the Environmental health team decided not to prosecute. New salmonella species are often named after the town they are discovered in and the new one was named.....Salmonella stenton

1. Name 4 types of samples Sarah would have taken
2. What would be the consequences for the business of being closed for 14 days and a hygiene ratings score of 1?
3. What are the penalties of being prosecuted by the EHO?