

Food preparation and Nutrition

Unit 1 - Food Safety

Knowledge Organiser

Name:

Teacher:

Form:

Food safety is all about the actual food and avoiding food poisoning or spoilage through microorganisms. Microorganisms are **bacteria, moulds** and **yeast**.

There are **food spoilage** and **food poisoning bacteria**. Food spoilage bacteria make food inedible by spoiling the appearance, aroma, taste and texture.

Food poisoning bacteria are **pathogenic** meaning they cause harm if consumed. The most common types of food poisoning bacteria are salmonella, listeria, campylobacter, bacillus cereus, staphylococcus aureus and E. Coli.

All forms of food poisoning bacteria cause sickness, diarrhea, nausea and headaches.

To multiply bacteria need **warmth, moisture, food** and **time**. If you remove any of these the bacteria will not be able to multiply.

Salmonella: Most commonly found on **poultry and eggs**. The red lion symbol found on eggs in the supermarket means that the hen has been vaccinated against salmonella.

Campylobacter: Found on **poultry and shellfish**. A very prolific bacteria that is one of the most common causes of food poisoning around the world

Listeria: Found in **unpasteurised dairy**, listeria should not be avoided by pregnant females.

E. Coli: Found on unwashed salad leaves and vegetables and undercooked red meat. Can be fatal to vulnerable people

Bacillus Cereus: Specifically affects rice. Uncooked rice is dehydrated so bacteria cannot multiply on it. Once rice is cooked and therefore contains moisture bacteria multiply on it very quickly and the rice becomes poisonous which is why you should always be very careful with reheating rice

Critical Temperatures:

Other than good cleaning procedures and preserving food through dehydration and canning the best way to control bacteria is through controlling temperatures.

- Freezers are always at -18°C . At this temperature the bacteria is frozen and stops multiplying altogether
- Fridges are always between 0 and 5°C . At this temperature bacteria still multiply but much more slowly which is why food last longer if kept in the fridge
- The danger zone is between 5 and 63°C . This is where bacteria multiply at their fastest and needs to be avoided as part of good hygiene practice
- Hot held food (such as the food in the canteen) is held at 63°C . It is too hot for bacteria to be able to multiply easily. Food can be stored at this temperature for 2 hours
- Cooked temperature is 75°C . Cooking for to this temperature for 5 minutes will kill the majority of bacteria and make it safe to eat

Cross Contamination:

Cross contamination is where bacteria from one food gets onto another. This commonly occurs through poor hygiene practices such as not washing your hands after handling raw meat, chopping boards not being cleaned properly or raw meat dripping onto other foods if stored incorrectly in the fridge. Most kitchens use colour coded chopping boards:

Red: Raw Meat, **Yellow**: Cooked Meat, **Blue**: Fish and Seafood, **Brown**: Vegetables, **Green**: Fruit and Salad, **White**: Bread and Dairy.

Contamination:

- As well as bacteria contaminating foods there are other contaminants to be aware of. Contamination is split into three categories: Chemical, physical and biological.
- **Chemical contamination** is where chemicals get into food. This is often cleaning products and can be very serious. In a kitchen chemicals must be stored safely.
- **Physical contamination** is where physical objects get into food. This could be broken glass, parts from equipment or jewellery that has not been removed. These can cause choking hazards.
- **Biological contamination** is where something living gets into the food such as one of the three microorganisms or an insect.

Moulds:

Moulds are one of the three microorganisms that affect food and mostly affect fruit and vegetables and cheese. Mould releases toxic spores which can be very harmful if consumed. Although some moulds are useful such as penicillin you never know whether a mould is toxic or not so never eat mouldy food

Yeast:

Yeast is very useful in the production of bread and alcohol but if eaten raw is very toxic to humans. Along with mould, yeast is one of the main reasons for fruit and vegetables going off. Sometimes if you look at the skin of a tomato or plum there is a thin 'film' on the skin. This is yeast.

Kitchen safety:

Kitchen safety is about making sure the kitchen is a safe working area. Accidents in kitchens must be avoided and precautions put in place to avoid hazards. The most common accidents in kitchens are caused by trip and slip hazards such as water, oil or food spilled on the floor or equipment such as knives not being stored correctly. All equipment must be stored safely, walkways kept clear and any spills cleaned up immediately. Kitchens must also be well lit and a cleaning schedule must be in place.

Water should never be near to a deep fat fryer as if they mix at high temperature the results can be explosive and incredibly dangerous.

Personal Hygiene:

Personal hygiene is about what a Chef does and wears to ensure good hygiene. Chefs should always get changed into clean clothes and footwear, wash their hands with hot soapy water, remove jewellery and tie back long hair or wear a hair net before entering the kitchen. You should not go to work in a kitchen if you have any stomach issues and any cuts must be covered.

Chefs should wash their hands before starting work, after going to the toilet and after handling raw meat.

High risk foods:

Foods that are likely to cause food poisoning are called 'high risk foods'. There are different reasons why foods are high risk.

- Meat, fish, beans and eggs are all sources of protein and moisture which means they are a breeding ground for bacteria. We cannot remove the protein or moisture in most products so the bacteria have to be controlled with temperature and time
- Foods like cooked ham and salad are high risk for a different reason. These foods are not cooked before they are served meaning if any harmful bacteria is on them it will not be killed and instead will be consumed and cause food poisoning.

Safe storage of food:

All food needs to be stored safely to avoid food spoilage and food poisoning, especially high risk foods.

Foods that need refrigerating need to be stored in the correct part of the fridge to avoid cross contamination. If raw meat is stored at the top of the fridge and drips onto other foods this is likely to cause serious harm. This is why raw meat should always be stored at the bottom of the fridge, preferably in a sealed container.

Cheese and dairy should be stored at the top of the fridge and cooked meats and other products in the middle.

Tinned and dehydrated food can be stored at room (ambient) temperature in a clean, dry store room. Packaging should be checked for damage as if the packaging is damaged the food inside is likely to be spoilt.

Signs of spoilage:

Although sometimes it is impossible to tell if a food is harmful due to spoilage there are often signs that we should avoid it:

- Meat will change colour when affected by bacteria. It will also have an unpleasant odour and have a slimy coating on the outside. Sometimes, if there is an incredibly high concentration of bacteria you can visibly see it in small dots which can be white, yellow or green. Definitely do not eat meat with these dots
- Fresh fish should smell like the sea, fish only starts to smell 'fishy' when it starts to go off. Also their eyes will look cloudy and the gills will stop being red and healthy looking. Scales will also start to look dry and flake off.
- Fruit and vegetables get broken down by mould and yeast. Mould is usually quite visible so easy to spot but yeast is less visible. It will make the skin of the food look shrivelled and unpleasant. Some fruit and vegetables also get an unpleasant odour when they go off. Sometimes vegetables can still be used in soups and sauces when they are past their best as the cooking process makes them safe to eat but you need to use your professional judgement about when you should or shouldn't use them.
- Dairy can be very dangerous if contaminated with bacteria. It will normally have a very unpleasant smell and taste and can also get covered in mould. Some people cut the mould off blocks of cheese and continue to use it. This can be very dangerous as we can only see the spores of the mould and not the incredibly fine roots which are also toxic.