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# **Food Hygiene Book**

**To provide food handlers with the fundamental knowledge and information required to prepare and serve safe food**

## **The Aim of the Course:**

To provide you with an understanding of the basic principles of food safety.

For you to then apply the knowledge gained on the course back in the workplace, to control the risks of food poisoning and the contamination of food.

# What Is Food Hygiene?



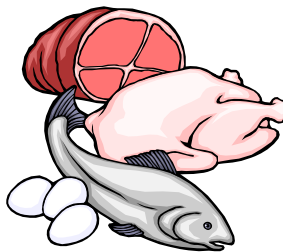
**Cleanliness**



**PLANT**



**PREMISES**



**PRODUCT**



**PERSONNEL**



## **3 HYGIENIC PRACTICES**

- 1: PROTECTION** to protect the food from contamination
- 2: PREVENTION** to prevent food poisoning bacteria from multiplying
- 3: DESTRUCTION** to destroy the food poisoning bacteria to a safe level



**SAFE FOOD**

## Outbreaks of Food Borne Illness

In England and Wales, from 1982 to 1998 the reported cases of food poisoning continued to increase up to around 100,000 cases. Over recent years, the figures have steadily reduced to approximately 70,000 in 2004.

Only a minority of cases are actually reported to the doctors and followed up by the Environmental Health Departments. Based on research, figures show that a true figure would be around 9.5 million actual cases of food poisoning in England each year.

Around the world incidence of food borne disease is increasing. In 1998, 2.2 million people around the world, including 1.8 million children, died from diarrhoeal diseases. Many of these cases can be attributed to contamination of food and drinking water.



**Think about the way we live, our changing life styles and trends over the past ten/twenty years.**

**Why do you think outbreaks of food borne illnesses have been on the increase?**

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**What are the benefits of investing time, money and other resources in good standards of food hygiene for each sector identified below?**

<b>Employee:</b>	
<b>Employer:</b>	
<b>Customer:</b>	

## Food Borne Illnesses

There are two types of illness linked to food:

1. Food Poisoning – caused by eating food contaminated by harmful substances or harmful bacteria that are living on the food; they need the food to grow  
e.g. SALMONELLA
2. Food Borne Diseases – are caused by consuming the food or water that is carrying harmful organisms; they do not need food, but use it as a vehicle  
e.g. LISTERIA and CAMPYLOBACTER



## Food Poisoning

An illness caused by eating contaminated food, which usually occurs 1 – 36 hours after eating.

### Main Symptoms of Food Poisoning

- Vomiting
- Fever
- Diarrhoea
- Nausea
- Stomach Cramp / Abdominal Pains

Symptoms usually last between 1 – 7 days



### Food poisoning can be fatal

High-risk groups include children, the elderly, immune suppressed and pregnant and new mothers.

By taking a stool sample and having it analysed at a laboratory, is the only way you can be 100% sure that you have food poisoning.

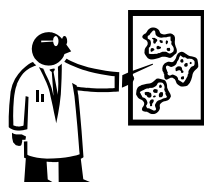
Doctors have a legal duty to report all confirmed cases of food borne illnesses to the local Environmental Health Department, who will then carry out an investigation to identify the **Source** and the **Cause** of the outbreak.

## The Causes of Food Poisoning

- **Micro-Organisms**
  - **Bacteria** most common cause of food poisoning
  - **Moulds** spoilage bacteria
  - **Viruses** take over the host cell
- **Chemicals** cleaning products, pesticides
- **Metals** lead pipes, copper saucepans, tin cans
- **Poisonous Plants and Fish** rhubarb leaves, toadstools, deadly nightshade, tuna, puffer fish, green potatoes

### Bacterial Food Poisoning is our main concern

**In order to prevent an outbreak of food poisoning, we need to know something about Bacteria and how they cause food poisoning**



### Bacteriology



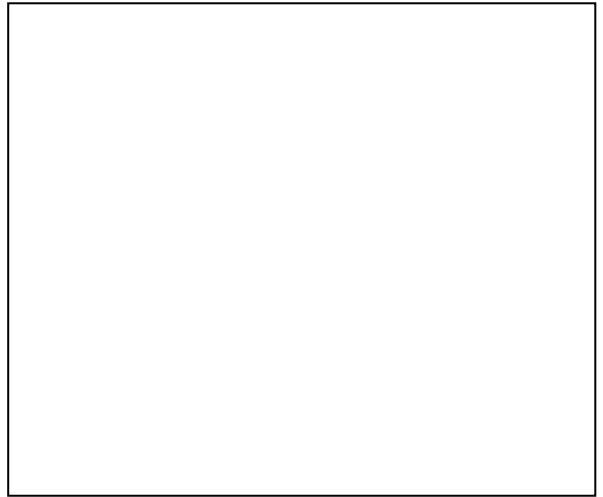
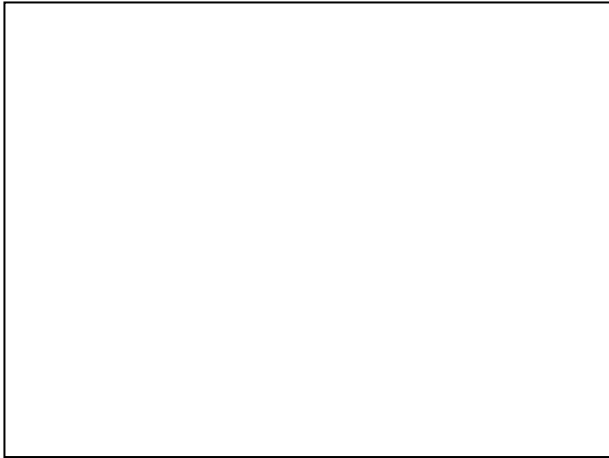
List some characteristics of bacteria:

There are three types of bacteria:

- Useful and essential -
- Spoilage -
- Pathogens -

**Pathogenic Bacteria cause food poisoning by releasing TOXINS (poisons)**

### What Do Bacteria Need To Multiply?





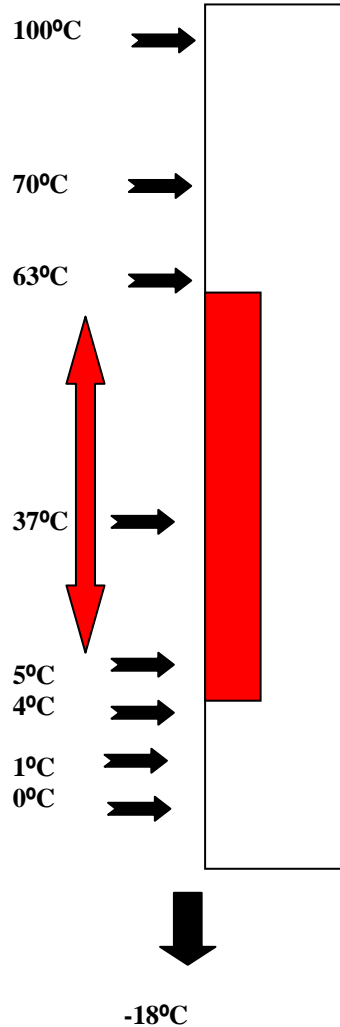
**Make a list of High Risk Foods:**

**Make a list of Low Risk Foods, which hold adverse conditions for bacteria to multiply**

High Risk Foods	Low Risk Foods

**5°C - 63°C**  
The temperature range for bacterial growth.

The optimum temperature for the growth of pathogenic bacteria.



- 100°C -Starts to kill off spores
- 70°C - Minimum core temperature for cooking food (to hold for 2 minutes)\*
- 63°C - Minimum temperature of food when hot holding

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- 1°C - 4°C – Air temperature of fridges. Most bacteria are dormant, but some can multiply very, very, slowly
- -18°C – Air temperature of freezers. Bacteria are dormant

\* Or 75°C for 30 seconds

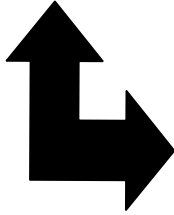
**NB. Re-heated foods must reach a minimum of 72°C or preferably 82°C plus**



What are your organisations food safety temperatures?

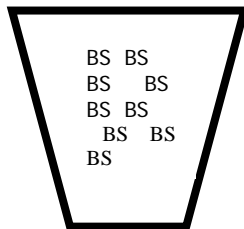
## Spores

It is important that food handlers understand that some food poisoning bacteria can produce **SPORES**.



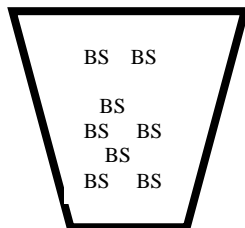
**Spores are a protective coating formed by some bacteria to help them survive adverse conditions such as high temperatures or dehydration.**

**Example of spores forming in a pan of cooked rice:**



A saucepan of rice cooking

Rice has Bacillus Cereus bacteria in it



Cooking to a heat of 75°C for 30 seconds

Bacillus Cereus bacteria do not die, they form a spore to protect them from this adverse condition.

A Spore is like a protective jacket

### **NOTE:**

If you eat cooked rice hot, whilst the spores are still in place, the bacteria cannot cause food poisoning.

If you **do not cool** the cooked rice quickly and place into the fridge, once the bacteria are in a temperature they like, they will reform and continue to multiply. Thus causing food poisoning.

## **Cooling Food Quickly Reduces the Risk of Food Poisoning**



## Contamination & The Prevention of Illness

Contamination is the presence of something harmful or objectionable in food or drink, which creates a risk of illness, injury or discomfort.

Or, anything in or on the food that should not be there.

### Three Causes of Contamination



### BACTERIA PHYSICAL CHEMICAL



Make a list of as many different ways food poisoning bacteria could come into your kitchen (SOURCES).  
Think how you can prevent this from happening

Source of Bacterial Contamination	Method of Control



Make a list of as many examples of Physical Contaminants as you can think of.  
Again, identify the controls to put in place to prevent these

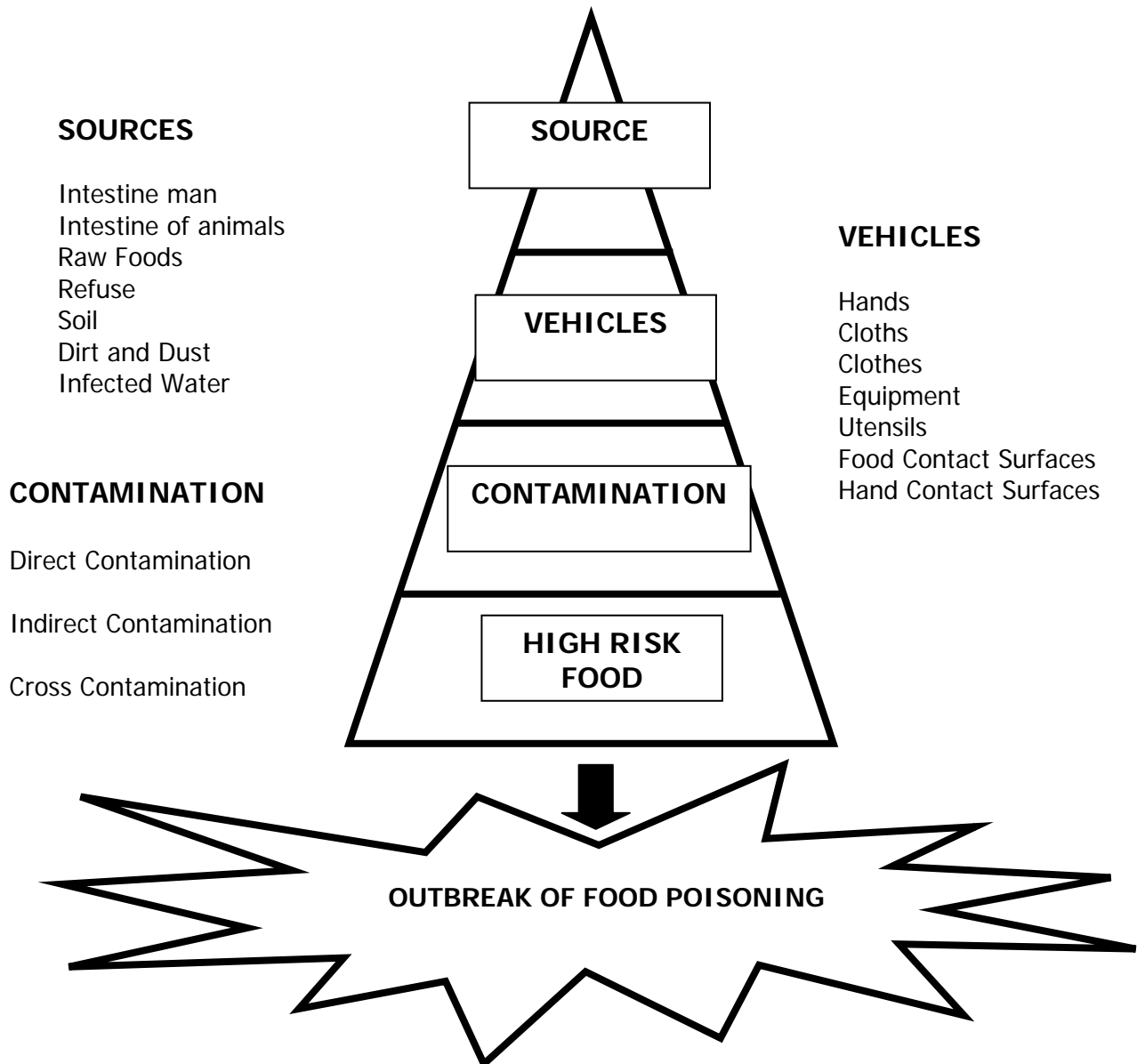
Source of Physical Contamination	Method of Control



Make a list of possible Chemical Contaminants.  
Once more identify how this can be prevented.

Source of Chemical Contamination	Method of Control

### The Path to an Outbreak of Food Poisoning



## Food Poisoning Bacteria

Disease	Sources	Onset Time Symptoms	Controls
<b>Salmonella</b>		12 – 36 hours	
<b>Staphylococcus Aureus</b>		1 – 6 hours	
<b>Clostridium Perfringens</b>  SPORE FORMER		12 –18 hours	
<b>Clostridium Botulinum</b>  SPORE FORMER		12 – 36 hours  Difficulties in breathing Difficulties in swallowing Paralysis	
<b>Bacillus Cereus</b>  SPORE FORMER		a) 1 – 5 hours  or b) 8 – 16 hours	

## Food Borne Diseases

Disease	Sources	Onset Time Symptoms	Controls
<b>Campylobacter</b>		2 – 5 days	
<b>Escherichia Coli</b>  (E. Coli O157)		12 – 24 hours	
<b>Listeria</b>		1 – 70 days	
<b>Dysentery</b>		1 – 7 days	



## Temperature Control and Food Storage

Controlling temperature, and the time food is left in the danger zone, are the two key ways food handlers can prevent food poisoning bacteria from growing and destroying them to a safe level.

### Controlling temperature – keep food out of the danger zone

Temperature control involves restricting the time that high-risk foods are left at temperatures in the danger zone and using high temperatures to kill food poisoning bacteria.

#### Basic Rules:

- Keep cold food below \_\_\_°C
- Keep hot foods above \_\_\_°C
- Restrict the time food is left in the danger zone
- Cook food to 70°C for at least 2 minutes or 75°C for 30 seconds
- Cool foods within \_\_\_minutes
- Defrost foods in a safe cool designated area – cook within 24 hours
- Reheated food must be served above 82°C or above
- Fridges must run between 1°C to 4°C
- Freezers must run between -18°C to -24°C
- Reject frozen deliveries above -12°C
- You must know your organisation's food safety temperature controls

### Storage Facilities

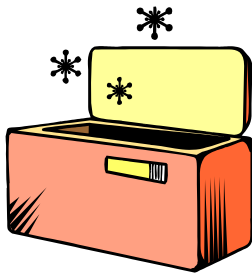


List the key points for the safe storage of food in the following areas:

Fridge	Freezer	Dry Food Store



**Why must separate areas be given to raw and cooked foods, dairy products & fish and defrosting foods?**



### **Food Deliveries**

A "delivery record sheet" should be kept, recording food, supplier and temperature. Any faults found must be recorded and reported to your duty manager.

<b>Delivery</b>	<b>Checks to Ensure Safe Food</b>
Raw meat and fish	
Vegetables	
Dried packed foods	
Tinned foods	
Frozen foods	

### **Date Codes On Foods**

**Use By:** Marked on perishable foods  
Any food, which is past its use by date is deemed unfit and could cause Food Borne Illness.  
It is against the law to use food once it is past its use by date

**Best Before:** Marked on low risk foods  
Food, which is past its best before date, is past its best point of quality. The date indicates when food is in its best condition

## Food Spoilage and Preservation

Food spoilage starts as soon as food is slaughtered, harvested or taken from its natural environment.

### Food Spoilage:

- The process by which food becomes unacceptable
- The action of spoilage bacteria and fungi including mould and yeast cause food spoilage

### Preservation:

- Is the safe treatment of food to delay spoilage

### Methods Of Preservation:

Method of Preservation	Examples
Using heat	Pasteurisation, canning, UHT
Using low temperatures	Freezing, refrigeration
Drying	Dehydration (meat, fish, fruit)
Chemicals	Salting, pickling & other chemicals
Smoking	Fish, meat, ham
Vacuum Packing	Controlled atmosphere (meat)
Irradiation	Kills spoilage and pathogenic bacteria Gamma rays into food (spices)

# Food Safety Legislation

## Legal Requirement:

Under the Food Safety Act 1990, both employers and employees have a responsibility to ensure the safety of food through all its stages of production and service.

As a food handler you must make constant checks during the production, service and storage of food, to ensure the food you produce is safe.



- Food must be fit for human consumption
- Food offered for sale must meet the food safety requirements
- Food must not be “unfit”
- Food must be of the right nature, substance and quality that the consumer expects
- Food does not meet the requirements of **“Safe Food”** if it:
  - Has been rendered injurious to health
  - Is unfit for human consumption
  - It so contaminated, that it would not be reasonable to expect someone to eat it in that state

**Due Diligence is your only defence under food law as a food handler you must be able to prove that you took “All Practicable Steps to Reduce Risk”**

## Penalties include:

Fines, Prison Sentence, Closure of Business, Civil Claims

The main piece of legislation is the **Food Safety Act 1990**; we also have various other regulations that support the Act and help us to comply with it. The main one is:

- Food Hygiene (England) Regulations 2005
- Which incorporates the following previous regulations:
- Food Safety (General Food Hygiene) Regulations 1995
  - Food Safety (Temperature Control) Regulations 1995



Food Safety Laws are designed to protect consumers from illness and harm.

## Food Handlers and The Law:

**Everyone who deals with food as part of his or her work has a legal responsibility to safeguard food. Other workers whose work could affect food safety, such as cleaners, also have a legal responsibility to protect food from contamination.**

### Food law requires:

- Food handlers keep themselves clean
- The premises are kept clean
- Food handlers must wear suitable protective clothing
- Everything is done to protect the food from contamination
- Store, prepare and display/serve food at safe temperatures
- Food handlers tell their employer if they have symptoms of a food borne illness
- Must not do anything that would expose food to contamination
- Businesses must not sell food with an expired date mark
- Food handlers must not work with food if they have food poisoning symptoms

### Employers Must:

- Ensure the premises is registered with the local EH department
- Ensure the premises are designed, equipped and operated to prevent contamination and the safe production of food
- Provide adequate washing facilities and arrangements for personal hygiene
- Ensure staff are trained and supervised to an acceptable level
- Carry out an assessment on the food hazards and take necessary action to implement suitable controls (hazard analysis)
- Ensure arrangements are made for the control of food pests
- Suitable storage, disposal, collection of rubbish and food waste



## Due Diligence Defence

A defence under S.21 of the Food Safety Act 1990  
Every Practicable measure was taken to avoid committing an offence under the Act



**Discuss what procedures, policies and documentation your company has in place to help provide a due diligence defence:**

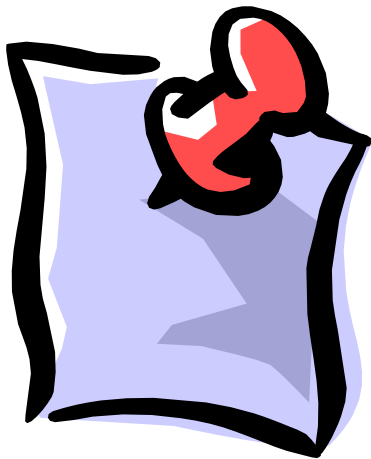
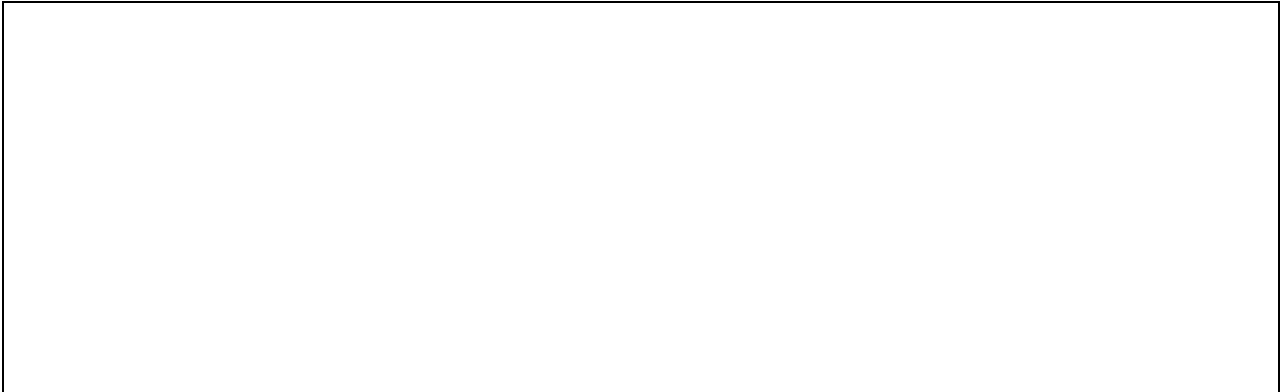
## Enforcing Food Legislation

Food Safety law is enforced by Environmental Health Officers – appointed by Local Authorities



**What powers do you feel an EHO has on entry to your premises?**





**Penalties:**

- Fines
- Prison Sentence
- Closure of business
- Civil claims
- Criminal record

EHO can also issue notices to food businesses:

**\_\_\_\_\_ Notice:**

Must detail what part of the Act/Regulations have been broken

What the proprietor needs to do to bring the fault into line

Time scales for the work to be completed (not less than \_\_\_\_\_days)

**Emergency \_\_\_\_\_ Notice:**

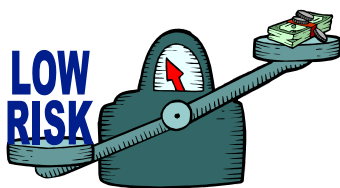
Where there is imminent risk to health

Premises shut down immediately

Must display notice on front door of the property

Must go to court to show improvements made

## Food Hygiene (England) Regulations 2005



### Hazard Analysis (HACCP)

Proprietors of food business are required by law to undertake an assessment of the hazards and risks to food safety at every stage of the food handling within their business.

**HAZARD:** anything which has a potential to cause harm

**RISK:** the likelihood of the hazard happening

**CONTROLS:** systems in place to eliminate the hazard or reduce the risk of the hazard

The new regulations came into force on January 1<sup>st</sup> 2006, which applies to all food business activity from primary production through to sale to the end-user (i.e. restaurants, care homes and food shops).

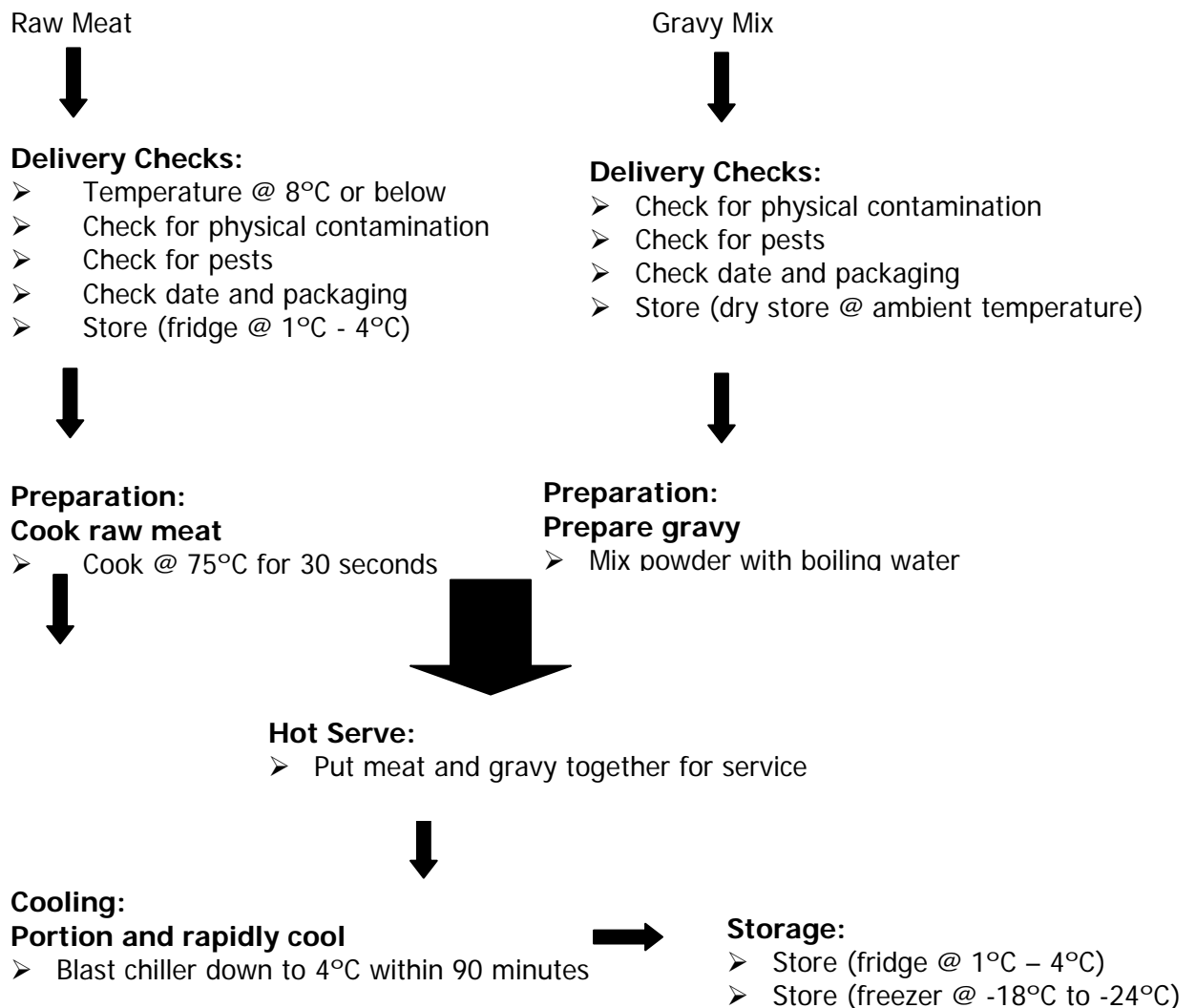
**HACCP is:**

The HACCP system looks at each food group, and records both critical control points and general control points for each stage of the process. It follows all stages from the “back door to the plate”. An easy way to think of it, is as a flow chart – ask yourself “What stages does the food go through within my premises?”

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- Supplies
- Delivery
- Storage
- Preparation
- Cooking
- Cooling
- Reheating
- Service
- Cleaning & disinfection

**EXAMPLE: Meat and Gravy**



**Critical Control Points:**

Points that are critical to food safety; any loss of these controls would lead to an unacceptable risk to health.

CCP = where no further process will render the food safe

The new regulations require us to look at each stage of the whole process, and the Food Standard's Agency has devised a toolkit for small organisations called **Safer Food Better Business**. [www.food.gov.uk](http://www.food.gov.uk)

**Example of the analysis at Delivery Stage:** Deliveries of perishable foods

HAZARD	CONTROLS	DOCUMENTS
Contamination & growth of food poisoning bacteria	<p><b>All deliveries to be checked by a competent person –</b></p> <ul style="list-style-type: none"> <li>➤ <b>Temperatures taken and recorded</b></li> <li>➤ <b>Visual checks for secure packaging</b></li> <li>➤ <b>No signs of pests or spoilage</b></li> </ul>	Delivery temperature check records
Contamination & growth of food spoilage bacteria	<p><b>Random checks of delivery personnel and van</b></p> <ul style="list-style-type: none"> <li>➤ <b>Record findings on temperature delivery sheets</b></li> </ul>	Invoice
Contamination from physical contamination and chemicals	<p><b>Acceptable temperature limits for deliveries:</b></p> <ul style="list-style-type: none"> <li>➤ <b>Chilled fresh foods between 1°C - 5°C (tolerance max 8°C)</b></li> <li>➤ <b>Frozen foods between -15°C - -24°C (tolerance max -12°C)</b></li> </ul>	
Contamination from pests	<p><b>Where temperatures or conditions of goods falls outside of the organisations standards, the Duty Manager must be informed; they will make the decision to accept or reject the goods</b></p> <p><b>Packaging must not:</b></p> <ul style="list-style-type: none"> <li>➤ <b>Be open</b></li> <li>➤ <b>Be marked out of date</b></li> <li>➤ <b>Have broken seals</b></li> <li>➤ <b>Be affected by food pests</b></li> <li>➤ <b>Be contaminated with chemicals</b></li> <li>➤ <b>Damaged in any way - dented/dusty/broken/torn/seals coming away/re-sealed</b></li> </ul> <p><b>Any unfit deliveries to be returned by the Duty Manager</b></p> <p><b>All deliveries to be checked immediately and placed in the correct storage area/equipment</b></p> <p><b>Strict stock rotation must be followed - FIFO</b></p> <p><b>Where goods cannot be received, the delivery personnel must place the deliveries into a suitable cold store</b></p> <p><b>Kitchen managers to contact suppliers where drop in hygiene standards have been identified. Suppliers to receive a copy of the organisations hygiene standards and requirements for suppliers and agree in writing that they will comply to all standards set</b></p>	



Working with your group, for one of the following areas either:

- a) Draw up a flow chart, or
- b) Write the key points of an analysis for a critical control point stage

- Cooking of meat dishes serving hot
- Reheating of soups and sauces
- Cooking of meat dishes and cooling for storage



## Premises & Equipment

The way in which food premises are designed, equipped and operated helps to ensure that food stays safe.

### Suitable for the use:

Food premises must be suitable for the type of food used and the preparation and processes being carried out.

## General Principles of Design

### To eliminate cross contamination

1. separation of clean and dirty activities
2. separation of \_\_\_\_\_ and \_\_\_\_\_
3. linear workflow
4. safe \_\_\_\_\_ of waste
5. easy to \_\_\_\_\_ and \_\_\_\_\_
6. \_\_\_\_\_ of \_\_\_\_\_



## Utensils and Equipment

The best materials for utensils and equipment are:

## Cleaning & Disinfection

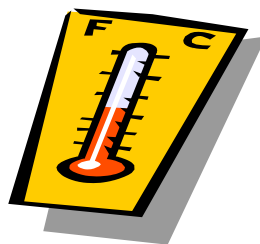


Customers expect food premises to be **CLEAN** and the food prepared hygienically. Clean and tidy workplaces create a good impression as well as helping to maintain a safe and pleasant environment for everyone.

The law demands that food premises are kept clean and disinfected, to keep food safe. Surfaces should be smooth, easy to clean and non-porous

**Cleaning:** Removes dirt, grease and debris

It involves three types of energy:



You could just clean a floor surface, but all other surfaces and vehicles must be both cleaned and disinfected.

**Disinfection:**                      **Reduces bacteria to a safe level**

Achieved by:

Hot water - 82°C for 30 seconds

Steam

Chemical disinfectant

You must clean and disinfect all bacterial vehicles – cloths, equipment, utensils, food contact surfaces, hand contact surfaces, hands

**Sanitizer:**                              **Both cleans and disinfects at the same time**

**Sterilization:**                      **Kills bacteria and spores**

Achieved by:

Water +100°C

Chemical sterilizer

All hand to mouth contact items must be sterilized – crockery, glasses, and cutlery.

Dishwashers are used, if not available a double sink method must be used.

**Six Stages To Cleaning & Disinfection:**

- 1.
- 2.
- 3.
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- 5.
- 6.

**Organising Cleaning & Disinfection:**

A cleaning schedule provides an organised system for recording **When, How, and Who** should carry out cleaning and disinfection tasks.

The schedule should include what is to be cleaned, when, how, signature of cleaner.

Health & Safety training must always be provided, especially COSHH



**Working with your group, select an area of the food premise to be cleaned and disinfected and write a short cleaning schedule.**

# Pest Control

## Definition of a pest:

Any creature that lives on or off of human's food, causing damage or contamination or both.

There are three main groups of pests:

1. Rodents
2. Insects
3. Birds



The costs and possible problems of pest infestation are immense to an organisation:

- Waste of food product
- Damage to \_\_\_\_\_
- Damage to \_\_\_\_\_
- \_\_\_\_\_ contamination
- \_\_\_\_\_ contamination



Working with your group, complete the chart below identifying signs of infestation and controls.

Pest	Signs	Controls
Rodents		
Insects		
Birds		





<b>Ears, nose, mouth</b>	
<b>Jewellery</b>	
<b>Make-up</b>	
<b>Smoking</b>	
<b>Protective Clothing</b>	
<b>Reporting Illness</b>	
<b>Training &amp; Supervision</b>	