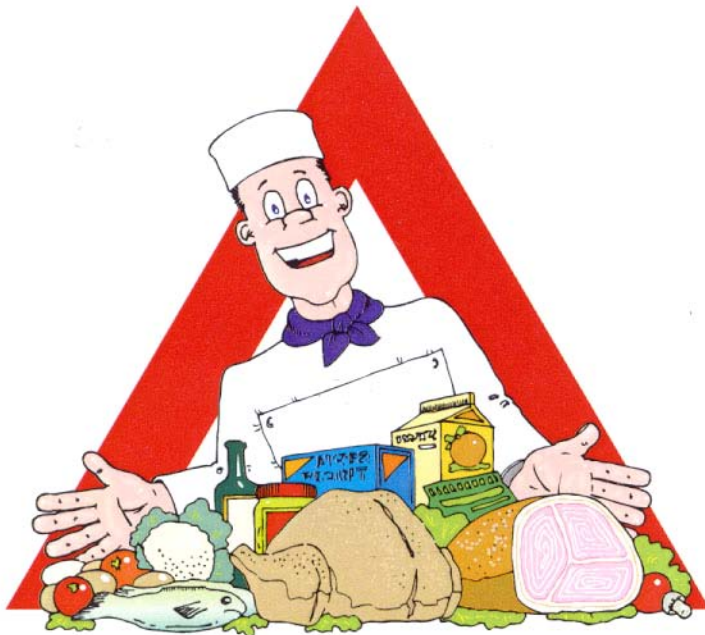


Course In Food Hygiene



Dr. Renald Blundell

The long history of
foodborne illnesses
continues and
is caused by
unsafe practices



Symptoms of Food Poisoning

- nausea
- vomiting
- diarrhoea
- stomach pain
- dehydration

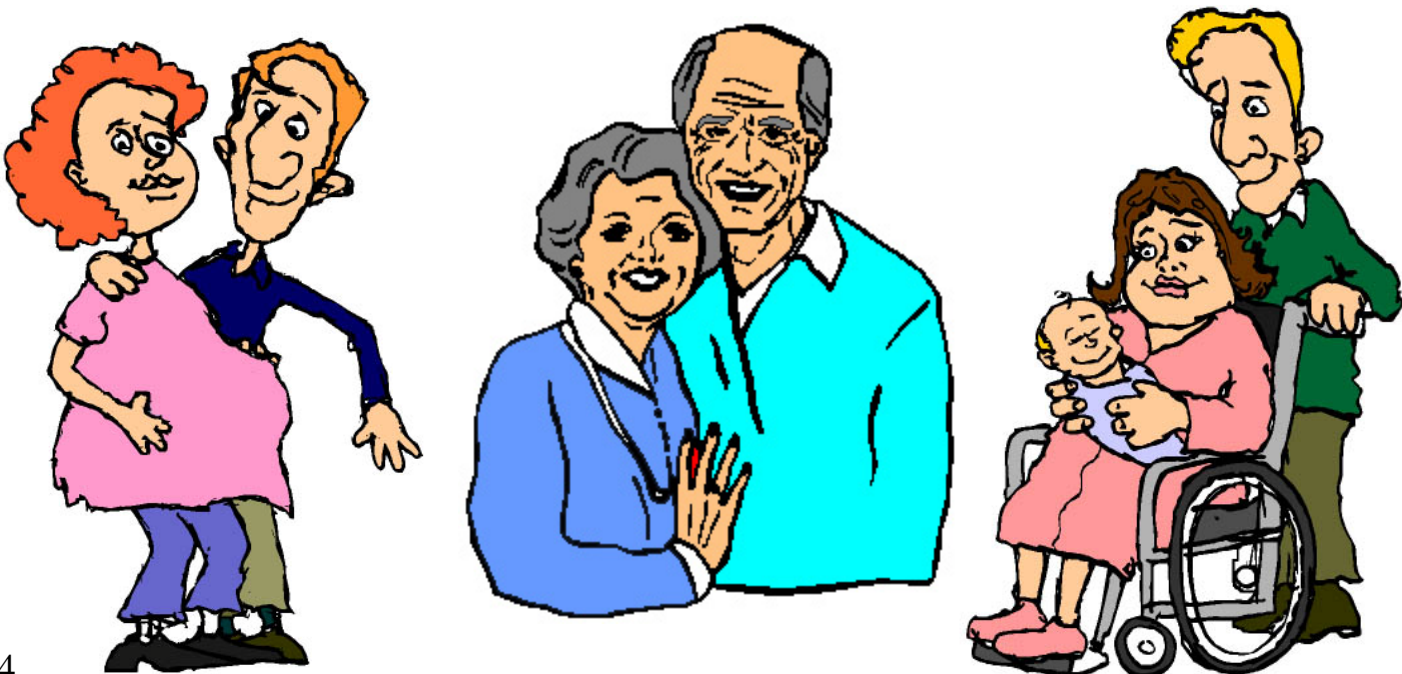


We are all 'at risk'
of food poisoning

BUT

some groups are more
vulnerable and could suffer
serious outcomes:

- infants
- pregnant women
- elderly people
- people with weakened immunity



Contamination of Food - Hazards to Consumers

- **Biological**

- *Bacteria and their toxins and viruses*

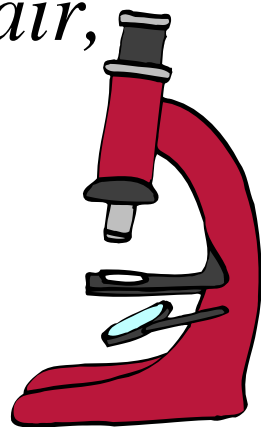
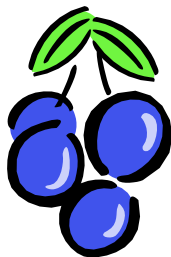
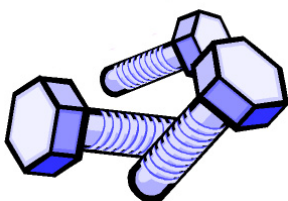
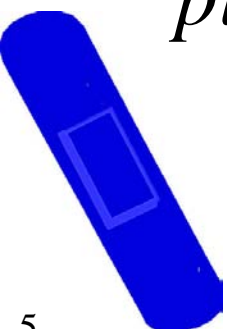
- **Chemical**

- *Chemical poisons and other poisons like insecticide*

- *Poisonous plants and poisonous toadstools*

- **Physical**

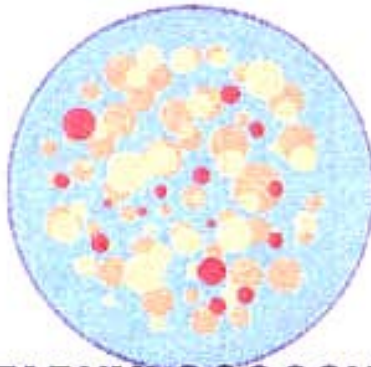
- *Undesirable substances in food like fragments of glass, stones, hair, pieces of metal...*



Food Poisoning Bacteria As Seen Through a Microscope



**CLOSTRIDIUM
PERFRINGENS**



**STAPHYLOCOCCUS
AUREUS**



CAMPYLOBACTER



**BACILLUS
CEREUS**



**SALMONELLA
SPECIES**



E. COLI

Conditions for Bacterial Growth

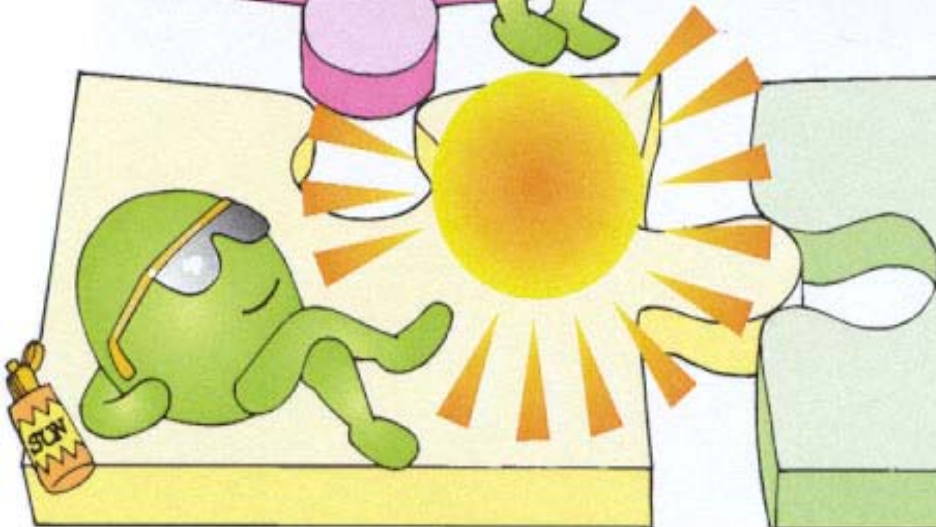
FOOD



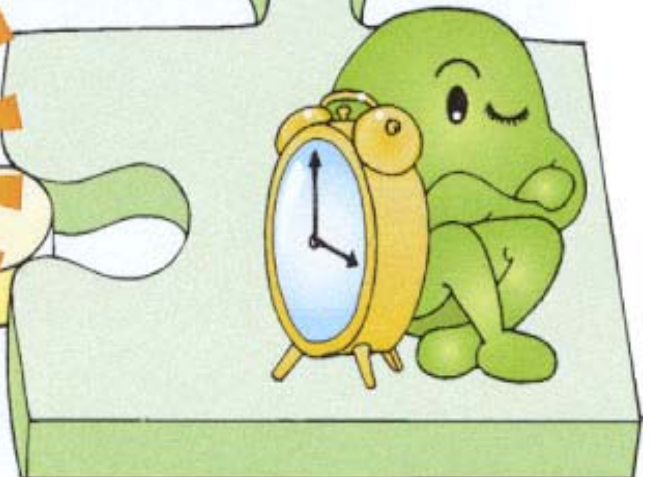
MOISTURE



WARMTH

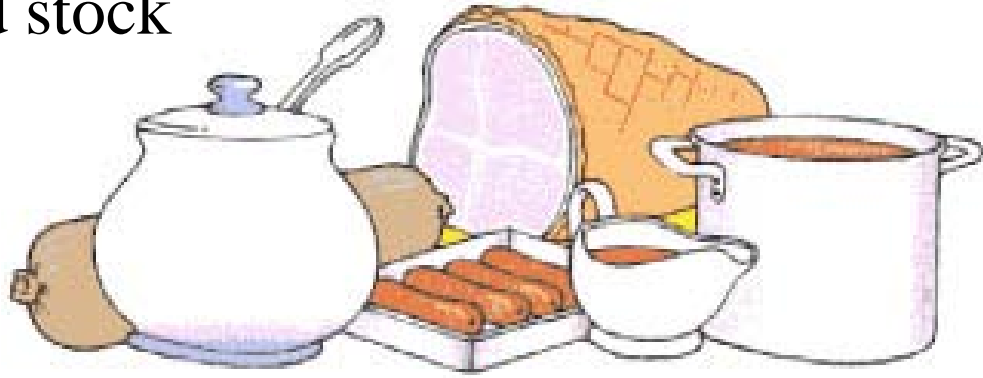


TIME



High Risk Foods

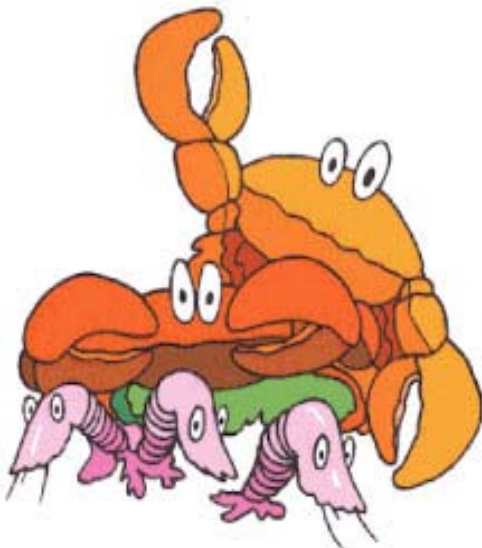
Cooked meat and poultry; cooked meat products; gravy, soup and stock



Milk and eggs and products made from them

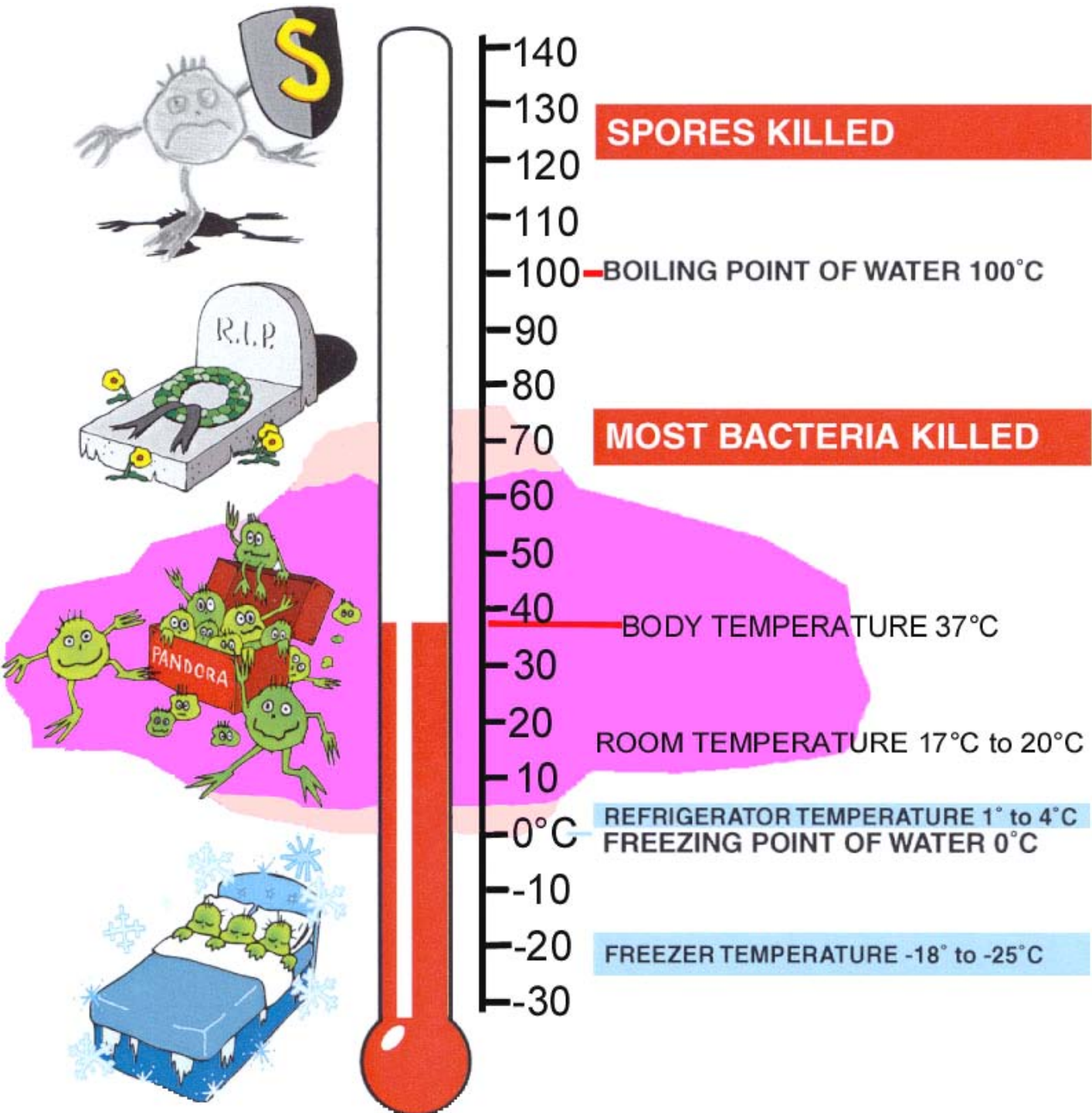


Cooked rice

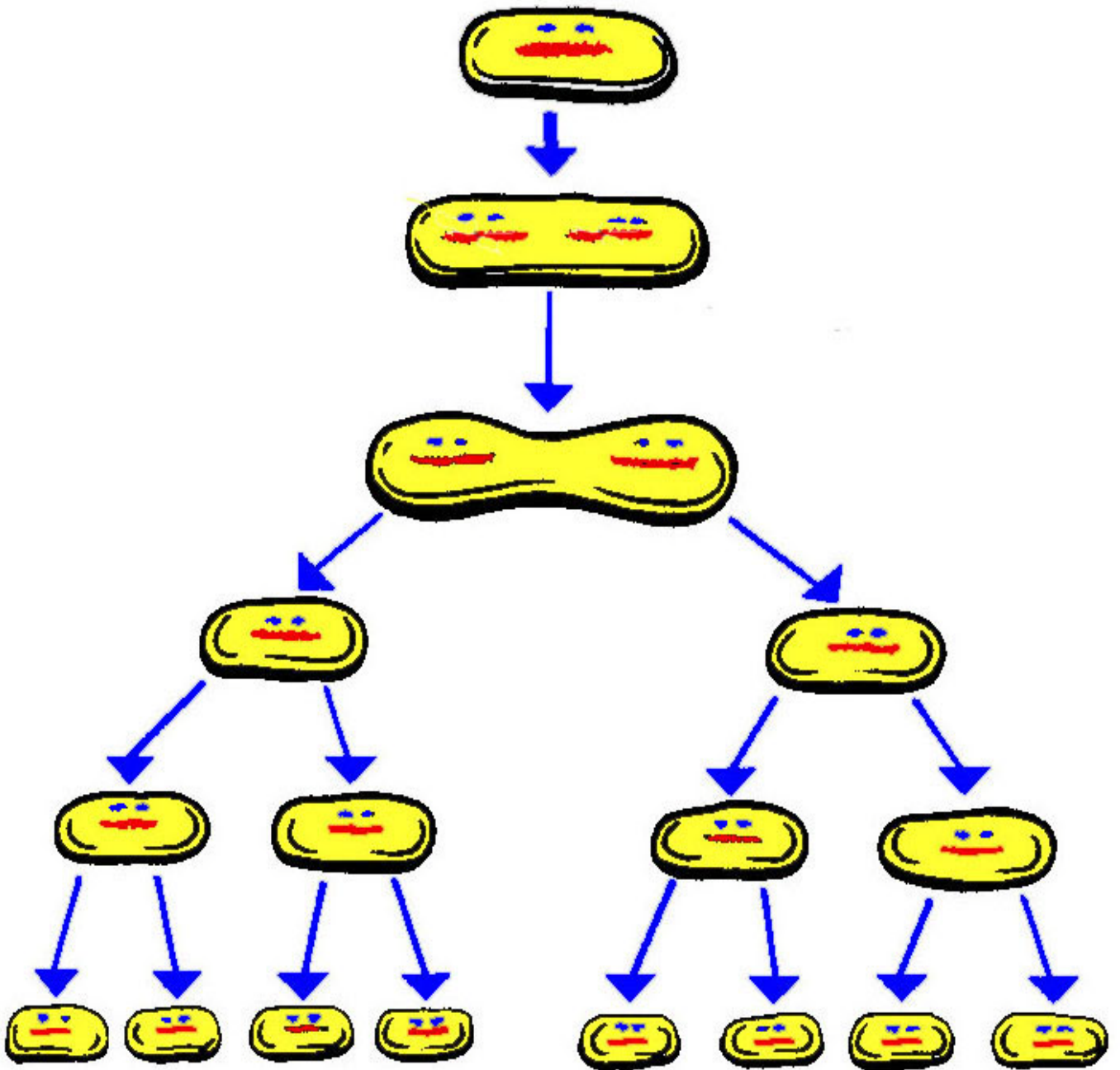


Shellfish

Temperatures and Bacterial Growth

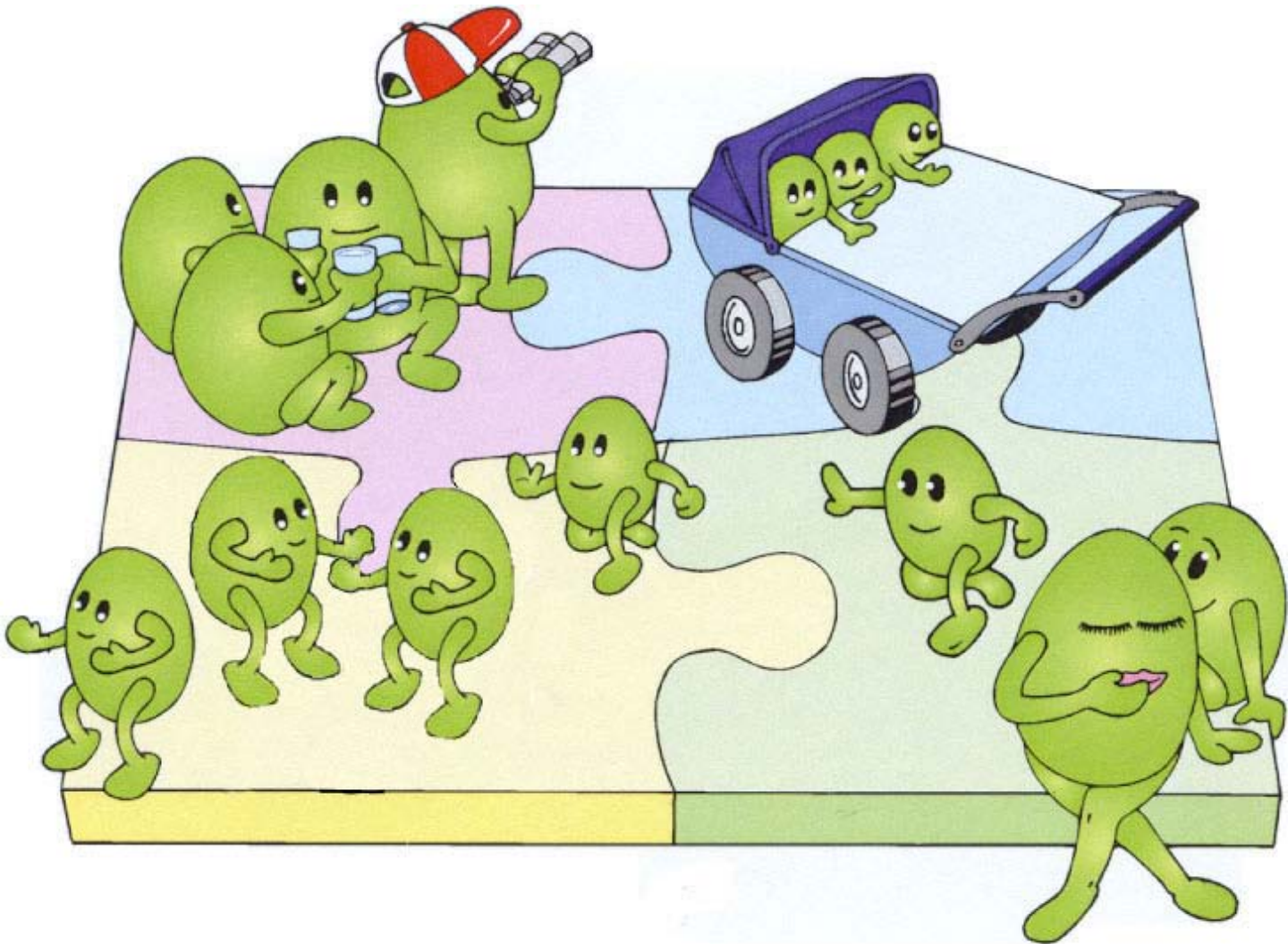


Binary Fission



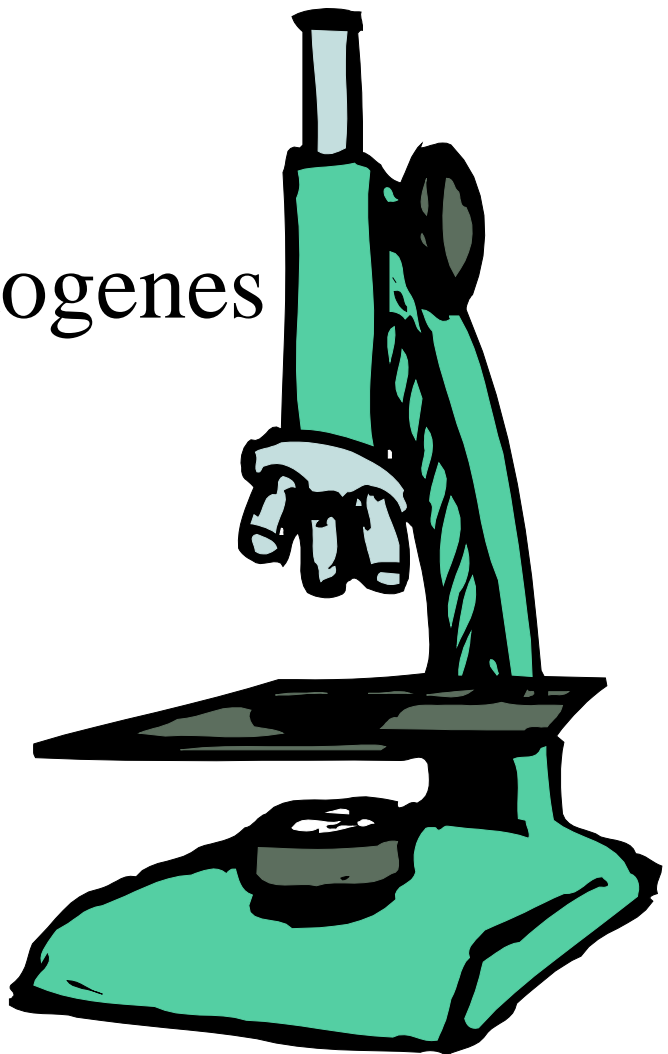
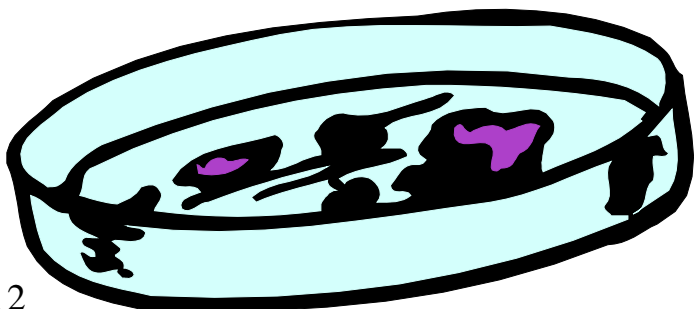
Under the right conditions, each bacterial cell can multiply as quickly as once every 10-20 minutes

Bacteria will multiply rapidly when the conditions for growth come together

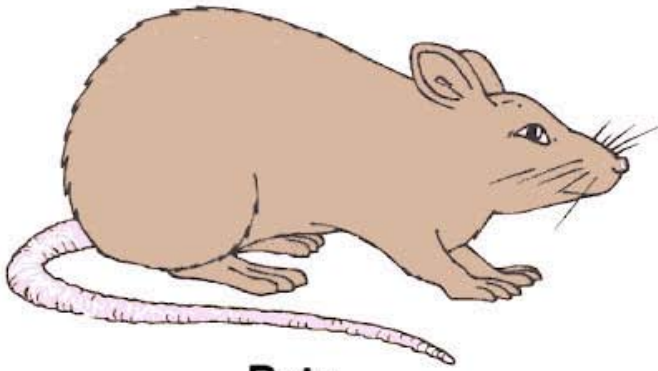


Names of Common Food Poisoning Bacteria

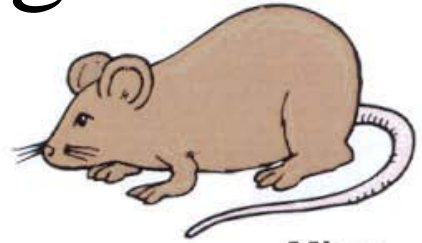
- Salmonella
- Clostridium perfringens
- Staphylococcus aureus
- Bacillus cereus
- Campylobacter
- Listeria monocytogenes
- E.coli



Sources of Food Poisoning Bacteria



Rats



Mice



Flies

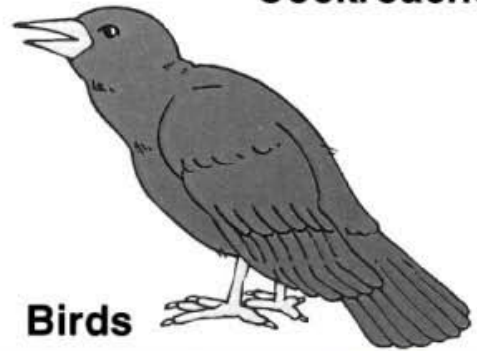


Cockroaches

Raw meat, poultry and eggs



Shellfish



Birds



Waste food and dirt



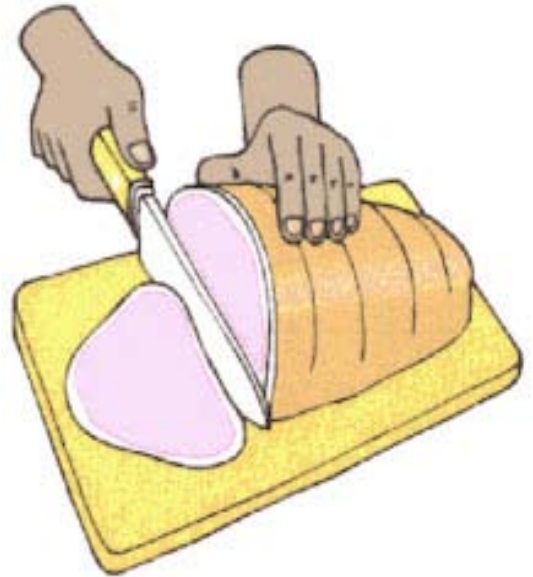
Human handlers

Ways in which bacteria from food handlers can enter food



And other 'horrible habits' such as tasting food with fingers, biting fingernails, eating while preparing food... need we say more?

Ways in which harmful bacteria get into food...



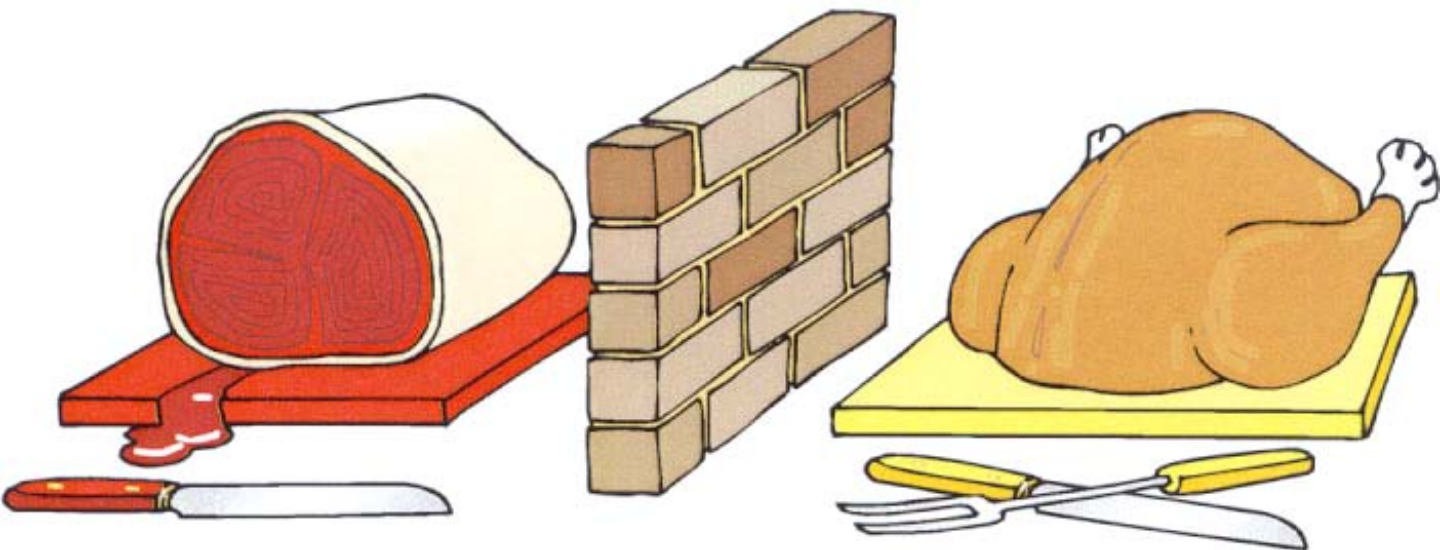
...from your gut due to handling food after using the toilet without washing your hands



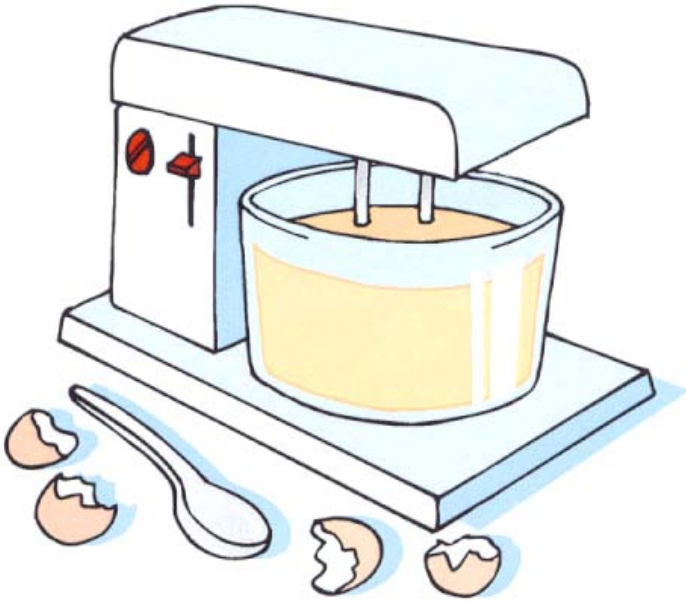
... or from handling cooked food without washing your hands after preparing raw food

Food-to-food contamination

The transfer of food poisoning bacteria
from contaminated food to an
uncontaminated (clean) food -
most frequently from
raw to cooked food

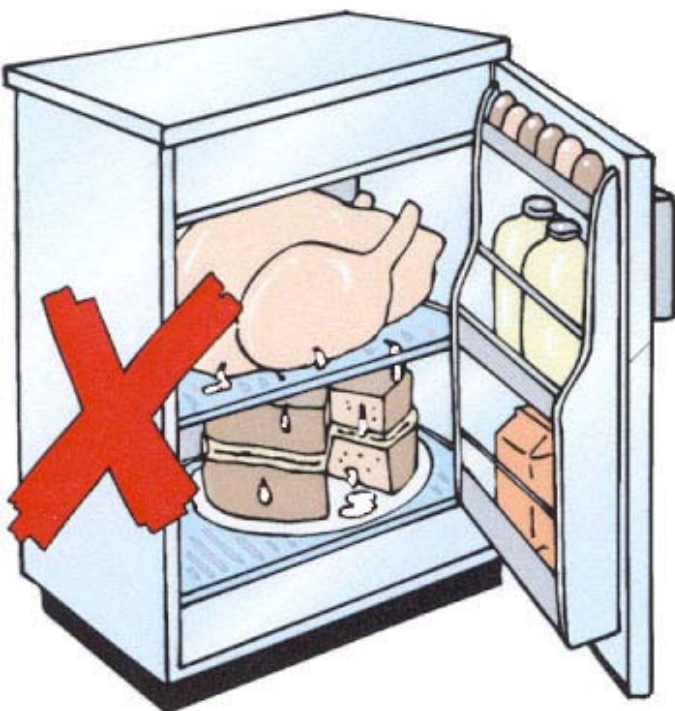
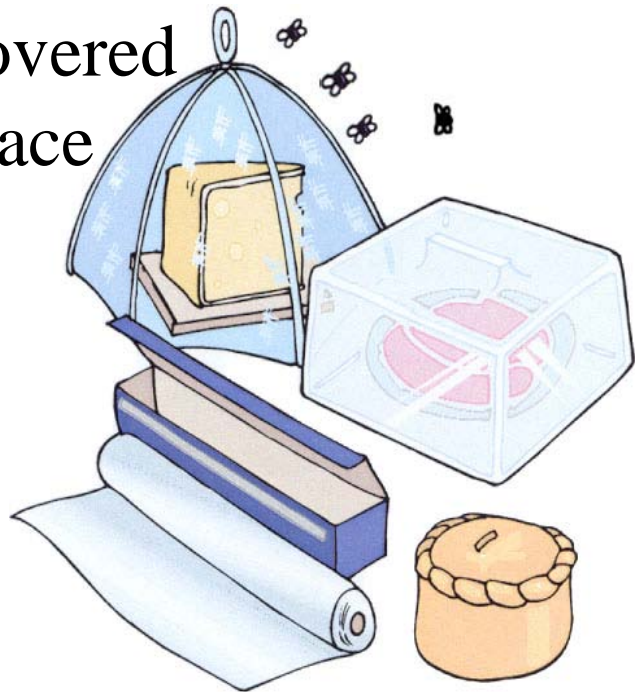


Other Ways of Contaminating Food



Equipment-to-food contamination

Flies, waste food and uncovered food left out in a warm place



Bad storage in the fridge

Good Hygiene Practice

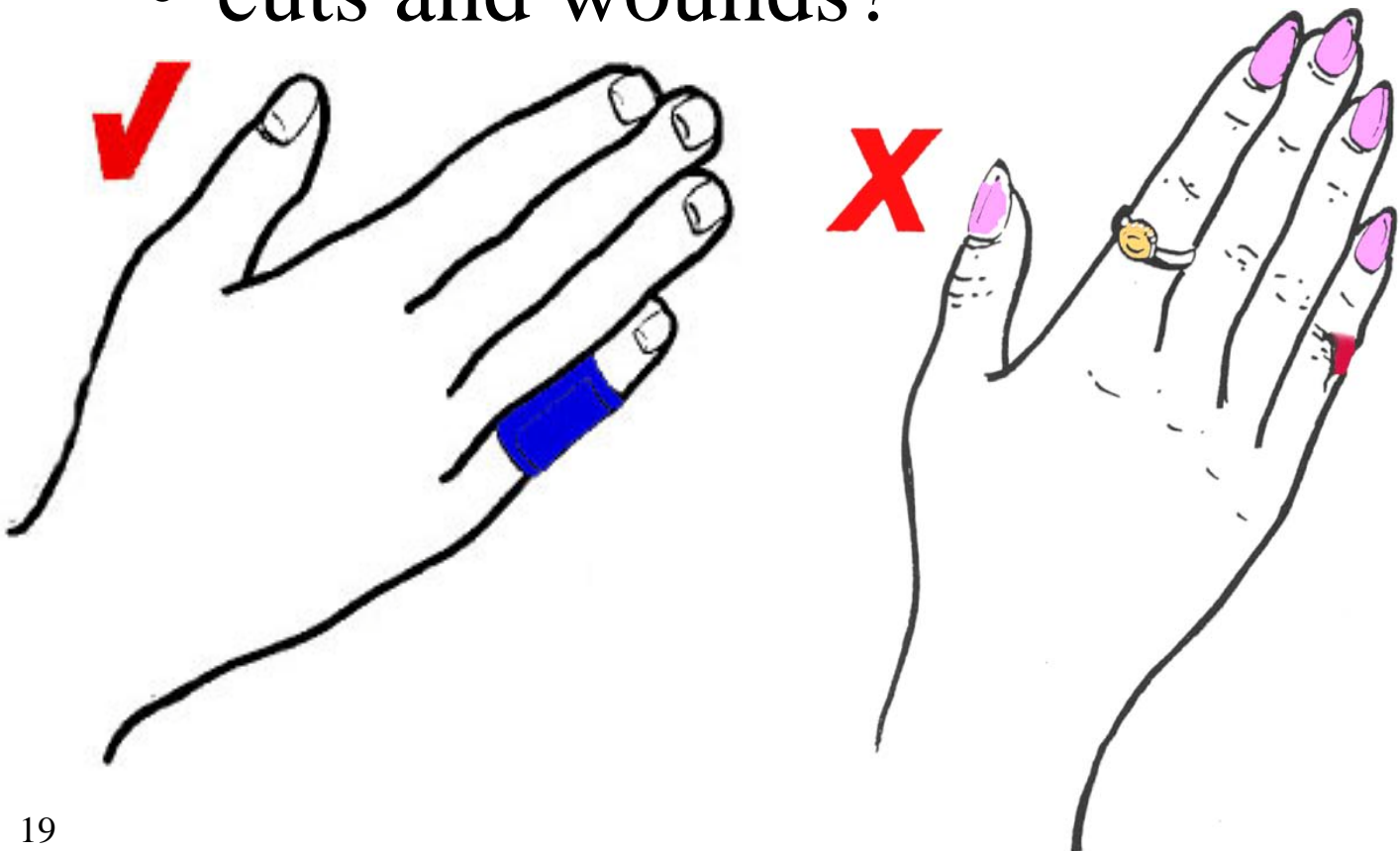
- wherever possible you must avoid handling food with your bare hands
- whenever it is possible to do so, you should use clean gloves, tongs or other utensils



Safe Hands or Hazardous Hands?

What are your opinions on:

- dirty hands?
- long nails?
- nail varnish and false nails?
- jewellery?
- cuts and wounds?



Hand-washing



Requirements for hand-washing:

- washbasins
- hot and cold (or appropriately mixed) water
- materials for cleaning the hands
- materials for hygienically drying hands



Always wash your hands



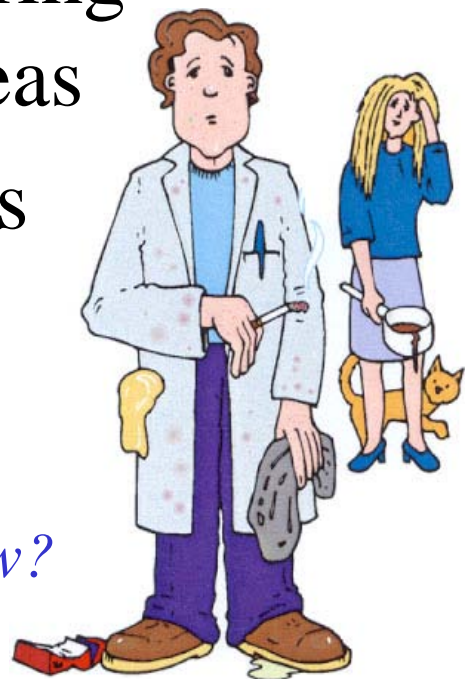
- before handling food
- after using the toilet
- after handling raw foods
- after cleaning
- after handling rubbish
- after blowing your nose or coughing/sneezing into your hands
- after a break
- and when they look dirty!



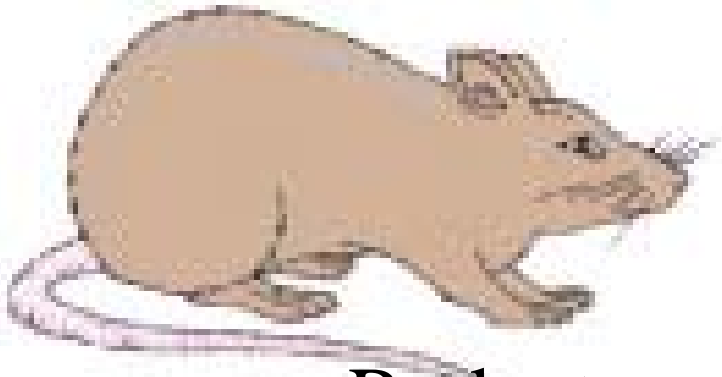
Good Hygiene Practice - Protective Clothing

- you should wear a suitable head covering which prevents hair falling into food
- you must wear the overclothing provided by your employer
- wearing overclothing is only effective if it is kept clean and always worn on entering the food handling areas
- follow company rules on 'barrier hygiene'

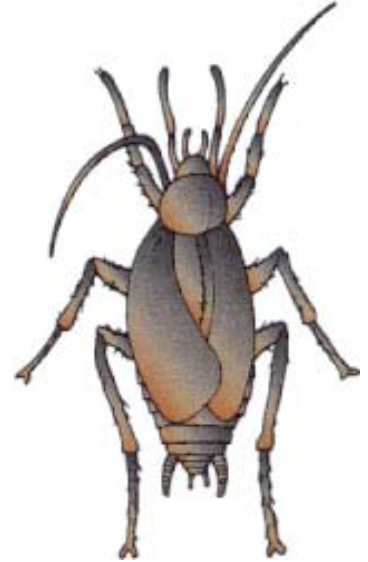
Someone you know?



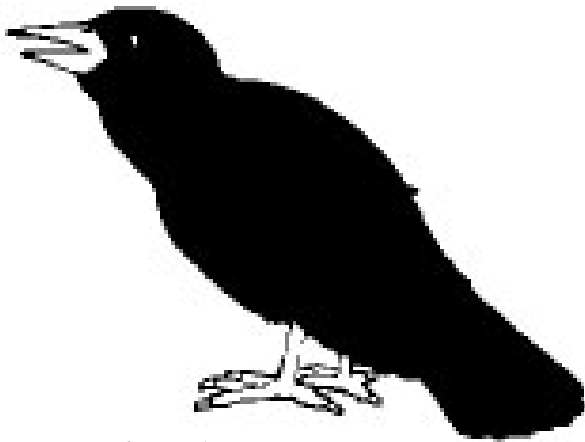
Common Pests



Rodents



Cockroaches



Birds



Flies

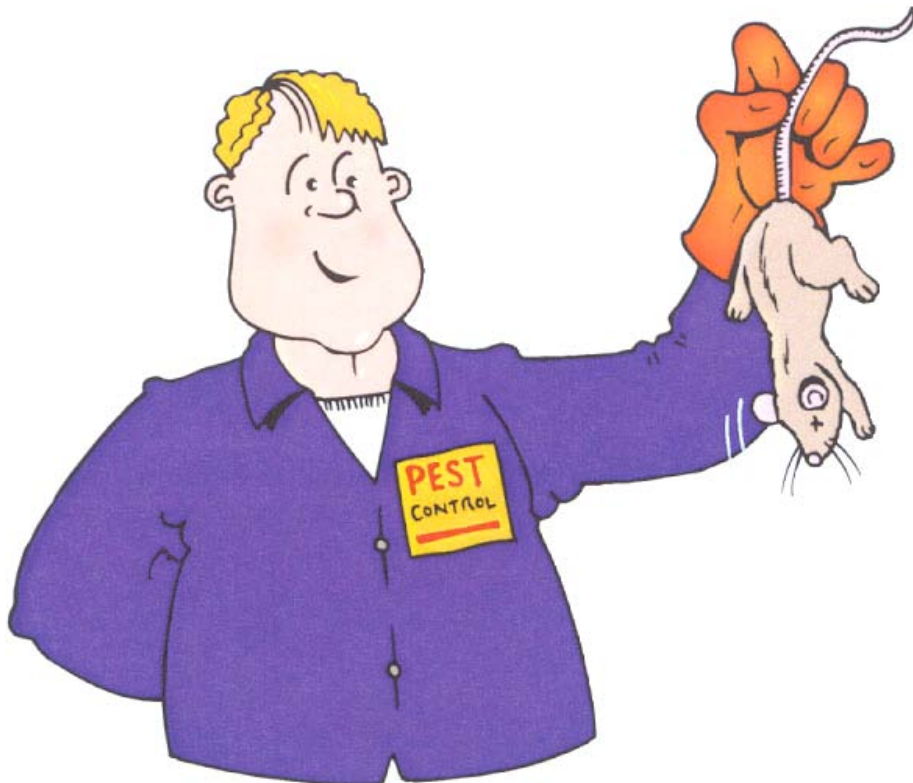


Domestic Pets

Pest Control

3-point strategy:

- preventing access
- denying pests favourable conditions
- reporting signs of pests



Preventing Access

- keep doors and windows closed
- use fly screens on windows
- check deliveries for pests
- find the ways by which pests gain access then prevent entry



Finding Pests

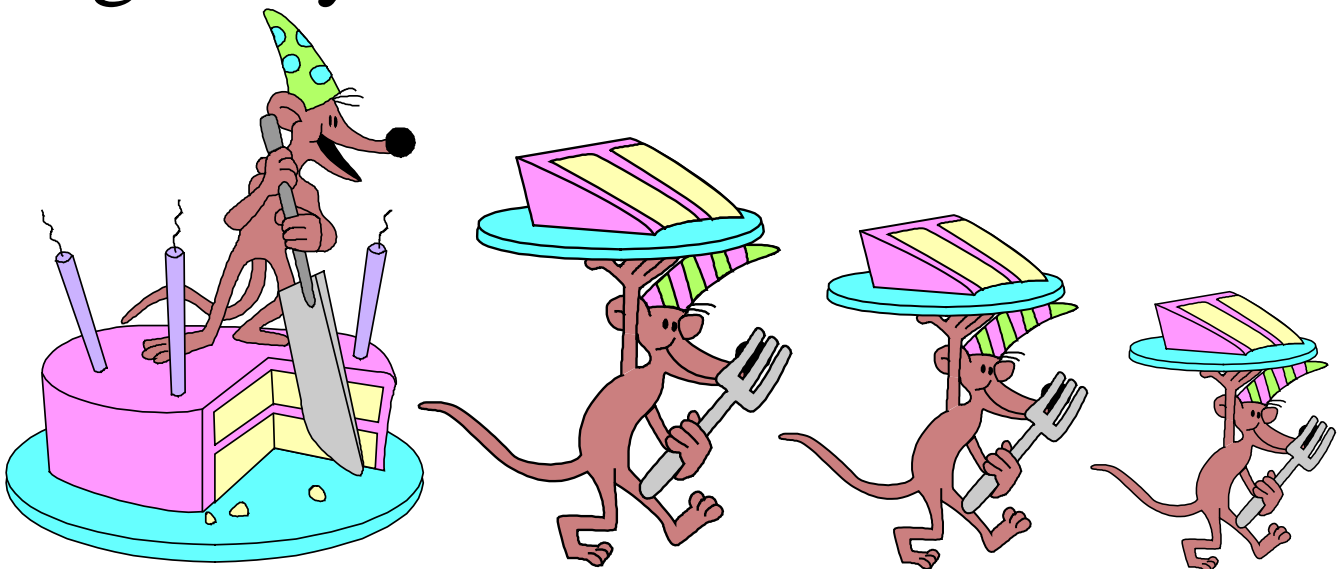
Always look for the following *signs*:

- droppings and greasy trails
- marks on food
- small mounds of food debris
- nibbled wrappings, holes in cardboard containers or pecked milk tops
- pest carcasses
- unusual smells and noises
- damage to woodwork
 - mice and rats gnaw

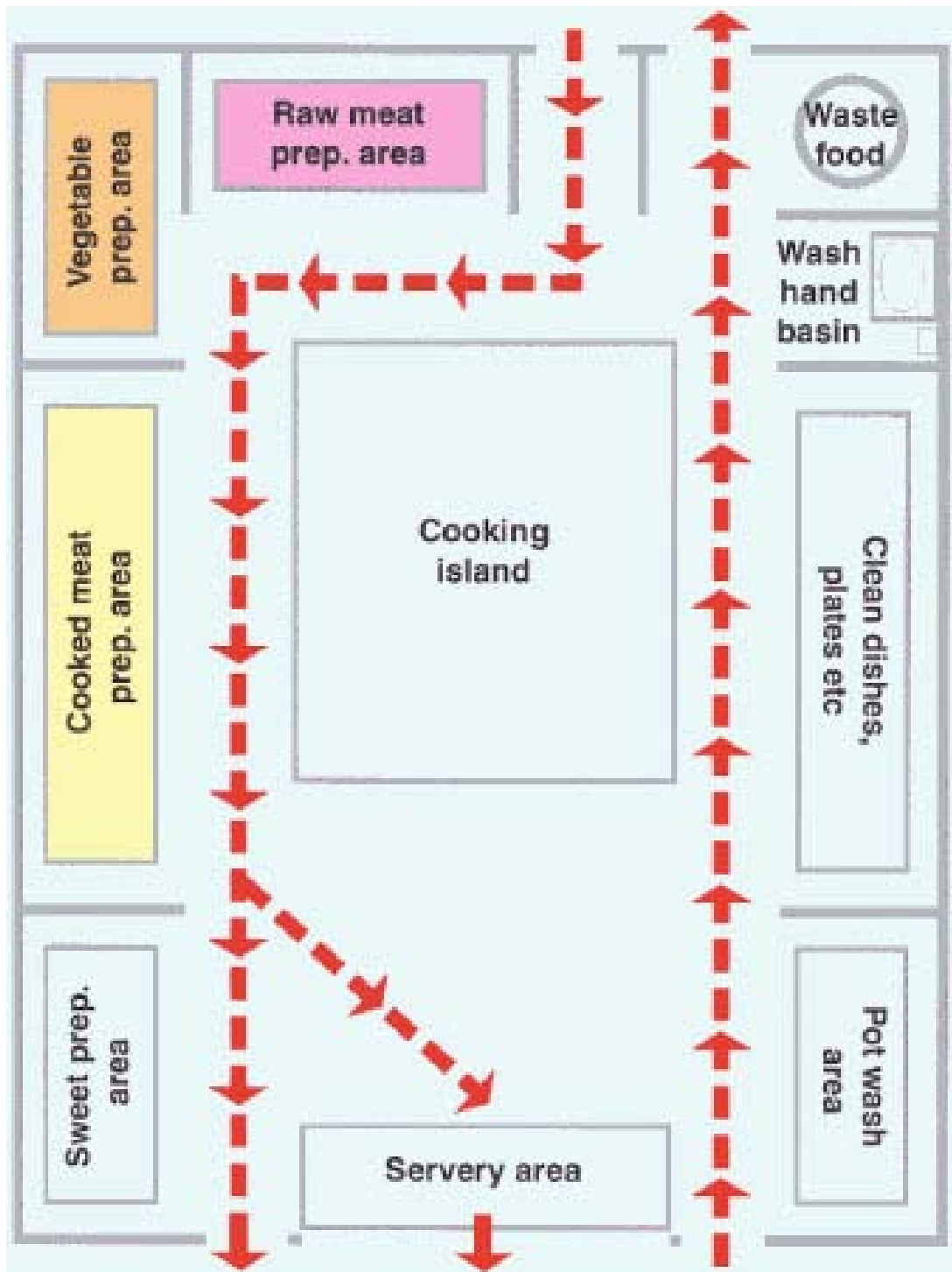


Denying Pests Favourable Conditions

- clean-as-you-go
- keep utensils and equipment clean
- cover any food that needs to 'stand out'
- do not leave food out overnight
- store foods properly
- regularly check all food storage areas
- regularly remove rubbish



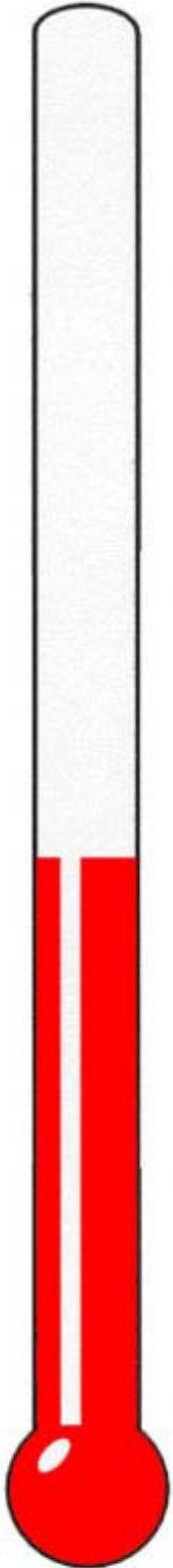
Example of the Layout of a Hygienic Catering Kitchen



Separation of 'clean' and 'dirty' areas

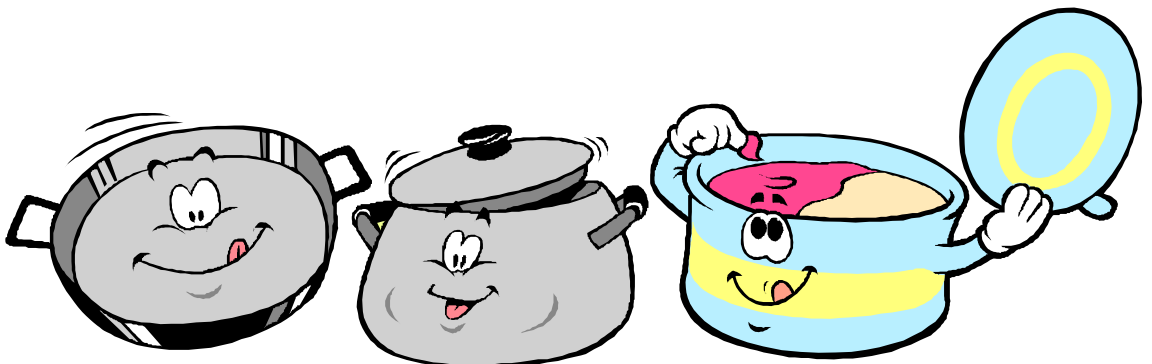
Significant Temperatures

- **121°C** - temperature which is needed to kill spores
- **at least 70°C for 2 minutes** - recommended temperature for reheated foods and the temperature required to ensure thorough cooking of food
- **63°C** - minimum temperature at which cooked foods must be kept hot until serving
- **37°C** - temperature at which most bacteria can grow very quickly
- **5°C- 63°C** - Temperature Danger Zone
- **1°C - 4°C** - temperature range for a refrigerator
- **-18°C to -25°C** - temperature range for a freezer



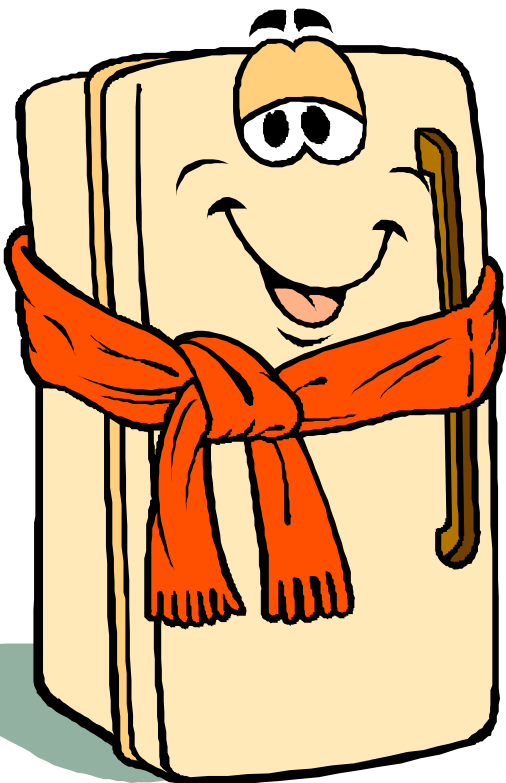
Re-heating Food

- keep food refrigerated until you reheat it
- handle as little as possible
- divide into small portions
- heat thoroughly to a high core temperature - the food should be 'piping hot'
- serve immediately
- throw away any leftovers



How Safe is Your Fridge?

- store raw and cooked foods in separate units if possible or raw foods *below* cooked foods
- no hot food in the fridge - cool it quickly within 90 minutes
- cover all food
- don't overload the fridge
- check the temperature is 1°C - 4°C
- keep the door closed as much as possible
- keep the fridge clean and defrosted

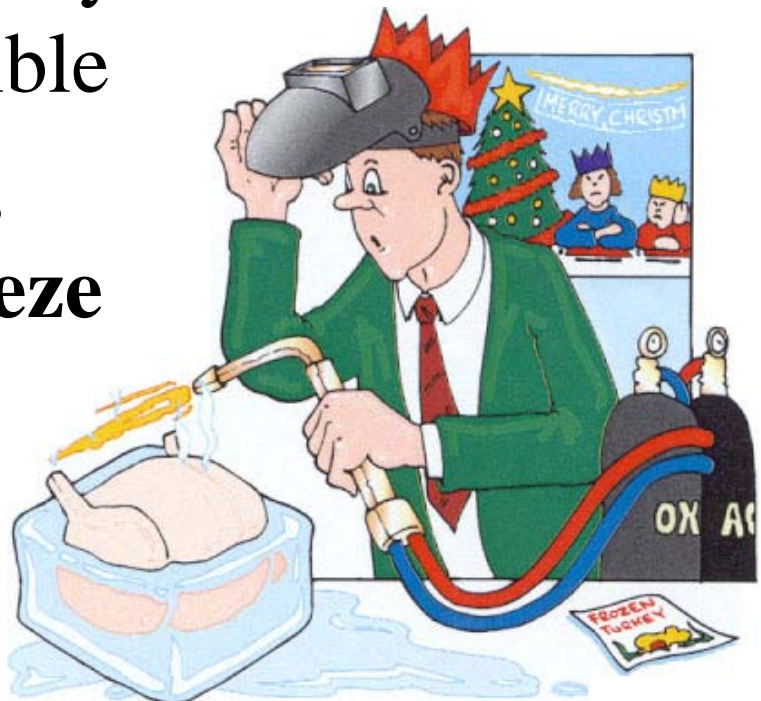


TEMPERATURE RECORD SHEET
Raw Meat Refrigerator No. _____
Temperature range 1°C - 4°C
Date Time °C Comments Signature

TEMPERATURE RECORD SHEET
Raw Meat Refrigerator No. _____
Temperature range 1°C - 4°C
Date Time °C Comments Signature

When Thawing Raw Meat and Poultry:

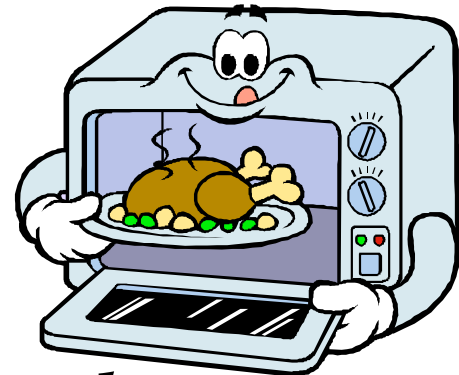
- plan well ahead
- place the frozen food in a container
- cover thawing food
- avoid cross-contamination from thawing food
- thaw completely and cook as soon as possible
- once thawed, **never re-freeze**



Microwave Cooking

The main *food hygiene hazards* relate to **insufficient or uneven heating of food:**

- domestic microwave ovens are not suitable for commercial catering - commercial models are designed to withstand continuous use
- beware of hot/cold spots in food - if necessary, turn, stir or rearrange food during cooking
- follow manufacturer's instructions for safe thawing
- allow sufficient 'standing time' to ensure even heat distribution
- ensure food is thoroughly cooked or reheated before serving



Also be aware of *health & safety hazards:*

- use suitable containers (not metal) and cover food to maintain moisture
- some foods should be pricked to allow steam to escape during cooking or they will burst (e.g. jacket potatoes)
- do not allow liquids to superheat

Dry Stores

- storage areas should be cool, dry, clean and ventilated
- check deliveries on arrival
- store food off the floor
- follow date-marks and rotate stock: first in, first out (FIFO)
- keep food covered
- do not use damaged tins
- dispose of unfit food safely
- check storage areas regularly





Types of Cleaning

Clean-as-you-go

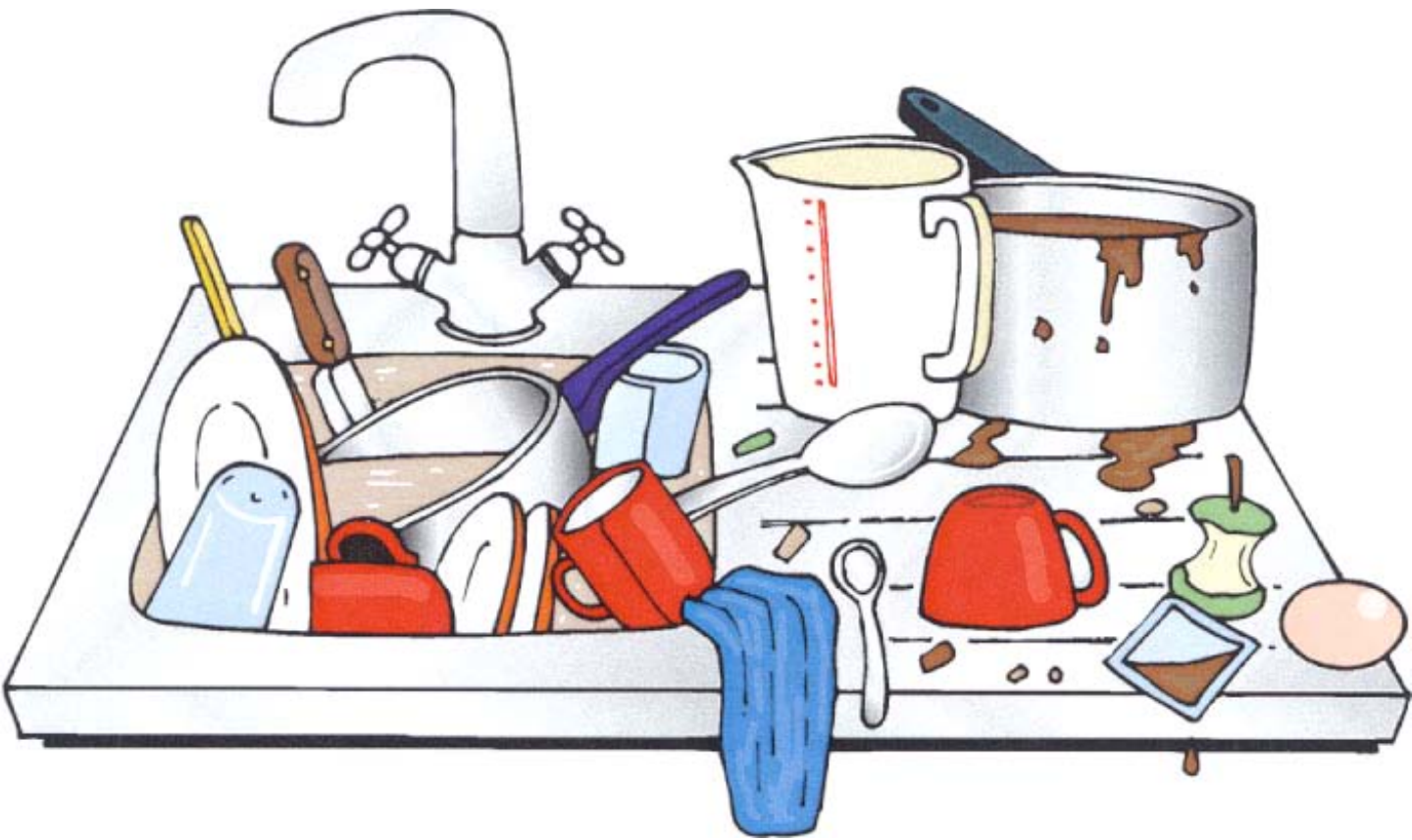
Scheduled cleaning

Cleaning-in-place

Cleaning-out-of-place



You Must Clean-as-you-go



You must remember that cleaning is
a very important part of any food
handler's work and is

YOUR RESPONSIBILITY

Working surfaces and equipment used for preparing food must be thoroughly cleaned to avoid contamination...



...and remove rubbish regularly

Cleaning and Disinfection Chemicals

- detergents
- disinfectants
- sterilisers
- sanitizers



Rules for Using Cleaning Chemicals

- follow the manufacturer's instructions
- use fresh, hot solutions
- wear protective clothing if necessary
- store chemicals safely
- **NEVER** mix chemicals



Prevention of Contamination of Food by Food Handlers

Food handlers must:

- avoid exposing food to the risk of contamination
- report if suffering upset stomachs, colds or coughs
- keep cuts covered with suitable waterproof dressings
- not smoke or spit in the food area
- keep themselves and their protective clothing clean



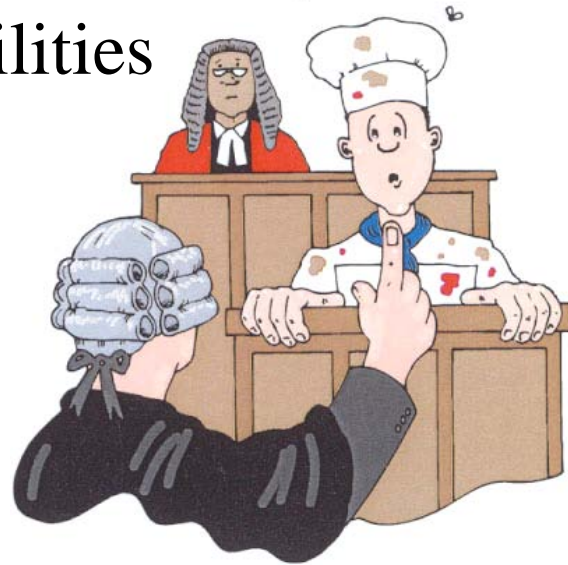
Food Premises

A food business must not be carried on in insanitary premises

- large fines and even imprisonment for breaking the law

Proprietors and owners must ensure that premises are:

- registered with the local authority
- properly maintained
- adequately supplied with clean water
- well lit and well ventilated
- provided with suitable facilities for washing utensils, equipment and food
- supplied with suitable facilities for personal hygiene
- equipped with first aid materials



Introduction to Food Safety Management Systems

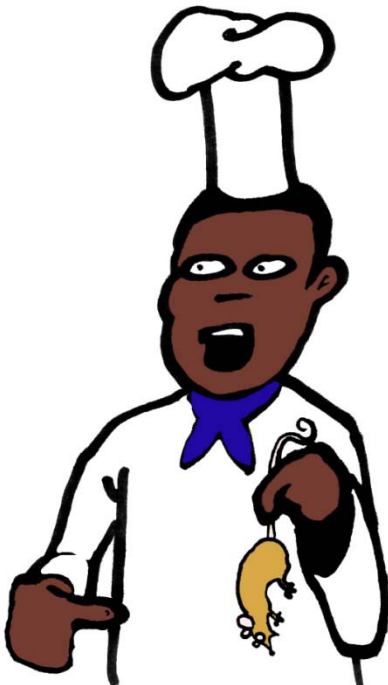
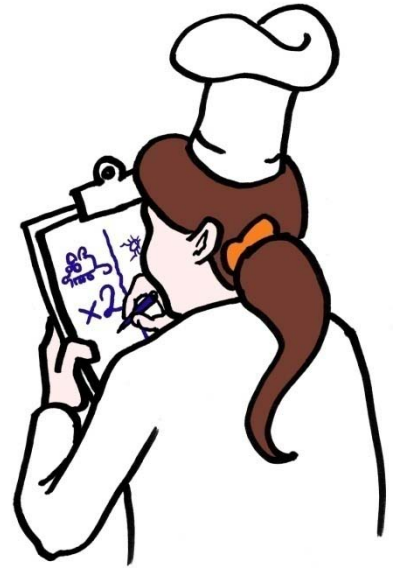
- It is the management's responsibility to introduce a **WRITTEN** food safety management system, but *all* food handlers must follow the procedures to prevent hazards from reaching consumers
- Systems must be based on **HACCP** principles - *Hazard Analysis Critical Control Point*
- Important stages in such systems include:
 - ✓ identifying potential hazards (biological, physical, chemical)
 - ✓ identifying **CRITICAL CONTROL POINTS** at which it is essential to control the safety of food
 - ✓ introducing procedures to reduce or eliminate hazards
 - ✓ monitoring procedures to check that the controls are working adequately
 - ✓ taking corrective action if problems occur
 - ✓ reviewing and updating the system as necessary
 - ✓ recording processes and procedures

Monitoring, Recording and Reporting



Monitoring

Recording



Reporting



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