



FOOD
HANDLER'S
HANDBOOK

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FOREWORD

This handbook contains basic information that a food handler needs to know for the proper and hygienic handling, preparation, storage and cooking of food for sale to the public. Food handlers should put these information into practice to ensure that the food for sale is safe for consumption.

This handbook also serves as a useful reference for persons not involved in the food retail business but who wish to know more about safe and good food hygiene practices.

The content of this handbook as well as other food safety educational materials can also be viewed at NEA website: www.nea.gov.sg

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The Importance of Good Food Hygiene

1

1.1 Food hygiene refers to all conditions and measures necessary to ensure that food is safe and wholesome for human consumption.

1.2 If good food hygiene practices are not followed, the food may get contaminated and spoilt, and people eating such food may come down with foodborne illnesses.

This may result in:

- a. Pain and distress to the patrons
- b. Bad reputation for the business and subsequent loss of revenue
- c. Legal action and penalties

2

Foodborne Illnesses

2.1 Foodborne illnesses are caused by the consumption of contaminated food or water which contains substances harmful to the body. Such harmful substances that can cause foodborne illnesses include:

- a. Micro-organisms (germs) and their toxins
- b. Chemicals and metals
- c. Poisonous plants, fish and naturally-occurring compounds (e.g. Cassava, puffer fish, kidney beans) or
- d. Parasites

2.2 Onset of foodborne illnesses may range from a few hours to days after consuming the contaminated food and can be classified into 2 categories namely, Food Poisoning and Foodborne Diseases.

- a. Food Poisoning – describes foodborne illnesses that are caused by consuming contaminated food which subsequently lead to symptoms such as vomiting and/or diarrhoea which may at times lead to shock and even death in acute cases.
- b. Foodborne Diseases – describes foodborne illnesses that occur after consuming food that has been contaminated with a known causative agent (i.e. Micro-organisms (germs) and their toxins, parasites etc.).

2.3 Germs are very tiny and cannot be seen with the naked eye. Examples include bacteria, viruses, fungi/moulds and protozoa.

Germs can be found:

- a. On our hands, nose, hair and skin
- b. On the bodies of insects (e.g. flies and cockroaches) and rodents (e.g. rats)

- c. On the bodies of animals (e.g. cats and dogs)
- d. In human and animal wastes
- e. In raw food (e.g. meat, poultry, milk, egg, shellfish, vegetables and rice)

Some germs produce toxins inside the food while some cause the food to spoil faster.

Fast Fact 1

Bacteria require food, warmth, moisture and time to grow and multiply.

Given the right conditions, bacteria multiply very quickly. In 7 hours, a single bacterium may increase to over 2 million bacteria!

2.4 Chemicals such as insecticides, pest baits, methyl alcohol and heavy metals such as lead may contaminate food and cause foodborne illness.

2.5 Poisonous plants and fish/seafood and other naturally-occurring compounds such as certain types of wild mushrooms and thunder crabs can cause foodborne illness.

2.6 Humans can become infected with parasites such as tapeworms and *Toxoplasma gondii* if they consume undercooked meat or untreated water, or by not washing their hands after handling their pets.

2.7

Examples of common foodborne illnesses are:

- a. Hepatitis A
- b. Campylobacteriosis
- c. Salmonellosis
- d. *Escherichia coli* food poisoning
- e. *Staphylococcal* food poisoning
- f. *Vibrio parahaemolyticus* food poisoning, and
- g. *Clostridium perfringens* food poisoning

2.8

There are certain types of foods which are commonly associated with the above foodborne illnesses. These are referred to as high risk foods, and extra precautions should be observed when preparing and handling these foods.

Examples of high risk foods include:

- a. Meat and meat-based products (e.g. gravies, stews, soups and stocks)
- b. Poultry
- c. Shellfish and seafood (e.g. oysters, raw fish, prawns and mussels)
- d. Dairy products (e.g. milk, cream and cheese)
- e. Eggs and egg-based products (e.g. mayonnaise, cake frosting)
- f. Ready-to-eat foods (i.e. foods which do not require further preparation before being consumed)

Ready-to-eat foods such as salads and cut fruits are considered high risk foods because they do not undergo further heat treatment such as cooking or microwaving. This means that if the food has been contaminated with bacteria or other causative agents, these bacteria will not be destroyed before the food is being served to the consumer.

To prevent foodborne illness, you must practise good food and personal hygiene. The rest of this handbook will guide you in preparing your food hygienically.

Below is a list of good practices and control measures necessary to keep your food clean and hygienic:

- a. Practise good personal hygiene
- b. Avoid cross-contamination. Cross-contamination is the spread of germs from contaminated food (usually raw) or surfaces to cooked/ready-to-eat foods
- c. Cook and reheat food thoroughly
- d. Store food at correct temperatures
- e. Keep premises clean and pest-free

The above are basic requirements that should be observed at all times and at all stages of food preparation, storage and serving. Observing these good practices are necessary to prevent the growth, survival and spread of germs.

3

Personal Hygiene

- 3.1 Wash your hands thoroughly with soap and water before starting work and especially:
- Before handling cooked/ready-to-eat food
 - After handling raw food
 - After handling waste
 - After cleaning duties
 - After using the toilet
 - After blowing nose, sneezing or coughing
 - After handling money
 - In between tasks

Seven steps to proper hand washing

- Wet hands with running water, apply soap and lather well
- Rub hands for at least 20 seconds



a. Palm to Palm



b. Between Fingers



c. Back of Hands



d. Base of Thumbs



e. Back of Fingers



f. Fingernails



g. Wrists

iii. Rinse hands thoroughly and dry with a clean paper towel

3.2 Keep fingernails short and clean. Germs can be harboured under fingernails.

3.3 Do not wear nail polish or fake fingernails.

3.4 Do not wear accessories/jewellery that may drop into the food during preparation. Such articles may also trap food debris that can contaminate food during preparation.

3.5 Wear clean aprons and tidy clothes when preparing and handling food.

3.6 Keep your hair tied back and in a tidy condition. Cover your hair with a cap or hair net.

3.7 If you have sores or cuts on your hand, you must cover them with a brightly-coloured waterproof plaster.

3.8 Do not prepare or handle food if you had any of the following in the last 48 hours:

- Diarrhoea
- Vomiting
- Fever
- Any other illnesses

Report your illness to your manager and see a doctor immediately.

3.9 Do not do any of the following when handling or preparing food:

- Smoke
- Spit
- Pick nose
- Clean ears with fingers
- Blow or breathe on glassware or cutlery to polish them
- Wipe hands on a dirty cloth
- Comb or touch hair
- Wipe off perspiration with bare hands
- Blow into plastic bags or food wrappers to open them
- Taste food with fingers or with a spoon that has not been cleaned between each tasting

Utensils and Equipment Used for Food Preparation

4

- 4.1 Wash dirty/soiled crockery, utensils, storage containers and appliances immediately after use. Keep them in a clean condition at all times. Avoid leaving cooking utensils unwashed overnight.
- 4.2 Thoroughly clean and sanitise chopping boards and knives between tasks and after use.
- 4.3 The cooking utensils and equipment should be washed using the following steps:
 - a. Pre-clean soiled utensils and equipment by scraping, rinsing and soaking where applicable
 - b. Wash, by scrubbing or spraying water at high pressure, with detergent and clean water, and rinse thoroughly
 - c. Sanitize to remove or kill any bacteria. The following methods can be used to sanitise:
 - Immerse in hot water at a temperature above 100°C for at least 30 seconds
 - Use a food-grade sanitiser
- 4.4 Store plates, bowls, pots, pans and other kitchen utensils in the following way:
 - a. On clean, raised shelves or racks or in cupboards
 - b. Away from insecticides, detergents and cleaning equipment
- 4.5 Do not use crockery, utensils and appliances that are chipped, broken or cracked.

4.6 Do not reuse disposable crockery, drinking straws or food wrappers/packages.

4.7 Use separate towels for different tasks e.g. wiping the utensils/equipment, wiping tables and wiping your hands. Use colour codes or different designs to distinguish towels for the different tasks. Wash the towels regularly with hot water and detergent.

4.8 Use SEPARATE chopping boards, knives, tongs, spoons and other utensils for cooked and uncooked food to avoid cross-contamination.



Using colour-coded chopping boards and knives eliminate the risk of cross-contamination during food preparation.

4.9 Meat grinders used for processing mutton, beef, chicken and pork must be labelled, separated and thoroughly washed and sanitised after every use.

- 5.1 Food must be prepared in an appropriate manner and on food preparation work surfaces to reduce the risk of contamination. Do not prepare food or drinks on the floor, near toilet or by the drain. Do not prepare food outside the kitchen or stall area.
- 5.2 Use only clean potable water for preparation of food.
- 5.3 Use only food-grade ice for preparation of drinks.
- 5.4 Obtain food supplies only from licensed or approved sources.
- 5.5 Ensure that ingredients used in the preparation of food are fresh, stored at proper temperatures, and have not reached their expiry dates.
- 5.6 Use the FIRST-IN-FIRST-OUT (FIFO) stock rotation system to help ensure that food products are safe for consumption. The first-in-first-out (FIFO) stock rotation system requires you to place items on shelves such that the oldest items will be used first.
- 5.7 Clean and wash ingredients (e.g. vegetables) thoroughly before cooking to remove any impurities.
- 5.8 Thaw frozen food in the refrigerator or chiller at between 0°C and 4°C - never at room temperature. Food that is being thawed must be placed at the lowest rack, separated from other food, to prevent its drippings from contaminating other food.

Alternatively:

- a. Thaw frozen food in a microwave oven
- b. Thaw frozen food under running water, sealed in a plastic bag and placed inside a clean container



Can you spot what is wrong in the picture?

The frozen chicken is directly placed in the sink to be thawed. The chicken should be sealed in a plastic bag, placed in a container and then thawed under running water.

5.9 Food must be completely thawed before use.

5.10 Catch drippings when handling defrosted food and its wrappers to avoid cross contaminating cooked/ready-to-eat food or surfaces which will come into contact with these food.

5.11 Do not refreeze food that has been thawed.

COOKING

- 6.1 Cook food thoroughly by keeping to the required cooking time and temperature to kill any harmful germs in the food.

Cook meat including chicken and other poultry thoroughly.

Use a food thermometer to check the internal temperature of large cuts of meat, poultry and other dishes when cooking and reheating. Ensure that the internal temperature of meat reaches at least 75°C.

- 6.2 Cook liquid foods such as soup, gravies and sauces thoroughly to a complete boil.



6.3 Make sure that fish and other seafood are cooked thoroughly by checking for a change in texture and colour.

6.4 Preheat ovens and grills before placing the food item to cook or reheat. If ovens and grills are not preheated, then be mindful that the food will take longer to cook.

REHEATING

6.5 Reheating food thoroughly is an important step in reducing the risk of food poisoning. Reheat food thoroughly by checking that solid foods give off steam, and liquid foods bubble or simmer thoroughly. Ideally, ensure that food is heated to a temperature of 75°C for at least 2 minutes.

Reheat food only once. Do not repeatedly reheat the food for consumption over a few days.

6.6 You must always reheat food thoroughly and quickly before placing into hot holding. The longer the food takes to warm up e.g. in a slow cooker, the longer it remains in the Temperature Danger Zone. For information on the Temperature Danger Zone, refer to Chapter 8.

Fast Fact 2

Most bacteria and parasites are destroyed by heat, which is why cooking and reheating foods thoroughly help to prevent foodborne illnesses. However reheating will not prevent foodborne illnesses caused by the toxin produced by *Bacillus cereus*. The bacterium *Bacillus cereus* is often found in rice.

Uncooked rice can contain spores of *Bacillus cereus* bacteria. Cooking the rice does not destroy the spores. If the cooked rice is left at room temperature, the spores will multiply and can produce poisonous toxins that cause vomiting and diarrhoea. Reheating the rice will not destroy the toxins.

You can prevent food poisoning from *Bacillus cereus* by serving rice that is freshly cooked.

If this is not possible, then make sure that you cool the rice quickly, then keep it cold below 5°C out of the Temperature Danger Zone. Alternatively, you can keep it above 60°C out of the Temperature Danger Zone.

It is advisable to consume the cooked rice within 1 day of cooking.

You must pay special attention to certain foods. These are listed in the table below:

FOOD ITEM AND THE RISK	WHAT YOU NEED TO DO
Rice	
<p>May contain the harmful bacteria, <i>Bacillus cereus</i>, which spores cannot be destroyed by heat.</p>	<p>Leftover rice should be cooled down quickly then kept in the refrigerator, OR always kept warm at 60°C or above.</p> <p>Cook rice in smaller portions to avoid the need to keep leftovers.</p>
Shellfish	
<p>If the shellfish has damaged shells or if the shells are opened before you cook them, then the shellfish may be unsafe to eat.</p>	<p>Throw away any shellfish with damaged or opened shells before preparation and cooking.</p> <p>Throw away any shellfish with shells which are still closed after cooking.</p>
Eggs	
<p>Eggs and eggshells may contain the harmful <i>Salmonella</i> bacteria.</p>	<p>Do not use eggs which have gone past their 'use by' or 'best before' date.</p> <p>Always wash your hands after handling egg and egg shells.</p>
Poultry	
<p>Bacteria such as <i>Salmonella</i> and <i>Campylobacter</i> occur naturally in raw poultry.</p>	<p>Wash your hands with soap after handling chicken and before touching other food. Cook the chicken thoroughly.</p>

- 7.1 Keep food properly covered to prevent contamination. Display all food for sale orderly and within the confines of the display showcases.



- 7.2 Do maintain showcases and sneeze guards by cleaning and sanitising daily at the end of the business day.

- 7.3 Do not use bare hands to handle cooked/ready-to-eat food including cut fruits.



- 7.4 Always use tongs, ladles, spoons or wear disposable gloves when handling cooked/ready-to-eat food including cut fruits.
- 7.5 Do not use bare hands to handle and place ice in glasses. Always use a ladle or tong.
- 7.6 Do not touch the inside or the rim of glasses when serving drinks. Use a food tray wherever possible.
- 7.7 Use gloves when handling cooked/ready-to-eat food. Do not use the same gloves for purposes other than handling food.
- 7.8 Change gloves regularly, especially after different tasks, or when they are soiled or torn.
- 7.9 Remove gloves when handling money. Dirt and germs may be found on money and this will contaminate the gloves and any food that is handled afterwards.



7.10 During preparation of food, avoid handling coins/money or other articles that may contaminate the food.

7.11 Do not mix, sell or resell any cooked or ready-to-eat food, which has:

- a. Dropped on the floor
- b. Been stored unprotected from dust, germs and pests
- c. Been stored at incorrect temperatures

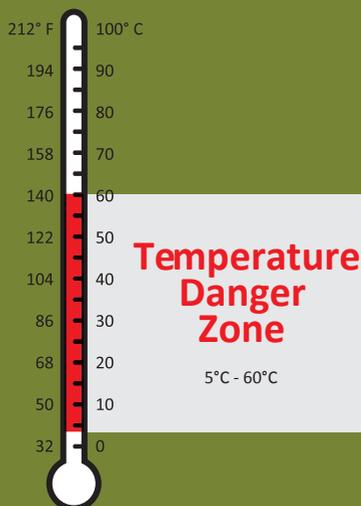
7.12 It is a good practice to provide serving spoons to patrons for shared dishes.

Storage of Food

Fast Fact 3

Food poisoning bacteria multiply between 5°C and 60°C. This is known as the Temperature Danger Zone. By keeping foods outside of the Temperature Danger Zone, you can help to reduce the risk of food poisoning.

No food should be kept in room temperature, inside Temperature Danger Zone, for more than 2 hours. Keep food in refrigerator after 2 hours. Food kept in Temperature Danger Zone for more than 4 hours must be discarded.



8.1 Storage of cooked/ready-to-eat and raw food at the correct temperature is very important. This helps to prevent germs from multiplying and minimise the risk of food spoilage.

8.2 It is advisable to use a thermometer to check that the refrigerator or freezer is operating at the correct temperatures and do monitor the temperatures regularly.

- 8.3 For pre-packed food, follow the storage instruction indicated on the packaging. Refer to the chart below for the correct temperatures for storing fresh produce:

Refrigerated and Frozen Food Storage Temperatures Chart:

TYPE OF FOOD	TEMPERATURE
Frozen meat	-12°C and below. For longer storage, set at -18°C and below.
Chilled fresh meat/fish	Between 0°C and 4°C.
Thawed frozen meat	Between 0°C and 4°C.
Ice cream	-2°C and below.
Dairy products	7°C and below.

- 8.4 Cut huge pieces of raw meat into smaller pieces before freezing and only take out the required quantity from the freezer for use.

8.5 Segregate different types of raw meat and seafood by placing them in separate compartments or containers when storing in the refrigerator or chiller.

8.6 Ensure that food sold in the frozen state is not defrosted and re-frozen for sale.

8.7 Do not overstock the refrigerator or freezer with foods, especially with foods that are still warm. This will raise your refrigerator's temperature, and bring the temperature into the Temperature Danger Zone.

8.8 Avoid leaving the refrigerator or freezer door open for too long as this will raise the temperature inside the refrigerator and allow the germs to multiply.



Can you spot what is wrong in the picture?

The refrigerator is overstocked with items that are stacked on one another, preventing the food from being chilled adequately. Refrain from stacking food to allow for adequate chilling.

STORAGE OF COOKED AND READY-TO-EAT FOOD

8.9 Germs multiply quickly within the Temperature Danger Zone of between 5°C and 60°C. To reduce the risk of contamination, hot and cold ready-to-eat foods must be held at correct temperatures.

8.10 Hot food should be kept in a proper warming or heating equipment at above 60°C, outside the Temperature Danger Zone. Cold ready-to-eat food should be kept in a chiller or refrigerator below 5°C.

8.11 Store any excess food (i.e. food you are not serving immediately) quickly in the refrigerator below 5°C. If food is left at room temperature in the Temperature Danger Zone, harmful germs can grow to a dangerous level.

8.12 Cover food properly before placing them in the refrigerator. Ideally, label the food and include the date of purchase or preparation. Always store cooked and ready-to-eat food above raw food in the refrigerator to prevent cross-contamination.



The raw chicken should not be placed over the strawberries as there is a risk that the strawberries can become contaminated with the drippings from the raw meat. This is especially dangerous as the strawberries are to be served as ready-to-eat food. Always store raw food in tight-fitting containers and place them at the lowest rack of the refrigerator, below any cooked/ready-to-eat food.

- 8.13 Do not keep unsold, left-over cooked food, or food that has been kept for more than 4 hours after they are cooked, as germs can multiply to dangerous levels after 4 hours.

PACKAGING OF FOOD

- 8.14 Food must be packed using clean, food-grade packaging materials and containers with tight-fitting covers or lids.
- 8.15 Use the correct type of food-grade containers for packing hot food. Make sure that the containers can withstand the temperature of the hot food.
- 8.16 Styrofoam containers can warp and even melt under high temperature. Do not place very hot food directly into styrofoam containers.
- 8.17 Do not staple, clip, pin or use other metallic items to fasten or seal food wrappers and receptacles.
- 8.18 For the sale of raw meat, proper labels must be displayed indicating the type of meat e.g. chilled fresh meat, frozen meat, thawed frozen, etc.
- 8.19 For pre-packed salads and cut fruits, have a label with the required information such as packing date and expiry date.

- 9.1 Use food containers with tight-fitting covers for storage and transportation of cooked food. Do not allow food to be exposed.
- 9.2 Maintain the temperature of hot food at above 60°C after cooking and transport hot food in insulated hot boxes or insulated bags to keep the temperature above 60°C throughout.
- 9.3 Cold food must be transported in refrigerated truck, cooler or insulated ice boxes to keep the temperature below 5°C.
- 9.4 Ensure that there is no contamination between raw and cooked/ready-to-eat food.
- 9.5 Plan the route of delivery as food spoilage may occur if food is cooked and delivered hours before it is consumed. Do not prepare the food too early from the delivery time.
- 9.6 Proper food delivery vehicles must be used for transporting food. These vehicles have panelled interior to facilitate easy cleaning.
- 9.7 Provide rust-proof shelving for placing food trays and containers in the vehicle cabin. Do not place food trays and containers on the floor of the cabin.
- 9.8 Vehicles used for transportation of food must be kept clean and pest-free at all times, and used only for the purpose of transporting food.
- 9.9 Clean and sanitise the vehicles each time after they have been used for transporting soiled crockery.

- 9.10 Always service and maintain the food delivery vehicles in good working condition to minimise break-downs on the road which will compromise the safety of food being transported through extended delays and malfunctioning of the refrigeration system.

SERVING BUFFET MEALS AND PACKED MEALS

- 9.11 Provide a time-stamp for buffet and packed meals indicating the time the food is cooked and the time that the food should be consumed by. All food should be consumed within 4 hours of cooking.
- 9.12 Provide enough canned fuels for chafing dishes. Keep the covers of chafing dishes on until just before serving.
- 9.13 If the buffet meal lasts more than 2 hours, cook a fresh second batch of food and deliver at a later time.
- 9.14 Do not provide take-away containers to clients so as to discourage them from packing and eating left-over food beyond the safe time limit.
- 9.15 Ensure that food handlers practise a high standard of good food and personal hygiene if they are required to serve the food, e.g. not keeping long fingernails, not wearing jewellery, washing hands with soap, wearing gloves, using tongs and implements, etc.

- 10.1 Ensure that food preparation, cooking, service and storage areas are thoroughly cleaned and disinfected regularly.



- 10.2 Keep floor clean and dry. Do not sweep food scraps from the preparation tables and cooking area onto the floor. Sweep and wash floors daily and mop wet floors to dry them.
- 10.3 Wash and clean refrigerator regularly.

- 10.4 Exhaust hood and flue system and air cleaning system should be cleaned and maintained regularly to ensure that they are effective and do not produce excessive noise. Replace filters regularly.



- 10.5 Keep gullies and drains clean and unclogged at all times. Remove food scraps from gully trap covers and drains to prevent pest infestations.

- 10.6 Store items that are used for food preparation neatly on shelves at least 15 cm above the ground to allow easy cleaning of the floor.

Fast Fact 4

Why do you need to prevent rodent and cockroach infestations in your premises?

TRANSMISSION OF DISEASES

- Rodents, cockroaches and flies carry many germs and other harmful organisms.
- Consumption of food and water contaminated by rodents, cockroaches and flies can cause food poisoning and other infectious diseases.
- Direct contact with rodents and cockroaches may cause diseases and/or allergies.

DAMAGE TO PROPERTIES

- As rodents gnaw, they cause damage to items such as doors, grills, furniture, metal wiring and electrical wires. Damaged electrical wires may cause short circuit and fire.

DESTROY FOODSTUFF

- Rodents and cockroaches are omnivores. Uncovered food nibbled by rodents and cockroaches are unsafe for human consumption.

11.1 It is important to ensure that effective pest control measures are in place to keep your premises pest-free.

11.2 Pest-proof your premises by eliminating food sources, shelter and entry points for pests.

11.3 Eliminate food sources for pests by :

a. Maintaining a clean environment.

- Clean the stall and kitchen thoroughly at the end of the day's operation and ensure that no food scrap/refuse is left behind
- Clean up food/refuse spillage immediately
- Clean the drains and gullies daily
- Keep the areas below the cooking range and sinks dry and clean

b. Practising good refuse management.

- Empty refuse bins once they are three-quarter full or at least once a day
- Use proper foot pedal refuse bins that are lined with plastic bags
- Keep refuse bins and bulk bins covered at all times when not in use
- Bag, tie and dispose of all food waste and garbage into covered bins
- Do not leave bags of refuse on the floor
- Do not leave soiled crockery and food scraps on the floor and sink overnight



c. Protecting food from pest.

- Store food in tightly covered containers, metal cabinets or in screened rat-proof rooms
- Avoid leaving food overnight uncovered
- Store food items at least 15 cm above the ground

11.4

Eliminate shelter and entry points for pests by:

- Storing goods properly and inspecting the storage area at least once a week for signs of pest infestation
- Avoiding clutter and excessive stocks that may provide hiding places
- Ensuring that floor traps and downpipes are properly covered with grating
- Keeping drains and gullies covered at all times where applicable
- Sealing any holes or crevices in the ceilings, walls, floors and doors
- Installing strong wire meshes at openings (e.g. windows) that may be potential entry points for pests

11.5

Carry out daily checks for the following signs of rodent infestation:

- a. Rodent burrows
- b. Rodent droppings
- c. Smear marks on walls and ceilings made by rodents
- d. Gnaw marks on doors and false ceiling bitten through by rodents
- e. Sighting of live rodents

Effective control measures against rodents include :

- Denying rodents access to any food
- Practising good housekeeping to deny rodents of shelter
- Preventing rodents from gaining access into food premises and buildings through holes and crevices
- Maintaining an effective pest control programme done by a professional pest control operator



11.6

Carry out daily checks for the following signs of cockroach infestation:

- a. Cockroach droppings
- b. Sighting of live cockroaches
- c. Cockroach egg cases
- d. Pungent cockroach odour

Effective control measures against cockroaches include :

- Keeping premises clean everyday
- Practising good refuse management
- Sealing all cracks, crevices and openings in walls where pests can hide
- Replacing faulty refrigerator door lining
- Disposing of unwanted boxes, crates, piles of newspapers and other articles that may provide hiding places
- Checking all incoming goods for egg capsules and grown pests, especially those stored in cardboard materials
- Engaging professional pest control operator to carry out routine checks and treatment



11.7

Flies can cause foodborne illnesses as they carry harmful germs and contaminate the food that they land and feed on. They are found in food premises near uncovered food, refuse bins and unclean food preparation areas and equipment.

Effective control measures against flies include:

- Covering all raw and cooked food
- Cleaning up food and refuse spillages immediately
- Removing food scraps and food stains
- Washing refuse bins and bin points regularly
- Practising good refuse management to eliminate breeding grounds
- Installing fly-screens and fly electrocuters where possible
- Covering entrance points by placing air curtains or plastic screens, or installing self-closing doors

