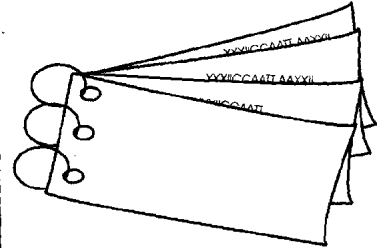


UNIT 10 PEST CONTROL

Contents

- 10.1 Methods of Pest Control
- 10.2 Chemical Methods of Pest Control
- 10.3 Measures for Pest Control



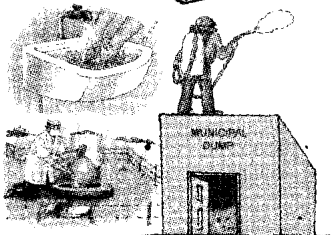
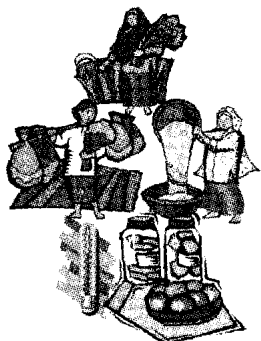
- Production of food for customers in any food service establishment demands a high level of hygiene and pest control. Pest control is the reduction or eradication of pests.
- If proper pest control measures are not put in place, concerns about food poisoning arise. In addition to being vectors of dangerous contamination, they can be the cause of costly damage and depreciation. A pest may be defined as a living organism living where it is not wanted.
- Common pests found in food processing and service establishments include insects, rodents and birds.
- Pests contaminate food with hair, fur, droppings, eggs and dead bodies (of insects). Regular survey of food premises must be carried out to ensure that they are pest-free.
- Pest control is essential to prevent spread of disease, prevent wastage of food, prevent damage generally caused by gnawing of electric cables or pipes, prevent loss of customers who would detest eating in premises infested with cockroaches, flies, rodents etc.

10.1 Methods of Pest Control

- The range of pest control options available may vary with the pest species, pest intensity or severity and effectiveness of the option.
- Methods can be categorized into environmental, physical and chemical methods of pest control.

Environmental Methods of Pest Control

Environmental methods include sanitizing, habitat modification and pest control (refer following Table):



Method	Description
1. Sanitation	<ul style="list-style-type: none"> – Removing potential areas where pests can feed, breed and hide (e.g. garbage, dirty waste bins) – Keeping premises and refuse areas clean – Not allowing waste to accumulate – Covering food on display or awaiting preparation – Clearing spillages, cleaning drains.
2. Habitat Modification	<ul style="list-style-type: none"> – Any method used to eliminate or disrupt areas where pests reside (e.g. removing weeds, debris, fallen leaves, wood piles). – Creating a vegetation-free barrier around the perimeter of the building to reduce incidence of many ground-dwelling pests.
3. Temperature Control	<ul style="list-style-type: none"> – Artificially manipulating temperatures of substrates infested by pests or areas where pests reside. – Subjecting infested foods, clothes and carpets to extremely hot or cold temperatures kills pests [temperatures below 0°C (32°F) and above 40°C (104°F)].

Physical Methods of Pest Control

Physical control methods are generally preferred as the pest is caught, either dead or alive and is consequently not able to die in food, equipment or in some inaccessible place.

Examples of physical control include ultra violet light, electric fly-killers (insectocuters) and rodent traps.

Some of the major physical methods of pest control include:

1. *Exclusion*: Any measure used to prevent entry of organisms indoors through openings in the building structure, doors, windows or on infested plant or food materials e.g. screens, caulking cracks and devices, sealing or repairing exterior openings.
2. *Mechanical Control*: Killing visible and less mobile or immobile pests using mechanical devices such as fly swatters.
3. *Traps*: Escape-proof devices capturing highly mobile and active pests, unbaited or baited or sticky traps for insects; useful for early detection and continuous monitoring of infestations; not effective in reducing populations unless pest population is isolated or confined to a small area.
4. *Miscellaneous*: Storing cereal and cereal products in tight plastic containers.

10.2 Chemical Methods of Pest Control

- Insecticides are defined as any substance or mixture of substances intended for preventing, killing, repelling, controlling insects.
- Rodenticides are chemicals that prevent, destroy, inhibit, kill or mitigate rodents.
- Common insecticides include aerosol sprays or attractants, baits and pellets, contact and residual sprays, dusts, fogging concentrates, fumigants, and repellants.
- Insecticides can be classified according to:
 - Mode of entry (stomach insecticides, contact poisons, fumigants);
 - Mode of action (physical poisons killing by suffocation, protoplasmic poisons precipitating proteins, respiratory poisons, nerve poisons);
 - Chemical nature (chlorinated insecticides, cyclodiene group, carbamates, organophosphorous insecticides, plant-derived botanicals, synthetic pyrethroids).
- Food and small utensils must always be removed when using insecticide especially sprays. Premises and fixed equipment must be thoroughly cleaned after use.
- Rodenticides are used as bait; for effective control the bait must have no repellent action; should not induce bait shyness, should make rats go out into the open to die.
- Rodenticides include inorganic rodenticides, botanicals, coumarins, organophosphates, chlorinated rodenticides, miscellaneous rodenticides.

10.3 Measures for Pest Control

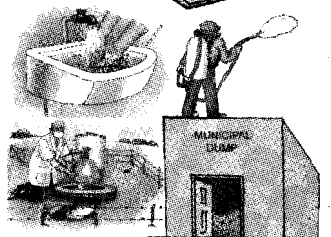
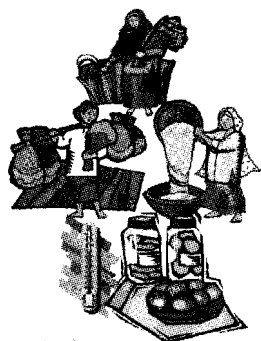
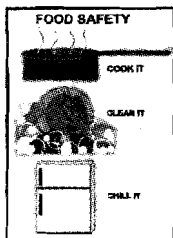
Various measures are needed related to general pest control, building and premises maintenance and pest control for stored raw material.

1. *General Pest Control*

- Food premises must be designed and constructed to minimize the risk of contamination from pests.
- External windows, where necessary, must be fitted with removable insect-proof screens.
- Doorways should be protected with hanging plastic strips or air curtains and the bottom of doors should be protected with rubber padding to prevent any pest entrance from below.
- Access holes and other openings should be sealed with mortar, metal sheets or mesh.

2. Building and Premises Maintenance

- Premises and refuse areas should be kept in a clean and tidy condition. Lids should always be kept on waste bins, which should be washed after emptying, together with the surrounding area. Waste must not be allowed to accumulate.
- Food on display or awaiting preparation should always be kept covered.
- Spillages should be cleared away promptly.
- Drains should be kept clean and in good condition.
- Sightings of pests or pest damage should be reported to management immediately.



3. Pest Control for Stored Raw Material

- All deliveries of raw materials and packaging material should be checked to ensure their freedom from pest infestation;
- Food should be stored off the floor and clear of walls to facilitate proper cleaning at all times and prevent any pests like rodents, cockroaches, silverfish and ants from finding a hiding place.
- Food should be stored well covered, in rodent-proof containers with lids that are always replaced after use.
- Stored material should be checked regularly for gnawing marks, holes, chewed pieces of cardboard or paper and damaged stock removed.
- The storage area should be well lit and any cracks in walls and ceilings should be sealed to ward off any pests, particularly cockroaches.
- As far as possible the above preventive measures and physical controls should be applied to control pest infestation. However, in unavoidable situations, the insecticides should be used carefully ensuring that they do not contaminate the stored food material.
- Professional pest controllers should be engaged for undertaking safe usage of insecticides. Staff should also be trained in pest control and made aware of the dangers of insecticides and their proper usage.

Key Terms

Insecticides: Any substance or mixture of substances intended for preventing, killing, repelling, controlling insects.

Rodenticides: Chemicals that prevent, destroy, inhibit, kill or mitigate rodents.

Exclusion: Any measure used to prevent entry of organisms indoors through openings in the building structure, doors, windows or on infested plant or food materials e.g. screens, caulking cracks and devices, sealing or repairing exterior openings.

Mechanical Control: Killing visible and less mobile or immobile pests using mechanical devices such as fly swatters.

Traps: Escape-proof devices capturing highly mobile and active pests, unbaited or baited or sticky traps for insects; useful for early detection and continuous monitoring of infestations; not effective in reducing populations unless pest population is isolated or confined to a small area.



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