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Facilities, Equipment, Utensils, and Pest Management

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Learning Objectives

- How do design and layout contribute to the efficiency and effectiveness of food production?
- What are the criteria for purchasing equipment?
- How do installation and maintenance affect equipment operation?



Learning Objectives

- How do the premises of a food establishment affect the customer's opinion of an operation?
- What criteria should be used when selecting materials for floors, walls, and ceilings in food preparation areas of a retail food establishment?

Learning Objectives

- Why is it important to properly light and ventilate food production and ware washing areas?
- What are the main components to properly equipped hand-washing station?
- How do proper disposal and storage of garbage and refuse help prevent contamination and pest problems?

Facilities, Design, and Layout

Retail food establishment facilities may include areas for:

- Receiving and delivery
- Storage
- Preparation and holding
- Service
- Ware-washing
- Refuse storage and pickup
- Food display area or dining room
- Housekeeping
- Toilets.



Conditions of the Building

Floors, walls, and ceilings should be:

- Smooth
- Easy to clean
- Made of nonabsorbent materials
- Free from cracks and crevices
- Free from imperfections that may cause accidents
- Resistant to damage and deterioration from chemicals and water.



Coving

Restrooms

Toilet facilities:

- Are required for all employees
- Must be conveniently located and accessible during all hours of operation
- Must be completely enclosed and provide a tight-fitting and self-closing door.



Restrooms should be cleaned frequently!

Equipment Purchasing

NSF International accredited by ANSI

Food service equipment must meet certain criteria.



Underwriters Laboratory

Sanitary design

Work Center Planning



Well-designed work center

A properly designed work center provides adequate facilities for:

- Efficient production
- Fast service
- A pleasant environment
- Effective cleanup.

Equipment Selection



Review equipment features prior to purchasing.

Equipment features include:

- Design
- Construction
- Durability
- Ability to clean easily
- Size
- Cost
- Safety
- Ability to do the job.

Equipment Selection: *Food-Contact Surfaces*

FDA Food Code requires food equipment and utensils to be:

- Smooth
- Corrosion resistant
- Nonabsorbent
- Seamless
- Easy-to-clean
- Easy to disassemble and easy to reassemble
- Durable and resistant to damage
- Equipped with rounded corners and edges.

Equipment selection:

Materials used in the construction of food equipment and utensils must:

- Be nontoxic
- Not impart colors
- Not impart odors
- Not impart tastes
- Be safe
- Be durable
- Be corrosion-resistant
- Be resistant to chipping, pitting and deterioration.

Equipment selection: Construction materials



Common utensils

Equipment and utensils are made from:

- Metals
- Stainless steel
- Plastics

Equipment Selection: Wood Material

- Wood is not recommended as a food-contact surfaces because it:
 - Is porous to bacteria and moisture
 - Absorbs food odors and stains
 - Wears easily under normal use
 - Requires frequent maintenance and replacement.

It is still allow in bakery and pizza store to take out baked food from oven

Types of Equipment: Ovens

Common ovens include:

- Range
- Rotisserie
- Deck
- Convection
- Microwave.



Deck oven



Microwave oven



Convection oven

Types of Equipment:

Refrigeration and Low Temperature Storage Equipment-Display

Refrigeration equipment should maintain temperatures between 32°F (0°C) and 41°F (5°C) and can be used to store, cool or thaw food.



Types of Equipment:

Refrigeration and Low Temperature Storage Equipment – Walk-in

Walk-ins should be located near:

- Receiving
- Handling
- Production areas.



Types of Equipment:

Refrigeration and Low Temperature Storage Equipment – Reach-in

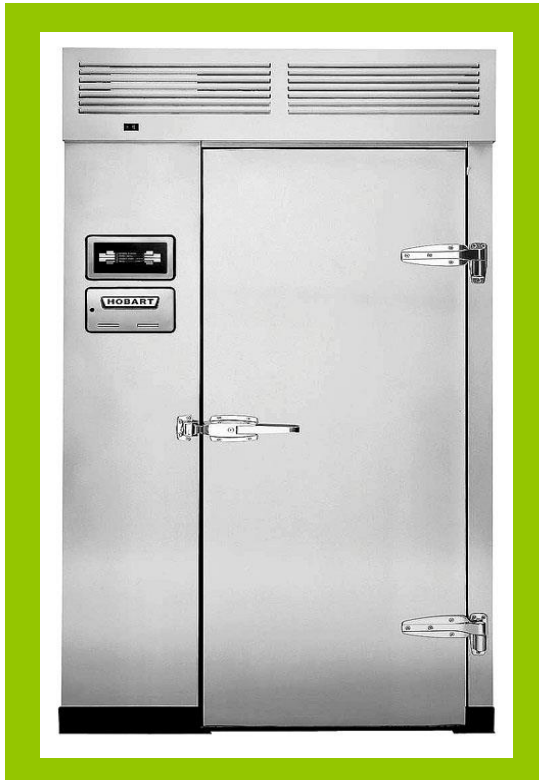
Reach-ins include:

- Upright
- Under the counter
- Mobile units.



Types of Equipment: Cook/Chill & Rapid Chill Systems

Quick chill systems move food through the temperature danger zone quickly!



External view of rapid chill system

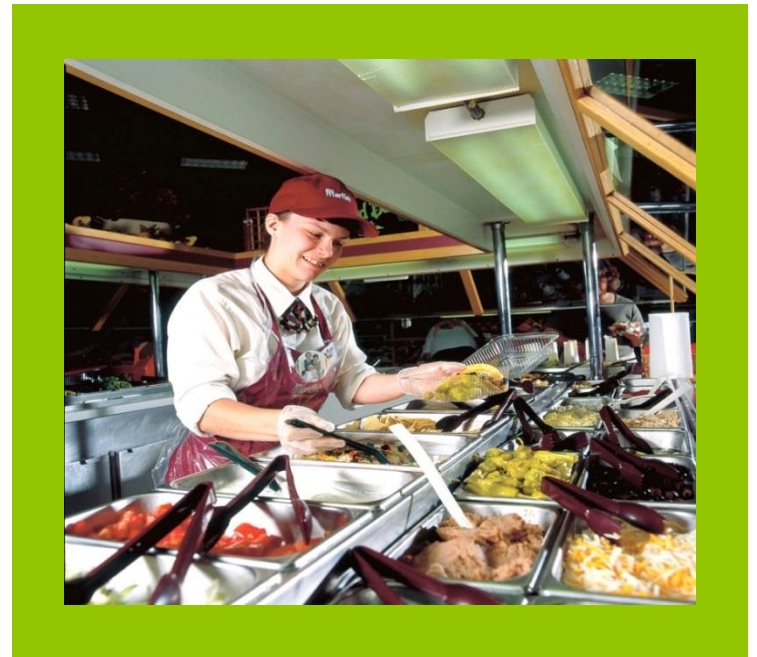


Internal view of rapid chill system

Types of Equipment: Hot Holding

To keep food warm, hot-holding equipment can use:

- ✓ Steam
- ✓ Heating elements
- ✓ Light bulbs.



All equipment can be dangerous if it is not maintained and used properly.

Look on resources a handout for correct cleaning and inspection of slicer machine



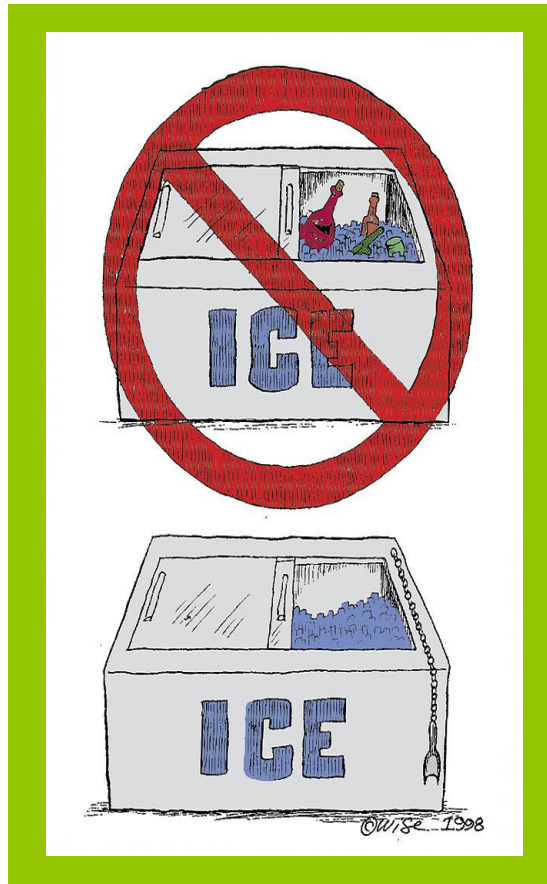
Type of Equipment: Band Saws

Band saws must be:

- ✓ Durable
- ✓ Easily cleanable
- ✓ Safe to use.



Types of Equipment: *Ice Machines*



Handle ice with
the same
degree of care
as other food!

ICE

Chemicals
containers can
not be used for
food or ICE!!!



Type of Equipment: Ambient Temperature Display Storage



Many food products in retail food establishments are not potentially hazardous and can be held at ambient, or room, temperature.

Type of Equipment: Ambient Temperature Display Equipment with Misters



System heads must be properly cleaned, sanitized, and maintained to assure:

- Maximum freshness of produce
- Safety of produce
- Wholesomeness of produce.

Type of Equipment: Live Seafood Display and Holding Tanks

Tanks are used to protect live perishable products such as:

- Fish
- Crustacean shellfish (crabs and lobsters)
- Molluscan shellfish (oysters, clams, and mussels).
- Must have a Variance or HACCP plan



Types of Equipment: Single Service and Single Use

Single-service/single-use items are designed to be used one time by one person, and then discarded. These include such items as:

- Wrappers
- Wax paper
- Butcher paper
- Plastic wrap
- Certain types of food containers.



This is a source of microorganisms

Types of Equipment:

Warewashing Equipment



Warewashing

Preventing contamination and cross contamination by properly cleaning and sanitizing equipment is one of the most important jobs in any food establishment.

Types of Equipment: *Manual Warewashing*

Use a three-compartment sink, spray units, or the bucket and brush method and properly follow the five-step cleaning process.



Three-compartment sink

Types of Equipment: *Mechanical Warewashing*

There are many types of mechanical warewashers you have to choose from, however single-tank or stationary rack are most commonly used in retail food establishments.

Information of the correct setting for: water temperature, water pressure and concentration of cleaner and sanitizers should be display



Single-tank warewasher

Dish washer vary by size, style and sanitizing method

- Some use hot water other use chemicals
- They should conveniently located and reachable.
- Should avoid contamination of other food contact surface
- Clean as often as possible

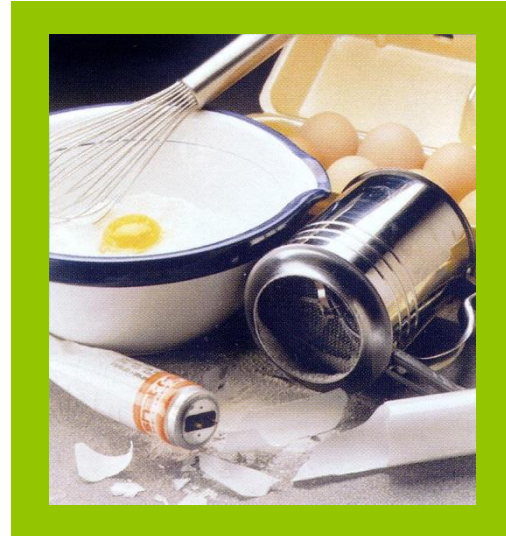
Installation, Maintenance and Replacement

- Have equipment installed by professionals to ensure it is done properly!
- Properly train employees who will be using the equipment!
- Maintain equipment according to manufacturers guidelines to extend its useful life!
- **Replacement is inevitable. . . Plan for it!!!**

Lighting

Proper lighting:

- Increases productivity
- Improves workmanship
- Reduces eye fatigue, employee irritability, accidents, and waste.
- Should have protective cover or shatter resistant light bulbs
- Higher intensity in production areas



Proper lighting is important.



Heating, Ventilation, and Air Conditioning (HVAC)

Proper ventilation keeps rooms free of excessive:

- Heat
- Steam
- Condensation
- Vapors
- Obnoxious odors
- Smoke
- Fumes.
- If not properly cleaned grease and condensation will built up



Ventilation systems

Water Supply and Sewage Disposal



FDA Food Code recommends:

- Water from a nonpublic source be tested at least once a year
- Water systems must be flushed:
 - After construction
 - After repairs
 - After modifications
 - After emergency situations.

Handwashing Facilities

Locate handwashing stations:

- In food preparation areas
- In food dispensing areas
- In warewashing areas
- In or adjacent to restrooms.
- Should always be available and not blocked



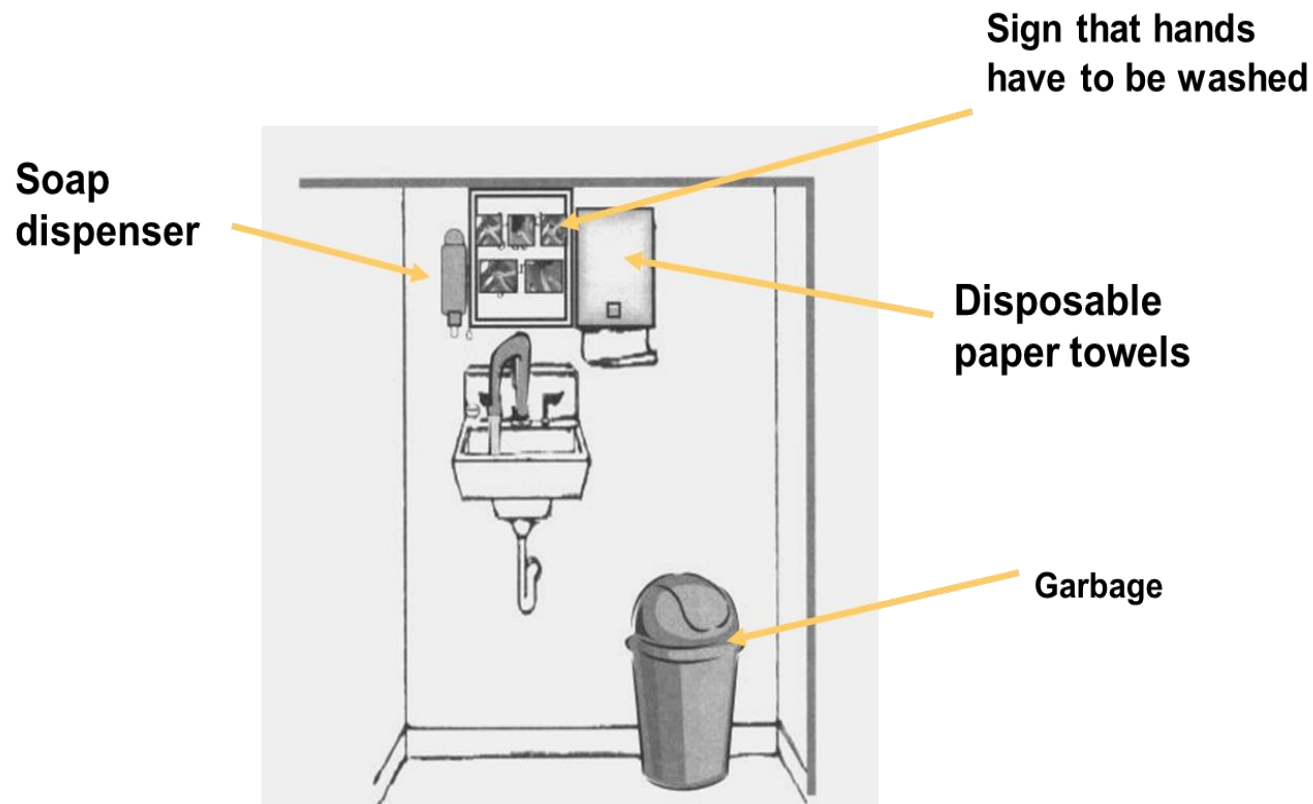
Handwashing station

What is wrong

- Mention at least three obvious ones



An equipped, clean hand washing station with signage



Plumbing Hazards



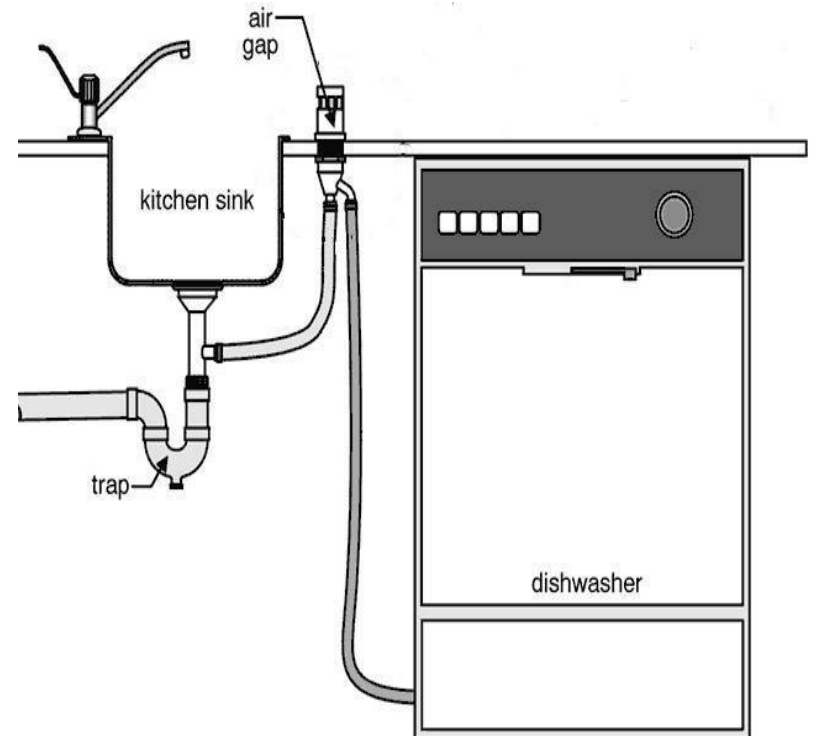
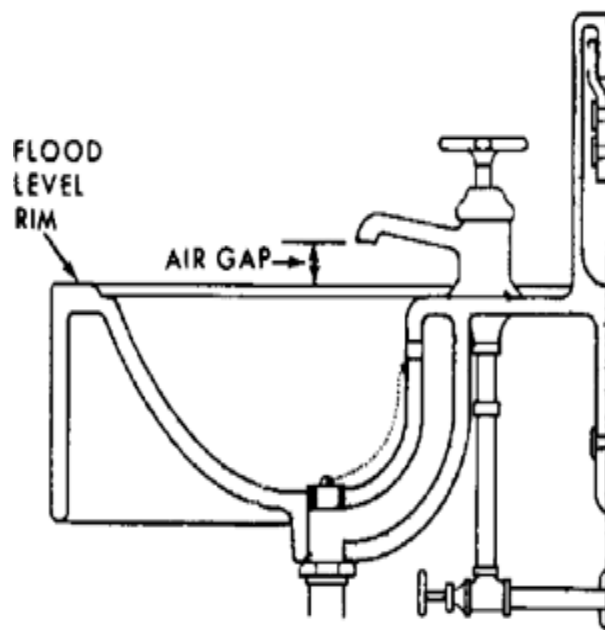
Plumbing

- A plumbing system includes:
- Water supply and distribution pipes
 - Plumbing fixtures and traps
 - Soil, waste, and vent pipes
 - Sanitary and storm sewers
 - Building drains.

AIR GAPS

- The unobstructed vertical distance between the lowest opening of a faucet (or the like) which supplies a plumbing fixture (such as tank or wash bowl) and the level at which the fixture will overflow.
- In a drainage system, the unobstructed vertical distance between the outlet of a waste pipe and the **flood-level** rim of the receptacle into which it discharges.

Air gaps must be in place to control, backflow



Backflow Devices



Reduced pressure backflow preventer



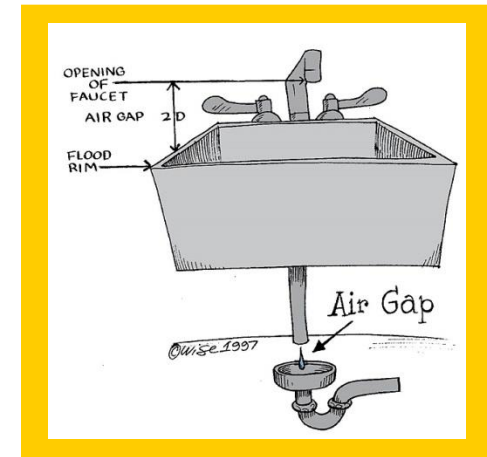
Double check valve



Pressure type vacuum breaker



Spring loaded vacuum breaker



Air gap

Backflow Devices

Backflow Prevention on Carbonators

Backflow prevention on carbonators keeps the carbon dioxide from backing up into copper water lines.



Backflow preventer

Garbage and Refuse



Recyclables



Garbage and refuse

Refuse is solid waste that cannot be disposed of through the sewage disposal system.

Garbage is food waste that cannot be recycled.

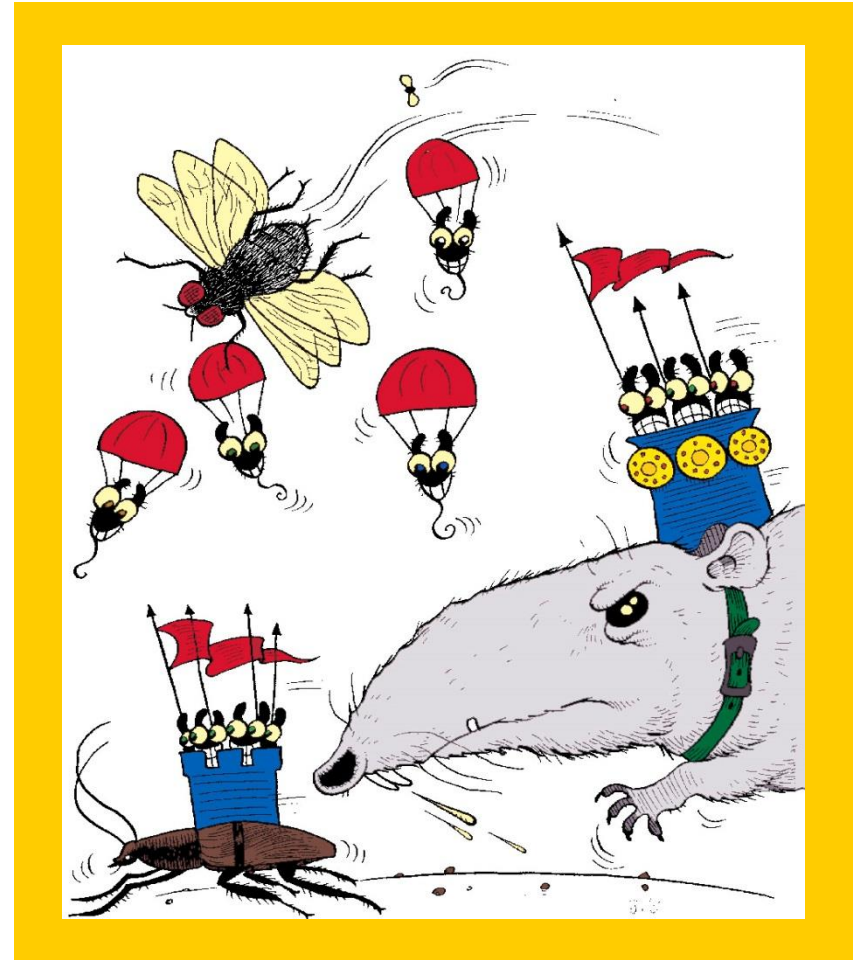
Integrated Pest Management (IPM)

- ✓ Deny access to facilities and operation
- ✓ Deny pests food, water, and shelter
- ✓ Work with a licensed pest control operator (POC)

Pest Control

Pests include:

- Insects
 - Flies
 - Cockroaches
 - Moths
 - Beetles
- Rodents
 - Rats
 - House mice.



Pest control

Benefits of an Integrated Pest Management (IPM) system are its:

- Efficiency
- Cost effectiveness
- Longer lasting effects
- Level of safety for employees and customers.

Deny access

- Eliminating hiding places
- Filling cracks and crevices in floors and walls
- Maintaining tight-fitting doors
- Checking incoming supplies for signs of insect infestation

Deny shelter

- Maintain proper sanitation
- Keep outside premises clean
- Take out garbage promptly
- Recyclables properly disposed or stored
- Eliminating hiding places
- Filling cracks and crevices in floors and walls
- Practice proper food storage and FIFO

Pest control

- Work with a pest control operator (PCO)
- If there is evidence of a few pest spots, there might be an infestation or large number

Pest Control: Insects

Flies, Moths, and Beetles

Install insect control devices

Flies, moths, and beetles can transfer diseases and are a nuisance as well.



Keep receiving doors closed.

Pest Control: *Cockroaches*

They like humid and dark areas
Might leave an oil smell

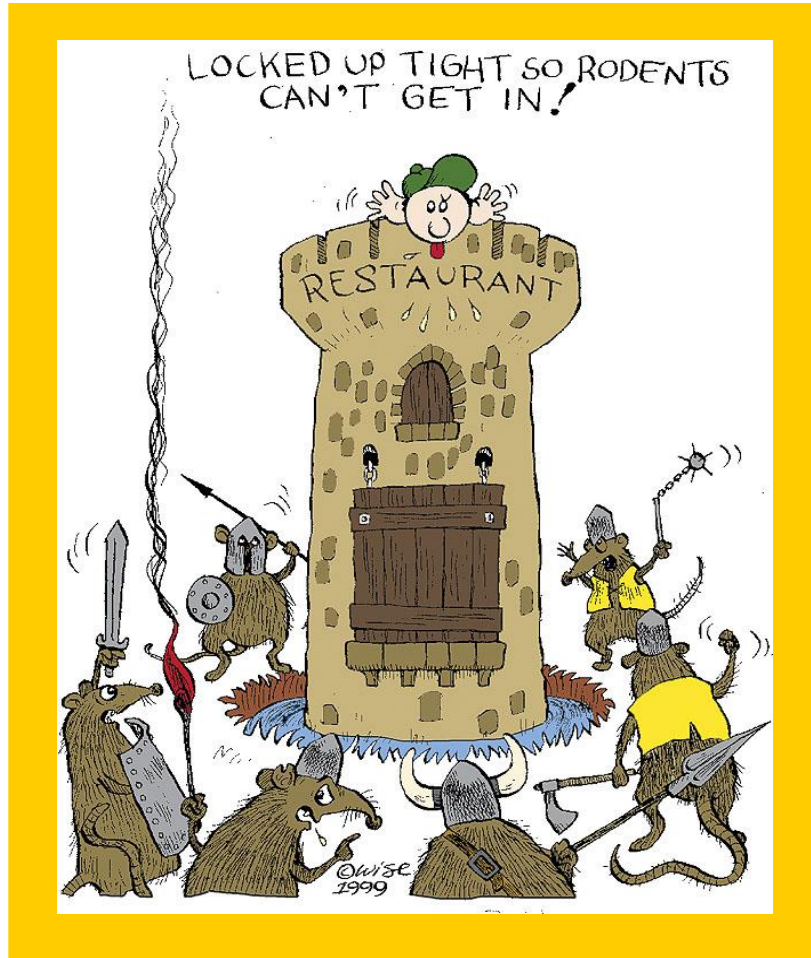
Controls include:

- Maintaining proper sanitation
- Eliminating hiding places
- Filling cracks and crevices in floors and walls
- Checking incoming supplies for signs of insect infestation
- Practicing proper food storage



German cockroaches

Pest Control: *Rodents*



Rodents

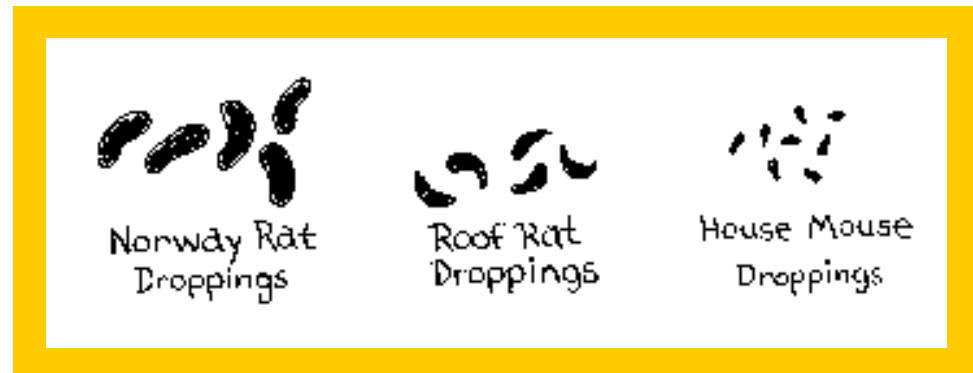
Rodents:

- Carry germs that can cause many diseases
- Can consume large quantities of foods.

Pest Control: *Signs of Rodents*

Look for signs of infestation including:

- Droppings
- Runways and burrows
- Rub marks
- Gnawings
- Tracks.



Rodent droppings

Pest Control: *Rodent Controls*

Rodent controls:

- Keep building and grounds clean
- Eliminate sources of food, shelter, and breeding areas
- Construct buildings to prevent rodent entry
- Utilize rodent traps
- Utilize chemical rodenticides.

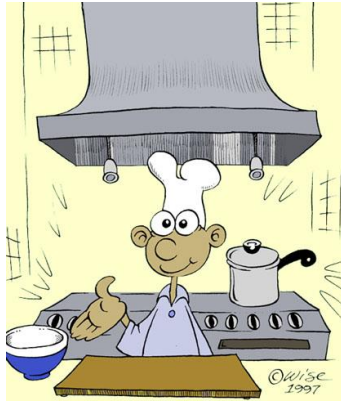


Rodent traps



Concepts to remember

- Food establishment facilities must comply with all local, federal, and state codes.
- Before you purchase major equipment, consider the need, size and design, construction, ability to do the job, safety, and cost of the equipment.



More Concepts to Keep

- Properly maintain equipment according to manufacturer's instructions to extend its usable life.
- Food-contact surfaces of equipment must be smooth, seamless, easily cleanable, easy to disassemble and reassemble and have rounded corners and edges.

“Must remember!”

- Food-contact and non food-contact surfaces must be cleaned and sanitized on a regular basis.
- Maintain equipment according to manufacturer’s guidelines to extend its useful life.
- Ice is food, treat it as such.
- Proper lighting shows soil and when a surface has been properly cleaned.



Concepts to Remember

- The No. 1 deterrent of pests is the cleanliness and sanitation of the retail food establishment.
- Toilet facilities should be kept clean and should be conveniently located to work areas.
- Proper storage and disposal of garbage and refuse are necessary to prevent contamination and avoid attracting pests.



Concepts to remember

- Handwashing stations should be equipped with hot and cold running water, soap, and a means to dry hands.
- Prevent cross connections by using backflow prevention devices.
- All retail food establishments should have a pest control program in place.

Concepts to remember!

- Keep the exterior of your establishment neat and clean.
- Restrooms must be a part of your cleaning schedule.
- Keep tight-fitting covers on trash receptacles when not in use.
- Pests can carry and transfer diseases and contaminate foods and food-contact surfaces.