Food Service IPM

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What is IPM?

- An environmentally sound approach to pest control
- Quality pest control using the least hazardous chemicals and techniques
- Mandatory best management practice for Texas schools
- When, where and what
An IPM Program

• Identify ways to prevent pest entry
• Deny pest access to food, water and harborage
• Monitor all areas of the kitchen regularly
• Identify the pest accurately
• Then assess the best options to control the pest
Ingredients of an IPM Program
The IPM pyramid

- **Pesticides**
- **Biological controls**
- **Physical / Mechanical controls**
- **Cultural / Sanitation Practices**
What Pest’s Need to Survive
Pest Prevention Through Design

• Landscape
  – Short grass
  – Neatly trimmed hedges
  – Paved access ways
  – Proper drainage
  ➢ Rodents will be discouraged to nest if there is an 18” to 24” strip of space between the building and green areas
Pest Prevention Through Design

• Floors
  – Concrete is most suitable, but watch for cracks
  – For wet areas – acid-proof for easy cleaning
  – Asphalt or vinyl tiles can be used – watch for cracks or incomplete bonding for pest harborage areas.
  – Floor drains every 400 sq ft and sloped with check valves to prevent pests

- Drain flies, roaches and rats
Pest Prevention Through Design

• Walls
  – Pre-cast or poured concrete, concrete block, brick, tile or metal curtain
  – Sealed for easy cleaning
  – Metal curtain walls can be hollow if so, do not punch holes and make sure cracks are well sealed.
  ➢ Cracks and openings are a natural hiding place
Pest Prevention Through Design

• Windows, Doors and Lighting
  – The less the better – glass block is best for windows
  – Doors should be metal, tight fitting seams and good door sweeps
  – Outdoor night lights should be high intensity sodium rather than mercury vapor
  – Lights should be located 30’ from door ways

➢ Crawling and flying pests
Make sure doors close tight
Preventing Pests Entry

• Inspection – identify where they are gaining access
• Pests enter either as volunteers or as captives

➢ Good IPM practice
  ➢ Routinely inspect the kitchen/cafeteria area for routes of entry
  ➢ Inspect food products for unwanted guests
Preventing Pests Entry

• Air curtains for flying insects
  – Proper width
  – Sufficient air velocity to cover top to bottom of door

• Inspecting food products
  – Check incoming supplies, including pallets
    • Reduce cardboard boxes
    • Check powdered products for weevils or other evidence of pests
Monitoring for Pests

- Systematic survey at regular intervals
- Maintains data on pest evidence
- Sampling requires numbers of pests
  - Locate and identify pest species
  - Estimate pest population size
  - Investigate causative conditions
    - Food, water, shelter, modes of entry, human behavior
Watching for monitoring devices
Preventing Problems
Sanitation

• Equipment Cleaning
  – Basics – wash, rinse and sanitize
  – To be thorough:
    • Entire inside – remove plates
    • Outside, frame, top and bottom of equipment
    ➢ A single crumb and drop of water can sustain a German Roach for up to three weeks
Look inside and clean
Preventing Problems Sanitation

- **Housekeeping**
  - *Essential element removes food and water – what pests need to survive*
  - *Must include indoors as well as outdoors to be successful*
    - Rubbish piles, used equipment storage, dumpsters
    - Maintain an 18” weed & shrub free zone around the outside wall of the campus
    - Remove waste, clean up spillage and trash immediately, keep garbage area clean, lids tight
The Good and the Bad
Preventive Housekeeping Steps

• Keep pests out by carefully inspecting incoming goods, including equipment, pallets and packaging supplies
• Keep building tight – screens, doors auto-closing
• Control trash with frequent pick ups, swapping dumpsters and closing lids
• Prompt disposal of damaged packages of food
• Install Vector control lights in areas of high fly populations
Vector Lights Work
Storage Practices

Three Basic Rules

1. Store it off the floor
   • PCO need to be able to see underneath
   • If the area is painted white easier to see

2. Keep it away from the wall
   • See behind stored products

3. FIFO – first in, first out
   • Invest in Sharpie’s date every item you take in, don’t guess
Dry Storage Area

- Do not store items within cardboard boxes.
- Discard leaky or damaged goods.
Inspection is for Everyone

• How can you help
  – Report suspected harborage sites & water leaks
  – Check doors and windows for proper sealing
  – Check incoming cardboard for pest activity prior to opening
  – Watch ceiling tiles for pest activity
  – Make sure storage rooms are kept clean
Inspection Tips
Ways to Motivate Employees

• Explain about enforcement actions
  – Health Dept., SPCB, others
• Management incentive programs
  – Reward with GC or other small items
• Interdepartmental competition
• Involve key employees in sanitation workshops
• Conduct routine training for all employees
Pests

• **Insects are most common and numerous**
  – Cockroaches: German, American, Smoky Brown
  – Flies: drain & phorid

• **Rodents can contaminate more than they eat**
  – Norway rat, roof rat and house mouse
IPM and Roaches

- Contaminate food with droppings, bodies and bacteria
- Seek cover during the day
- Like dark, warm, humid areas
- They are omnivores – not picky eaters
- Highly reproductive
- German roaches most common source of allergies and asthma in U.S.
American cockroach

- Identification: reddish-brown with yellowish band around pronotal shield; 1 3/8 to 2 1/8 inches
- Ootheca black-brown w/o lateral indentations

Smoky Brown
American cockroach

• Habitat
  – Primarily outdoors, but can be well-established indoors
  – dark, damp, warm locations
  – floor drains, pipe chases, basements, sewers, storage areas
  – generally found near ground level in food storage and prep areas
Sticky trap proper placement
American cockroach

- **Control**
  - Sticky traps to pinpoint activity hot-spots
  - Perimeter treatment and pest-proofing
  - Granular baits outdoors
  - Baits, sprays, dusts indoors
Treatment areas for Americans
German cockroach

• Most prolific of all cockroaches
  – 30 to 40 eggs per ootheca
  – 2 month development time

• Found only indoors

• Public health threat
  – Germ transport
  – Allergen production
Key biology points

• Egg case, nymph, adult stages
• Maximum growth rate at 33° C (91° F), preferred temps 75° to 90° F
• Spend most time in cracks (1 to 4 mm-wide)
• Found mostly in close proximity to food, water and harborage
Proper placement of sticky trap

Next to wall
### Example thresholds for German cockroach

<table>
<thead>
<tr>
<th>Ave. # cockroaches per zone</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>None</td>
</tr>
<tr>
<td>1-2</td>
<td>Bait stations; check sanitation</td>
</tr>
<tr>
<td>3-6</td>
<td>Spot treat c&amp;c; add or replace baits; review sanitation</td>
</tr>
<tr>
<td>7-15</td>
<td>Thorough bait and c&amp;c application; revisit in two weeks</td>
</tr>
<tr>
<td>15+</td>
<td>Close facility; conduct thorough c&amp;c inspection and sanitation improvement; increase baits in infested areas; monitor biweekly</td>
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Effective controls

• Caulk and seal harborages
• Eliminate, reduce, separate water and food resources
• Bait and dust harborage areas identified by sticky traps
• Apply residual sprays to harborages
Treatment area for Germans
Commensal rodents

• Hazards
  – fire hazard, damage to structures, stored food, and other commodities
  – bites
  – disease transmission, including plague, typhus, leptospirosis, salmonellosis, hantavirus, others
FIELD IDENTIFICATION OF DOMESTIC RODENTS

ROOF RAT  *Rattus rattus*

LONGER THAN HEAD + BODY
LIGHT SLENDER
LARGE
LARGE POINTED
TAIL
BODY
EAR
EYE
NOSE
HEAVY THICK
SMALL
SMALL BLUNT
SHORTER THAN HEAD + BODY

NORWAY RAT  *Rattus norvegicus*

YOUNG RAT

LARGE
LARGE
FEET
HEAD

HOUSE MOUSE  *Mus musculus*
Can you identify the species?

- Tail as long as the body
- Big ears

Juvenile roof rat: note large feet.
Commensal rodents

• Rodent-proofing
• Sanitation
• Inspections
• Trapping
• Rodenticides, tracking powders
How rodents gain access
Preventing rodents access

Rat guards
Placing the rat trap

• Trapping tips
Rodents

- Trapping tips

  - Expanded trigger

  - Pairing traps
How rats move about