Integrated pest Management – Challenges & Best Practices.
Rentokil Initial is one of the largest business services companies in the world, operating in the major economies of Europe, North America, Asia Pacific and Africa. It is listed in the London Stock Exchange and provides services mainly in pest control, hygiene and work wear. As the experts in the Essentials and its 100-year legacy, Rentokil Initial represents innovation, expertise and quality service.

Service / Value Differentiators
Rentokil Initial looks forward to extend a working partnership with your business

For more information visit our website www.rentoki.in
Approaches to Pest Management

Preventive Pest Control

Pest Elimination or Extermination

Reactive Pest Control

Integrated Pest Management
What is Integrated Pest Management?

Decision Making Process

Physical/ Mechanical  Biological
Chemical  Awareness
Monitoring

A *threshold* is the level of pest density that can be tolerated.
Major Pests

Wood destroying pests
- Termites, Wood boring beetles, Carpenter ants, Carpenter bees, Wood wasps, Horn tails

Food, fabric and nuisance pest
- Cockroach, Ants, Carpet beetle, Cloth moth, Centipede, Booklice, Storage pests, Silverfish, Fungus gnats, Fungus gnats, Flies, Midges

Pests that sting, bite or injure
- Bed bug, Head lice, Mosquitoes, Scorpions, Yellow jackets, Bees, Fleas, Ticks.

Occasional invaders
- Crickets, Earthworms, Earwigs, Millipedes, Snails, Slugs, Ground beetles

Vertebrate pests
- House mouse, Lizard, Pigeons, Rats, Sparrows, Tree squirrels, Moles, Ground squirrel
Insect Pests

- COCKROACHES
- TERMITES
- ANTS
- HOUSEFLY
- WOOD-BORRERS
- BED BUGS
- SILVERFISH
- MOSQUITO
Non-Insect Pests

RAT

SPIDER

LIZARD

BIRD

CENTEPEDE

MITE
Why Control Pests: Supply Chain Consequences

- Damages caused by Pests
- Product Contamination
- Operational Inconvenience
- Product Recall
**Principles of IPM**

**EDUCATION, COMMUNICATION & POLICIES**
- **EXCLUSION** - Physical & Mechanical
  - Caulk cracks & crevices
  - Replace broken screens
  - Repair leaky faucets
  - Weatherstrip doors

**RESTRICTION**
- **DESTRUCTION**
  - Non Chemical-Vacuum, Snap traps, Glue boards
  - Pheromone traps,
  - Chemical-Vacuum – Least Toxic, Spray, Fog

**MONITORING**
- Visual, monitoring traps, fluorescent tracking powder, glue pads, pheromone traps,

**Control**
- **Prevention**
  - Use tight-fitting lids on trash cans
  - Keep food containers tightly sealed
  - Eliminate clutter & standing water
  - Clean up crumbs immediately

**Toxicity**
Key Principles of IPM

1. Partnership
2. Pest Awareness
3. Exclusion
4. Restriction
5. Destruction
6. Monitoring
## Conventional Pest Control Vs. IPM: A Comparative Study

<table>
<thead>
<tr>
<th>Element</th>
<th>Conventional</th>
<th>Integrated Pest Management</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Scope</strong></td>
<td>Individual plant</td>
<td>Supply chain</td>
</tr>
<tr>
<td><strong>Education &amp; Knowledge</strong></td>
<td>Minimal</td>
<td>Extensive</td>
</tr>
<tr>
<td>(Safety, Pest Awareness, certification)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Inspection &amp; Monitoring</strong></td>
<td>Minimal</td>
<td>Extensive; Online Reporting</td>
</tr>
<tr>
<td><strong>Emphasis</strong></td>
<td>Treat symptoms of the problem. Routine pesticide Application</td>
<td>Treat source of the problem. Pesticide is the last resort</td>
</tr>
<tr>
<td><strong>Insecticides in Occupied Spaces</strong></td>
<td>Sprays and aerosols</td>
<td>Baits, Gel, dust etc</td>
</tr>
<tr>
<td><strong>Application of Sprays</strong></td>
<td>Surface treatments</td>
<td>Spot, crack and crevices</td>
</tr>
<tr>
<td><strong>Rodent Control, sanitation and Exclusion</strong></td>
<td>Minimal</td>
<td>Extensive</td>
</tr>
<tr>
<td><strong>Lethal control of Rodents</strong></td>
<td>Emphasis on rodenticides</td>
<td>Emphasis on trapping</td>
</tr>
<tr>
<td><strong>Program strategy</strong></td>
<td>Reactive</td>
<td>Preventive</td>
</tr>
<tr>
<td><strong>Potential liability</strong></td>
<td>High</td>
<td>Low</td>
</tr>
</tbody>
</table>
Components of IPM

1. Expertise
2. Setting Objectives of Pest Control
3. Initial Site Survey
4. Identifying Treatment Areas
5. Identify Pests and Risk associated with Pests
6. Set control Measures
7. Set Monitoring System
8. Partnership with Client
9. Record Keeping
10. Evaluation of the program
11. Preventive & Corrective Actions
12. Pest Awareness
### Components of IPM: Pest Risk Assessment

**Consider ALL Contributing Factors**

- Pest History
- Building Integrity
- Surrounding Environment
- Stock Management
- Sanitation and Hygiene

**How CAN it affect our customer?**

- Minimal threat
- Moderate inconvenience or non-conformance
- Significant
  - Product/asset damage
  - Contamination
    - Brand damage

**Probability**

- Minimal threat: 0 - 8
- Moderate inconvenience: 8 - 16
- Significant: > 16

**Level of Risk**

- **Low**: 0 - 8
- **Medium**: 8 - 16
- **High**: > 16

**Probability X Consequence = Level of Risk**

**ABLE TO CHANGE (REDUCE THE RISK FACTORS)**

**WILL USUALLY REMAIN CONSTANT**
Components of IPM:

**Building Integrity**
- Customer 100% in control of this score
- PCO supports by evaluating the number of gaps and entry points for pest

**Neighboring Environment**
- Customer – Cannot control or change
- PCO to assess level of risk which will then influence the score to determine the IPM programme to minimise risk

**Pest History**
- Customer – Consults with PCO of previous infestation by pest
- PCO to assess level of risk which will then influence the score to determine the IPM programme to minimise risk

**Site Sanitation & Housekeeping**
- Customer 100% in control of this score
- PCO supports by evaluating current cleaning practice on site and advises on how to reduce this risk score

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**CUSTOMER’S CONTROL** + **PCO IPM** + **CUSTOMER’S CONTROL** + **PCO IPM**

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**PARTNERSHIP**
# Observation and Recommendations Report

<table>
<thead>
<tr>
<th>PRM Hazard Factor</th>
<th>Hazard Score from 0 (low risk) to 5 (high risk)</th>
<th>Observation Comments</th>
<th>Recommendations</th>
<th>Riskal Score (Out of 5)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A2. Control Measures</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A2.1 Pest Management Programme</td>
<td>2</td>
<td>The current contractor has demonstrated limited knowledge of, and compliance with, Global BAT Standard</td>
<td>Use a professional contractor that can provide services to required BAT standards</td>
<td>0</td>
</tr>
<tr>
<td>A2.2 Fumigation</td>
<td>4</td>
<td>The current contractor performed very poorly in a fumigation audit conducted on the day prior to this assessment</td>
<td>Use a professional contractor that can provide services to BAT required standard</td>
<td>0</td>
</tr>
<tr>
<td><strong>A3. Building Integrity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A3.1 Physical Exclusion of Pests</td>
<td>4</td>
<td>Doors and walls were generally solid, however there large gaps exist around exterior doors and screen mesh size is significantly larger than the BAT requirement of 8 strands per cm.</td>
<td>Fit seals to external doors, seal gaps around windows, wall/floor cladding or piping/ducting entrance points and install correct size screen mesh.</td>
<td>1</td>
</tr>
<tr>
<td>A3.2 Building &amp; Plant Characteristics</td>
<td>2</td>
<td>Incorrect size screen mesh Large gaps around door</td>
<td>Apply sealant to remedy cracks and crevices where dust can accumulate and Cigarette Beetle can harbour.</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cracks and gaps still exist in interior storage area.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Component of IPM: Selection of Insecticides

<table>
<thead>
<tr>
<th>Category</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organophosphates</td>
<td>Chlorpyrifos, DDVP</td>
</tr>
<tr>
<td>Carbamates</td>
<td>Carbaryl, Propoxur</td>
</tr>
<tr>
<td>Fumigants</td>
<td>Methyl bromide, Aluminium phosphide</td>
</tr>
<tr>
<td>Synthetic Pyrethroids</td>
<td>Deltamethrin, Beta-Cyfluthrin</td>
</tr>
<tr>
<td>Botanicals</td>
<td>Pyrethrum, Neem extract</td>
</tr>
<tr>
<td>New Generation Insecticides</td>
<td>Neo-Nicotinile (Imidachloprid)</td>
</tr>
<tr>
<td></td>
<td>Pyrazole group (Fipronil)</td>
</tr>
<tr>
<td>Insect Growth Regulators</td>
<td>Methoprene, Hydroprene</td>
</tr>
</tbody>
</table>

**Toxicity**
- Hazardous
- Safe
Automated PestNetOnline Interface
Flying Insect Control Measures

- Inspection
- Assessing level of infestation
- Exclusion & Restriction procedures
- Larviciding
- Residual application on fly resting areas
- Fly Baiting technique
- Monitoring of installed ILT’s
- Schematic diagram of the location of the ILT’s
- Monitoring the effectiveness
- Trend Analysis & Corrective Actions
- Maintain reports & documents as required
Rodent Control Measures

• **Inspection**
  – Dropping
  – Live / Dead Rodents
  – Smears
  – Tracks
  – Gnawing Damages
  – Runs and Burrows

• **Assessing level of infestation & Behaviour of rodents**
  – High
  – Medium
  – Low

• **Exclusion & Restriction procedures**
  – Exclusion – Identifying Rodent Entry Points
  – Restriction – Identifying food, water & Shelter in the premise and restrict the same

• **Installation of Rodent Control**
Rodent Control Measures: Three Line of Defense

- Rodent Bait Station
  - External Bait Station
  - Tamper Resistant Bait station
- Site Location Map
- Reports and Documents
Rentokil’s innovative solutions for rodent control such as RADAR humane mouse trap, repellent, snap trap, tamper resistant station and 3 line defense to solve rodent problems quickly and safely. Well trained and experienced technicians can advise on appropriate rodent proofing to help prevent a rodent infestation.
Cockroach Management

Inspection
  • Dead or Live roaches
  • Smear marks
  • Cockroach droppings
  • Egg Cases – Oothecae

Assessing level of infestation
  • High
  • Medium
  • Low

Exclusion & Restriction procedures
  • Recommendation on sanitation & Hygiene
  • Proofing measures on sealing cracks & crevices

Residual application in the drains, manholes, gutters etc
Application of cockroach baits in selected locations
Monitoring the infestation levels
Maintain reports & documents as required
• Reducing food source in the adjacent environment
• Storage cleanliness
• Waste management
• Risk profiling and inspection of incoming goods/vehicles/Suppliers warehouse
• Monitoring through Pheromone traps
• Insecticide treatment of insect activity sites
• Prophylactic treatments
• Fumigation
- Cleaning / Disinfecting
- Bird Gel
- Bird Spikes
- Bird Wire
- Electric Systems
- Bird Netting
- Bird Spider
- Bird Slope
- Misting Units
<table>
<thead>
<tr>
<th>CONTROL POINT</th>
<th>CRITICAL LIMITS (ACTION LEVELS)</th>
<th>CORRECTIVE ACTIONS</th>
<th>RESPONSIBILITIES &amp; AUTHORITIES</th>
<th>RECORDS / REMARKS</th>
</tr>
</thead>
</table>
| Rodent Control* | - 50% of stations with evidence of rat activity  
- 30% of stations with evidence of rat activity  
- 2% of stations with evidence of rat activity | One or more of the following 4 courses of action  
1. Increase frequency of inspection  
2. Increase number and density of control and monitoring devices  
3. Increase quantities of bait in stations  
4. Inspect building integrity and housekeeping/sanitation standards | Rentokil Pest Control | OPMS report  
PestNet reports  
Temporary Site maps  
Rodent Activity register |
| Insects and arachnids | Unacceptable increase in insect or arachnid activity  
Detection or observation of unacceptable pest species. | One or more of the following 5 courses of action  
1. Increase frequency of inspection and pesticide application  
2. Increase number and density of ILT and monitoring devices  
3. Additional spraying or fumigation as necessary  
4. Inspect building integrity and housekeeping/sanitation standards  
5. Additional placement of glueboards and monitoring and control devices. | Rentokil Pest Control | OPMS report  
PestNet reports  
Temporary Site maps |
| Stored Product Pests** | 1-10 pest per device per visit | Increase number and density of pheromone traps | Rentokil Pest Control | OPMS report  
PestNet reports  
Temporary Site maps |
| | 11-20 pest per device per visit | Increase number and density of pheromone traps and close inspections of an area 10m² to identify source of activity. | Rentokil Pest Control | OPMS report  
PestNet reports  
Temporary Site maps |
Challenges for Effective Pest Control

- Wrong identification of pest
- Incomplete/Incorrect inspections & reports
- Wrong selection of pesticide
- Incorrect dose of pesticides
- Incorrect method of application
- Lack of Standardized service SOP’s
- Lack of proper Service delivery Specifications
- Application time
- Re-infestation
- Customer Education
- False commitments
- Lack of co-ordination between client and pest Control vendor
- Incapability of Service Technicians
Pest management is a universal challenge in the food & food related industry, but not a challenge that cannot be overcome.

An effective IPM and a skilled pest management team are the best defenses against pest infestations.
Expertise in IPM: The Technician

- IPM is a people oriented process
- The program designers are not the one who implement
- It is the front end Pest Control technician who is important

<table>
<thead>
<tr>
<th>Trained Pest Control Technicians Knowledge</th>
</tr>
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<tbody>
<tr>
<td>Integrated Pest Management - Principles &amp; Methods</td>
</tr>
<tr>
<td>Pest Biology &amp; identification</td>
</tr>
<tr>
<td>Inspection skills &amp; Tools</td>
</tr>
<tr>
<td>Control Measures – Treatment SOP’s</td>
</tr>
<tr>
<td>Chemicals &amp; Materials to be used</td>
</tr>
<tr>
<td>Awareness on GFSI, FSMS, AIB, FSSAI, BRC, HACCP</td>
</tr>
<tr>
<td>Monitoring &amp; Documentation</td>
</tr>
</tbody>
</table>
Expertise in IPM: The Technician

- Finest Recruitment
- Six weeks Rigorous Induction program
- Monitoring through Buddy technicians and Supervisors
- Competent to manage the IPM program
- Well trained in reporting and documentation
- Competent to handle clients/ Auditors queries and objections
Thank you