

# **GENERIC INTEGRATED PEST MANAGEMENT PROGRAM**

## INTRODUCTION AND PROGRAM DEVELOPMENT

### **1. Instituting an Integrated Pest Management Program**

Protection of products, facilities and personnel necessitates the development and implementation of an effective integrated pest management (IPM) program (a combination of chemical and non-chemical prevention and control strategies). The basic structure of an IPM facilities program includes:

- A. An initial inspection of products and facilities to identify problem areas and pests present.
- B. Application of pest management techniques:
  - (1) Structural design and pest exclusion
  - (2) Sanitation and housekeeping
  - (3) Stock handling practices (including receipt and conveyance inspection)
  - (4) Non-chemical control and exclusion methods
  - (5) Active and passive surveillance
  - (6) Education and training programs. Assignment of a warehouse representative to act as pest management program evaluator.
  - (7) Chemical control methods (least toxic, pest specific)
- C. Ongoing inspections of products/facilities and pest monitoring to continually evaluate program goals and correct problem areas.

The success of any IPM program is dependent on communication, cooperation and training between and for facility management, employees and pest management professionals. The responsibilities for each element of the program overlap, thus, the breakdown of any element can jeopardize the program.

## **2. Initial Inspection/Program Development**

A joint inspection between pest management consultants (PMC) and facility management personnel (FMP) will be performed to identify problem areas, operational constraints and review current pest management practices. The PMC will discuss techniques for effective pest management and pinpoint deficient areas. Immediately following the inspection, the PMC and FMP will discuss problem areas and develop a working plan and goals to correct deficiencies or shortcomings. A facility representative should be identified at this time to act as the liaison between management and the PMC. This individual(s) should receive training in pest management techniques.

### PROGRAM COMPONENTS

#### **1. Survey/Monitoring Techniques**

- A. Conduct thorough pest management/commodity inspections for possible infestations. Emphasize receipt inspections.
- B. Conduct, as a minimum, monthly pest management/preventive medicine inspections of sanitary conditions both inside and outside warehouses. If no critical deficiencies are reported, sanitary inspections should be conducted on a quarterly basis. Sanitary problems shall be reported when observed. Reported problems should be monitored until corrected.
- C. Effective inspection technique is the key in developing and implementing an IPM program and is essential in monitoring and maintaining the program's efficiency. To conduct a proper inspection, the inspector needs several items, such as a flashlight, pocket knife for opening boxes, clipboard, paper, pen and tape for resealing boxes. In addition, the inspector may want to carry chalk for marking infested pallets, a magnifying glass to aid in initial insect identification and a mirror on an extendable handle for inspecting difficult to reach locations. Also a portable blacklight is useful in determining rodent contamination, as rodent urine fluoresces under ultraviolet light.
- D. During receipt inspection of foods, the inspector should note the condition of boxes and pallets and look for actual infestation of the product itself. Over-aged items and products severely deteriorated or in damaged containers should be viewed with suspicion; where possible, such items shall be returned to the vendor. Repeated receipt of questionable items from the same vendor should be documented and purchasing practices reviewed. Do not place infested items in the warehouse. The conveyance should also be inspected for evidence of insect or rodent infestation; such evidence may be grounds for rejection of the products.

- E. During the initial pre-program inspection, as well as during follow-up inspections, the reviewer should note general sanitation levels, structural discrepancies and signs of pest infestations. Inspection results shall be communicated to warehouse management, as well as any other involved party such as the maintenance department and pest management liaison. This is necessary to correct deficiencies promptly, ensuring an effective program.
- F. Insect and other arthropod identifications must be supported by confirmation from a pest management consultant.
- G. The following guidelines are helpful to reviewers identifying pest infestations:
  - (1) Rodents
    - (a) Look for droppings, urine stains, rub marks, gnawing and shredded nesting materials on, in, and under palletized goods. Rodents may infest the interior of palletized goods, especially if held for long periods in the warehouse before issue.
    - (b) Do not confine inspection to pallets or food items; rodents will nest in undisturbed areas with specific characteristics (i.e., roof rat vs. Norway rat).
    - (c) Heavy infestations are often characterized by a musky odor and provides a valuable clue to their location.
  - (2) Insects
    - (a) Note the number and type of dead insects on floors, ledges, and window sills, as well as any live insects crawling on or flying about the facility or specific commodities.
    - (b) If light traps are used, their contents must be checked weekly for the number and species of insects. The responsible pest management consultant should identify these insects.
    - (c) Pheromone traps are recommended and may be used at the discretion of the responsible pest management consultant.
    - (d) Check infestible food products by moving packages off the top of the pallet and look closely for insects on package surfaces or in cracks and folds between packages. Insects infesting food products will usually be found on the underside of plastic bags, in and along folds and seams of bagged commodities, in the bottom of cartons and sacks, or underneath carton or box flaps. The existence of "frass" or

silk in or on a product or chewed entry and exit holes are clues to an infestation, even if actual insects are not immediately seen.

## **2. Sanitation/Housekeeping**

Proper sanitation and housekeeping efforts will substantially reduce pest food sources and harborage, as well as facilitate effective chemical and non-chemical control measures. Most pest problems may be directly traced to ineffective sanitation programs. Good sanitation practices include:

- A. Prompt clean up of spilled commodities
- B. Repair or removal/disposal of broken food containers and packages, especially in salvage and recoupment areas. Thoroughly cleaning metal or plastic refuse containers located in the recoupment are as frequently as necessary with hot water or steam. Use disposable liners in refuse containers to minimize cleaning frequency. Deep cleaning is a necessity.
- C. Use snug-fitting covers or lids for refuse containers. Additionally, empty refuse containers, vacuum cleaner bags, or receptacles daily. Clean containers as frequently as necessary.
- D. Sweep floors regularly, with special attention to the removal of debris, which accumulates around posts, shelf legs and pillars. Use an industrial vacuum sweeper to thoroughly clean warehouses and storerooms containing subsistence items. Empty stock locations should be swept prior to new stock placement. This applies for trailers, containers, and rail cars.
- E. Notify your pest manager and immediately cleanup rodent droppings when discovered; also, inspect commodities, packaging, pallets and floors for contamination by urine or other filth. Note: special precautions may be necessary in certain regions.
- F. Maintain pallets and keep them clean and free of debris. Pallets constructed of impermeable materials should be acquired and used if possible.
- G. Ensure that rail cars and truck vans are clean and without holes, both before they are loaded and shipped and upon receipt.
- H. Through facility management prohibit eating, drinking and/or smoking, except in designated areas. Remove empty or half-consumed food containers which may be placed behind or underneath pallets, and in other out-of-the-way places. Such items are powerful pest attractants. Encourage consumption of food items by employees in designated break-rooms.
- I. Ensure all rest rooms and "break" or lunch areas are regularly deep cleaned.

### 3. Structural Design/Pest Exclusion

Proper structural design and other techniques can prevent or minimize pest entry into facilities (preventive), thereby, minimizing additional time and resources needed to remove them (reactive).

#### A. Outside Grounds

- (1) Eliminate all heavy weed growth and debris near the facility. These items provide ideal breeding sites and harborage for pests, make locating and treating these areas more difficult.
- (2) Empty refuse receptacles and pick up trash daily. Insure the area around and under all refuse receptacles are cleaned on a consistent basis.
- (3) Stack/store surplus pallets and equipment in designated areas well away from the facility, as they often provide harborage for pests. Develop a recycling program for pallets and unused equipment.
- (4) Use yellow or sodium vapor interior and exterior lighting to reduce insect attraction.
- (5) Keep garbage areas well organized and free of litter to prevent pest harborage and enable observation during surveillance activities.
- (6) Implement passive pest monitoring systems (i.e., pheromone traps, rodent traps) outside of the building.

#### B. Facilities

- (1) Maintain tight door closure--the gap along bottom and sides should not exceed 1/4". Keep doors closed when not in actual use. Insure air screens are operating properly and in good repair.
- (2) Repair holes existing in or under walls and seal all cracks around door jams or at the wall-ground junction with concrete or other suitable material. Begin a monitoring program and repair schedule.
- (3) Seal utility lines and chases where they enter the facility.

- (4) Cover operable windows and air ducts with 16-mesh screening.
- (5) Cover exhaust fans with operable louvers and/or 16 mesh screening.
- (6) Appropriately screen or cover floor drains and heating/cooling vents with 1/4" mesh to prevent rodent access. Seal non-functioning floor drains. Monitor floor drains for debris which may attract pests.
- (7) Properly seal expansion joints and other joints or cracks to eliminate pest entry or harborage.
- (8) If loading docks are not of solid construction, keep the area beneath it open, accessible and clean. Keep docks themselves free of debris, excess pallets and packing materials, which may provide pest harborage.
- (9) Maintain a minimum of 18" perimeter clearance between walls and shelves or pallets to allow for thorough inspection and cleaning.
- (10) Store packing material in repack areas off the floor, store tools and parts in mechanical and recharging areas similarly.
- (11) Insure employees only eat in designated break areas. These areas must maintain a high level of sanitation (deep cleaning).

#### **4. Stock Handling Practices**

Certain stock handling practices have been effective at reducing the potential food supply and harborage for pests:

- A. Inspect incoming products to ensure they are pest free when received. Refuse receipt of any infested products.
- B. Store food products separate from all other items to the maximum extent possible, except when stored under refrigeration.
- C. Avoid combining different products on the same pallet.
- D. Consolidate items on pallets as compactly as possible to eliminate rodent hiding places.

- E. Rotate stock properly. Proper stock rotation is critical; the older a product, the more likely it is to be infested. Base rotation on the date of pack of the item, rather than the date the item was received in the warehouse or storeroom, unless food inspection personnel indicate otherwise. Management must be aware of the turnover time on various items in order to reduce the likelihood of overstocking and consequent over-aging of products.
- F. Food items found to be infested with pests should be isolated as quickly as possible and discarded.
- G. Ensure that supervisors encourage caution among forklift operators. Most spillage and commodity damage is caused by careless operations. Special care should be taken with soft packaged food items, such as flour, sugar and rice.

## **5. General Pest Exclusion Methods**

These methods are designed to exclude pests from storage areas and prevent their establishment:

- A. Plastic or wire screening attached or suspended beneath warehouse structural framing and overhangs can be effective means of excluding birds from access to roosting or nesting sites.
- B. Screening (16-mesh) over windows on outside walls is an effective way to prevent bird entry through operable windows.
- C. Large doorways leading to outside access should be tight-fitting and have no gaps larger than 1/4" on any edge when the door is closed. If these doorways are left open for extended periods, they should be fitted with full length plastic strips or air curtains to discourage and prevent pest entry.
- D. Electronic, magnetic and sonic devices are neither effective nor authorized for rodent or bird control.

## **6. Non-chemical Control Methods**

These methods are designed to control pest infestations by catching, killing or excluding the pest without the use of pesticides. Facility design must be considered from the standpoint of control and exclusion.

- A. Repeating traps and snap traps are used for rodent control around the inside perimeter of the warehouse. They are set at regular intervals (distance will vary depending on the potential for rodent activity and the type of rodent normally encountered), or within stacks in high susceptibility areas such as those used for pet food, rice and flour storage. Traps should be checked at

least weekly, or daily if activity is observed. It is possible to have either a warehouse worker or food inspector check traps during the interval between routine pest control visits. They should notify pest control of any activity found.

- B. Glue boards may be used for rodent control and should be placed in the same manner as traps on the natural rodent runs. Note: They can also be used for monitoring for some insects.
- C. Eliminate unnecessary water sources readily available to rodents. This will also improve the effectiveness of liquid rodenticides.
- D. Repellent glues may be used to keep birds off roosting points, if they cannot be entirely excluded. In some situations, slip sheets (cardboard sheets used between the pallet base and load) or plastic may be placed on top of pallets to protect products from contamination.
- E. Insect pheromone traps, New Jersey style light traps and insect electrocutors, while not effective as the only type of control measure when used alone, do provide surveillance of insect populations. Pheromone traps may be used outside of a storage facility, away from the building, to monitor outside pest insect populations and intercept pest insects before they can enter the facility.

## **7. Chemical Control Methods**

Pesticides are used to prevent or control insect, rodent and bird infestations.

- A. Ensure that all pesticide applicators are trained, certified or appropriately licensed to apply pesticides.
- B. When necessary, apply crack and crevice residual pesticides with insect growth regulator (approved for food processing establishments) in dry storage warehouses or similar facilities. The frequency of application should be adjusted, reduced or increased based on surveillance results, however, it shall not exceed label recommendations.
- C. Dry rodenticide bait may be used in storage environments in appropriate bait stations. Rodent bait stations are placed along the inside warehouse perimeter as well as at points of evident need based on surveys. Mechanical traps, both windup and snap, may be used along interior walls in place of bait stations. Place rodent control devices only in locations that are accessible for inspection and servicing, and are protected from careless operations which may damage them. Stations should be checked at least monthly for rodent activity, and old bait material completely replaced with new bait, at regular intervals. Bait stations should be used outside all storage facilities at intervals

of 50 feet or closer. Bait stations placed outside must be tamperproof. Baits must be protected from mechanical damage and be readily accessible to the rodent population. If rodent activity is noted indoors, both liquid bait stations and mechanical traps should be used to supplement dry rodenticide baits and the frequency of monitoring increased.

- D. Rodent tracking stations can be used outside the storage facility, and are especially effective for rapid reduction of high rodent populations.

## ADDITIONAL INFORMATION

### **1. Expectations of Your Pest Manager (adopted from Purina)**

-Expect a high level of management emphasizing prevention. The presence of insect and rodent pests in your facility should not be tolerated.

-Your pest management professional must be certified and knowledgeable about pest management in general and your needs in particular.

-Expect written reports that detail pest activity as well as point out sanitation situations which require corrective action. The report should address structural situations which need attention.

-A copy of these reports should be kept with the PMP as inspections are being performed. An additional copy should be kept in a log book on site along with the labels and MSDSs of the pesticides being used.

-You should expect your pest manager to follow all Federal, State and local laws and regulations that pertain to pest management. They should be willing to provide you with copies of these laws and regulations and be willing to discuss them with you and explain their meaning and implications.

-You should expect the pest manager to adjust their service schedule to meet your needs. Timing is critical for successful pest control and your pest manager should know this.

-You should expect your pest manager to have access to information and assistance from specialists to help them in difficult situations.

-Your pest manager should maintain close contact with you and explain all actions taken.

-Your pest manager should be willing to take time to educate you concerning pest management in your facility. They should be able to answer your questions directly.

-Your pest manager should be willing to assist your employee training program. There are many things your employees can do everyday as part of their job to help with preventing pest control problems.

## **2. Your Responsibilities in a Pest Management Program**

-You should respond in a reasonable and timely manner to requests for corrections to sanitation situations or structural repairs. Some requests may be impractical for your operations or out of your control. Let the know this so that alternatives may be explored.

-You should be an active participant in your pest control program. Your pest control company cannot respond to your needs if you do not tell them what those needs are.

-You should report pest sightings as accurately as possible. This allows your pest manager to solve problems quickly and efficiently and design a preventive program.