1.0 OBJECTIVES

1.1 To protect and enhance the natural biodiversity of the ADB Headquarters' site, while also supporting high-performance building operations and developing synergies between the building and its environment.

1.2 To minimize the impact of site management practices on the local ecosystem, and to reduce exposure of occupants, staff and maintenance personnel to potentially hazardous chemical, biological and particle contaminants.

1.3 To address environmental best practices for both outdoor and indoor integrated pest management.

1.4 To minimize consumption of chemical for pest control use.

2.0 SCOPE

This Integrated Pest Management (IPM) shall govern all components of pest management at the ADB Headquarters. The practices identified herein shall be wholly adapted and used in all pest management scenarios at ADB Headquarters.

3.0 DEFINITION OF TERMS

3.1 **Asphyxiation** – To kill or make unconscious through inadequate oxygen supply, presence of noxious agents, or other obstruction to normal breathing.

3.2 **Biohazard** – A condition that is a hazard to humans or to the environment.

3.3 **Decapitation** – Cutting of the head from the body, beheading.

3.4 **Dilution** – Reducing the concentration of chemical.

3.5 **Euthanasia** – The act of killing an organism in a relatively painless way for reason of mercy.

Prepared by	Reviewed by	Approved by
SENIOR FACILITIES PLANNING AND MANAGEMENT ASSISTANT	EHS MANAGEMENT SYSTEM SECRETARIAT/ LEAD FACILITIES PLANNING AND MANAGEMENT SPECIALIST	MANAGEMENT REPRESENTATIVE FOR IMPLEMENTATION PRINCIPAL DIRECTOR, OAS

3.6 **Re-entry period** – A certain amount of time must pass before it is safe to go on a treated area. Waiting time from chemical delivery until it is declared safe and hazard free.

4.0 REFERENCES

4.1 IACUC Standard Euthanasia Guidelines for Rodents July 2004

5.0 POLICIES AND E^{2}HS BEST PRACTICES

Guidance for Resources and Implementation

5.1 Indoor Integrated Methods

Integrated methods that make use of monitoring and non-toxic preventive measures (e.g., site inspection, cultural control, physical control, mechanical control, biological control and monitoring results) will be used to proactively manage and minimize pest issues. In the event that monitoring activities reveal a need for the use of pest control, appropriate options will be evaluated, and if nontoxic options are unreasonable and have been exhausted, and the least-toxic option likely to be effective will be employed.

5.1.1 Inspection

The first step in an integrated approach to pest management. The service provider may spend as much or more time observing and collecting data on activity than in the actual application of pesticides.

5.1.2 Cultural Control

This strategy includes improved sanitation, reducing clutter, people change habits like leaving food in the work stations/cabinets, maintain plant health by taking care of habits and conditions, fertilization, plant selection (right plant/right place), and sanitation to include problem pests and weeds.

5.1.3 Physical Control

This strategy of pest eradication involves removing pest access to the ADB Headquarters building by sealing openings with caulk and mesh wires; repairing leaks and screen; and removing pests by hand.

5.1.4 Mechanical Control

This strategy involves the use of insect monitors, light traps, rodent traps, etc. to prevent pest infestation.

5.1.5 **Biological Control**

This strategy uses the pest's natural enemy which includes introduction of beneficial insects or bacteria to the environment.

5.1.6 **Chemical Control**

This method is employed when all methods are exhausted and found to be ineffective. Notification should be practiced prior to any chemical application in accordance with ADB practices. A licensed Pest Control Operator (contractor) should do the application of all chemicals to avoid misuse and malpractices.

5.1.7 **Monitoring Results**

Observing or evaluating the success of the pest management is the final step in an IPM program. Records provide a starting point for problem resolution. Systematically reviewing the records and merging that information with correct observations can lead to a timely solution for many problems.

5.2 **Outdoor Integrated Methods**

The main goal is to maintain healthy vegetation with minimum inputs of water, fertilizer, pesticides or energy. IPM relies on cultural, biological and chemical methods to keep pest below a threshold level in order to maintain or enhance desired vegetation. The best way to manage pest is by managing for healthy landscape plantings, thus cultural practices are the most important components of this plan.

5.2.1 **Cultural**

Cultural methods include human activities that promote healthy desirable plants while discouraging opportunities for pests to establish. Examples include proper pruning, irrigation, fertilization, mulching, aeration and physical removal of pests (e.g. hand pulling of weeds or vacuuming insects off plants). Service provider staff should attend professional trainings and participate *i*n seminars to uplift knowledge in horticulture. The foundation of any pest management program must be maintenance of healthy turf and other desirable plants. These healthy plants can resist more serious pest infestations and require less time and money to maintain. Some essential cultural methods that all turf managers should use include irrigation scheduling, fertility management, proper mowing, aeration, mulching, re-seeding and over seeding, hand pulling, employee education and ADB personnel education.

5.2.2 **Biological**

The deliberate introduction of living organisms that attack the target pests. This can be accomplished through cultural methods. Staff should be trained to be able to know a pest from a beneficial insect in order not to imbalance ecology.

5.2.3 **Chemical**

Includes the use of synthetic herbicides, insecticides, rodenticides, miticide, acaricide or fungicides. Chemical control is usually effective in a short amount of time, takes less labor and provides almost instant gratification at a low cost. However the use of chemical pesticides brings with it concerns for human health and environmental safety. ADB shall take the approach to limit pesticide use as much as possible to achieve management goals and that cultural practices are the first line of defense against pests. Labels of all pesticide applications on main grounds and outside facilities are typically made by a licensed contractor.

Pesticides are stored in a dedicated storage area with proper ventilation to prevent accidental inhalation of chemical vapors. Spill kits are readily available in case of spillage and enough room for work equipment. Care must be exercised in handling and mixing chemicals. Equipment must be in good condition and regularly inspected. Chemicals should be mixed as needed in amounts that will be used entirely.

Mix and rinse equipment at locations with acceptable collection and treatment area. All empty containers or bottles are rinsed with water and disposed in hazardous waste disposal. Pesticide applications are prefaced by public notification in accordance with ADB practices.

5.2.4 **Monitoring**

Ongoing monitoring and evaluation are important. If a certain combination of tools is not working, then a different approach should be taken. Landscape workers and managers monitor conditions on an ongoing basis, using visual assessment. This relies on trained staff's ability to recognize and report problems and emphasizes the important role that the service provider staff have in keeping our surroundings healthy and attractive.

5.2.5 **Least-toxic Pesticides**

All pesticides used in ADB shall be registered in the Fertilizer & Pesticide Authority of the Department of Agriculture. Chemical composition of the each pesticide shall be verified if it is included in the Philippine Index of Chemicals and Chemical Substances (PICCS) released by the Department of Environment and Natural Resources (DENR). Pesticides shall be considered least toxic if it meets the criteria set by City of San Francisco's Hazard Tier 3 criteria and Beyond pesticides/NCAMP. Non rodent pesticides are also

considered least toxic if they exceed the tier 3 criteria but are used in self-contained baits and placed in inaccessible locations; rodent baits are not considered least toxic under any circumstances.

5.2.6 Landscaping Features

With the possibility of landscape plants/vegetation harboring pests, outdoor integrated pest control management should consider features that might harbor pests - vegetation close to the building façade should be trimmed/removed; pest attractants such as trash bins should be checked regularly; pest population should be monitored; and weeds and invasive plants should be controlled.

5.3 Chemical Storage Practices

5.3.1 Storage Areas

a. Storage areas must be dry, well-ventilated and secure.
b. Storage areas must be situated away from other buildings or areas where food or flammable materials are stored.
c. Storage must be built to resist foreseeable accidents, including leakage and spillage, fires and the weather. Ensure there is no risk of spills polluting ground water and local bodies of water. Floors must be impervious to liquids, anti-slip, chemical-resistant, washable and with a means of diverting spills. Drains must lead to sumps or tanks large enough to contain any foreseeable leaks.
d. Shelving must be appropriate for the size of the containers stored in them. Flammable pesticides must be separated from other pesticides. Consideration must be given to possible reactions between chemicals coming in contact with each other.
e. Keep equipment in proper storage area.
f. Keep pesticides in a cool, dry place away from direct sunlight.
g. A fire extinguisher, water and soap shall be readily available near the storage area.
h. Store pesticides in their original containers with a legible label.
i. Store volatile pesticides separately to avoid possible cross-contamination of other products.
j. To avoid unnecessary and prolonged storage of insecticides, order only sufficient amounts needed for a given operation, or order on a regular basis (e.g. every three months depending on routine needs), or order only when stocks are getting low.

5.3.2 Labels

a. Make sure all pest control chemicals are clearly labeled and that the manufacturer's instructions for use are kept with them.
b. Chemicals must never be placed in unmarked containers.

c. Check the label to make sure the pesticide you have chosen is registered to use both on the pest and the crop. Accurately identify your pest, and then match the pesticide with the pest.
d. Select a pesticide formulation that is easy and safe to use.

5.3.3 **Product Information**

a. Effective first-aid provisions must be available together with data sheets on all the products in the storage room and the chemical safety precautions.
b. Emergency telephone numbers must be listed in a key location in the storage facility. These numbers and other emergency facilities must be checked and updated as necessary.
c. Know the first-aid measures and anti-dotes for the insecticides being used.

5.3.4 **Signage**

a. Display warning signs without attracting unwanted attention.
b. Signages should be easy to read and understand.

5.4 **Chemical Preparation and Handling Practices**

5.4.1 **Choosing Chemicals**

a. Identify which pesticides and herbicides are being used and the exact problems they are intended to resolve. The more that is known about the problem, the less chance there is of making a mistake. The words organic, natural and biodegradable in this context do not guarantee that they are safe.
b. Secure MSDS of pesticides and other chemicals prior to procurement. Post approved MSDS in strategic locations. Refer to OP-ADB-2.07 Chemical Control and Safety. Consider its toxicity, safety to humans and to the environment; effectiveness against the vector; and cost of the insecticide.
c. An effective and/or cheap insecticide should not be used if the chemical is highly toxic to humans and other non-target organisms.
d. Pyrethroids are generally has very low mammalian toxicity when compared to other groups of insecticides such as carbamates.
e. The liquid formulation of an insecticide is usually more dangerous than a solid formulation of the same strength. Certain solvents in liquid formulation facilitate skin penetration.
f. The latest information on the safety aspect of insecticides being considered must be available before a wise choice can be made.

5.4.2 Mixing Chemicals

a. Accurate measurements must be made during both mixing and application phases. Use the most suitable chemical, in the minimum necessary amount, to achieve the desired results.
b. A safe area must be available for mixing pesticides. This must be done on a concrete pad, with separate sump or tank to contain any leakage.
c. Do not drink, eat or smoke while working. This prevents accidental inhalation or ingestion of insecticides.
d. Mix insecticides in a well ventilated area preferably outdoors. Mix only as much insecticide as needed for each application. This will reduce the problem of storing and disposing excess insecticide. Never mix insecticides directly with bare hands.
e. Stand with the wind blowing from behind when mixing insecticides.
f. Keep all unconcerned people away from where insecticides are being mixed.

5.4.3 Health Precautions

a. Operators must be provided with and adequately trained in the use of the necessary equipment and protective clothing.
b. Proper health surveillance must be available to all those working with pesticides and herbicides.
c. Neighbors and others in the area must be warned of the spraying program in advance and during applications.
d. All workers must wash thoroughly with soap and water. This removes deposits of insecticides on the skin.
e. All protective clothing should be washed after each use.
f. Eat only after a thorough washing with soap and water.

5.4.4 Chemicals Transport

a. Only the appropriate quantity of pesticide and herbicide must be removed from the pesticide store for immediate use.
b. Lock up the pesticides if you leave your vehicle. Never transport pesticides along with food, feed fertilizer and clothing or consumer goods.
c. Protect wettable powders and dusts in paper or cardboard containers from rain and moisture.

5.5 Chemical Application Practices

5.5.1 User Qualifications

a. In many instances, it will be necessary to call on outside expertise to advice on pest management problems, particularly in the creation of customized integrated pest management plan, which may require detailed knowledge of the biology and ecology of a particular species.

b. A specialist must supervise and control the preparation and use of chemical applications.

5.5.2 **Species Qualifications**

a. Time the treatment to coincide with the presence of the pest.
b. Use a selective chemical that has the least effect on non-target species and treat only the area affected.
c. Include site-specific information.

5.5.3 **User Safety**

a. Users must wear protective clothing and headgear. Change clothing and wash thoroughly with soap and water after applying pest control chemicals.
b. Wear clean protective clothes that are free of holes or other defects.
c. Those applying insecticides should always wear long-sleeved shirts and trousers.
d. To protect yourself and your family, never work with insecticides in your street clothes.
e. Wear a respirator for outdoor spraying or dusting of organic phosphorus compounds.
f. Do not wear unwashed protective clothing. Make sure your gloves and boots have been washed inside and outside before you put them on.
g. All workers must wash thoroughly with soap and water. This removes deposits of insecticides on the skin.
h. Ensure that anyone handling toxic chemicals never works alone and that the work area is well-ventilated.
i. Users must be familiar with the effects on the body of the chemicals they are likely to be using, and how the chemicals may enter the body.
j. Users must be aware of the signs and symptoms of acute poisoning related to chemicals they are using. They must stop work if they are feeling ill and seek medical advice.
k. Eating, drinking and smoking must be prohibited when using or handling chemicals.
l. Do not leave pesticides or empty containers lying around. Empty containers shall be given to the Contractors for proper disposal using OP-ADB-2.03 F3 Hazardous Waste Turnover Form. Observe OP-ADB-2.03 Guidelines on Waste Management.

5.5.4 **Limited Access**

a. The area of application must be clearly marked, and prevent unnecessary access while spraying is in progress.
b. Building occupants must be informed of any pest-control management systems. When application or spraying is in progress, they must be warned of this activity and kept away from the area in which it is taking place.

c. Control the re-entry of people into the treated area by providing barriers or warning signs.
d. Permit-to-Work must be secured first by the concerned Facilities Planning and Management staff/contractor before conducting any critical activity that may pose danger to the environment, community and workers. Accomplish OP-ADB-2.06 F4 Contractor Monitoring Checklist (General Permit-to-Work) for approval of SEO and Security staff-on-duty. Refer to OP-ADB-2.06 Permit to Work.
e. Do not re-enter the treated area until the spray has dried or the specified re-entry time has elapsed.

5.5.5 **Equipment**

a. Equipment must be frequently checked and properly maintained, both for health and safety reasons and to minimize spray drift.
b. Wear clean protective clothes that are free of holes or other defects.
c. Observe OP-ADB-2.05 Guidelines on the Use of Personal Protective Equipment. Always use appropriate personal protective equipment:
    - hand gloves
    - mask with filter
    - boots (used only when raining)
    - safety shoes with steel toe
    - goggles
d. Make sure that the spray equipment does not leak; check all joints regularly.
e. Do not clear blocked spray nozzles by blowing with the mouth.
f. Wash all spray equipment thoroughly and return to the storeroom. It is important to maintain equipment in good working order after usage.
g. All protective clothing should be washed after each use.
h. To avoid equipment accidents, do not leave the equipment unattended, and ensure that the application equipment is working properly.

5.5.6 **Weather / Time Restrictions**

a. Spraying must not be carried out in unsuitable weather. Anyone operating sprayers must have access to a wind-speed meter and only spray when the wind speed is negligible.
b. Hours of work must be controlled so that building occupants are not exposed.
c. Take heed of the wind direction to avoid drift.

5.6 Chemical Disposal Practices

5.6.1 Conditions of Disposal

a. As most pesticides and herbicides are toxic, proper disposal of unused chemicals is paramount to maintaining the health of building occupants and the safety of the environment. Disposal methods will depend on:
   - Quantity of waste for disposal
   - Chemical and biological degradability of the active ingredients
   - Toxic properties
   - Concentration
   - Physical form of the waste
   - Disposal options available

b. Thoroughly rinse pesticides containers.
c. If possible, all mixed solutions shall be used up. Unused or excess mixed solutions, containers and contaminated PPE shall be given to the Contractor for proper disposal.
d. Other wastes such as used baits, fly papers, etc. shall be disposed accordingly. Refer to OP-ADB-2.03 Guidelines on Waste Management.

5.6.2 General Guidelines

a. Always follow the manufacturer's and/or supplier's instructions even when disposing of empty containers.
b. Land filling or incinerating pesticides and herbicides is not an environmentally sound option.
c. Segregate pesticide/herbicide wastes from general building wastes.
d. Other wastes such as used baits, fly papers, etc. shall be disposed accordingly. Refer to OP-ADB-2.03 Guidelines on Waste Management

5.6.3 Containers / Labels

a. Never transfer pesticides to unlabelled or mislabeled containers. Keep the chemicals in clearly labeled containers even when disposing of them.
b. Do not reuse pesticide/herbicide containers.
c. Puncture containers after they have been used to prevent reuse.
d. Used containers can be rinsed two or three times with water, scrubbing the sides thoroughly. If a drum has contained an organic phosphorus compound, an additional rinse should be carried out with washing soda, 50 g/l (5%), and the solution allowed remaining in the container overnight. A soakage pit should be provided for rinsing.
e. Empty insecticide containers should not be used in the household to store food or drinking water.

5.6.4 **Authorization**

a. Use an authorized waste-disposal contractor.
b. Use an authorized disposal site.

5.7 **Basic Vegetation Control Practices**

5.7.1 **Maintenance**

a. Keep the building grounds well-maintained at all times.
b. Maintenance personnel shall apply mulch to plant beds, warding off weeds and other pests.

5.7.2 **Planting**

a. Plant at the right time and in the right places. Seedlings must not be planted too early, nor located in unsuitable conditions.
b. Avoid monocultures by mixing plant species in planters and gardens.

5.7.3 **Manual Controls**

a. Landscaping shall be hand weeded and chemical control shall be kept to a minimum.
b. This measure prevents human and environmental exposure to hazardous chemicals.

5.7.4 **Chemical Controls**

a. When chemical use is necessary, replace hazardous substances with least-toxic chemicals.

5.7.5 **Inspection Schedule and Location**

a. The landscape contractor shall visit the site at regular intervals to monitor and apply pest control operations as per approved annual work program.

5.8 **Basic Animal Pest Control Practice**

5.8.1 **Site and Building Cleanliness**

a. Keep garbage containers clean, free of odors and covered at all times. Sanitation measures reduce habitat and food sources for pests.
b. Keep areas around garbage containers free of spillage or garbage to prevent the collection of trash or debris on the ground around or underneath the containers.
c. Keep grounds free of high weeds, trash, old equipment and debris, as these conditions create ideal harborage for rodents.

d. Include site-specific information.

5.8.2 **Structural Integrity**

a. Maintain the building exterior in good condition with no holes or openings larger than ¼ inch including, but not limited to, windows, doors, fans, vents, etc. Structural repairs prevent pests from entering the building.
b. Address any deficiencies in the building exterior with corrective measures, i.e., cementing, screening, caulking, installing stripping on door bases, etc.
c. Maintain door sweeps on all applicable doors to produce a good seal to the ground.
d. Include site-specific information.

5.8.3 **Inspection Schedule and Location**

a. Visual inspections shall be performed at least 2 times per month, with treatment if necessary. After each visit, the pest contractor shall provide a printed service report that includes written observations, recommendations and details of IPM activities.
b. Include site-specific information.

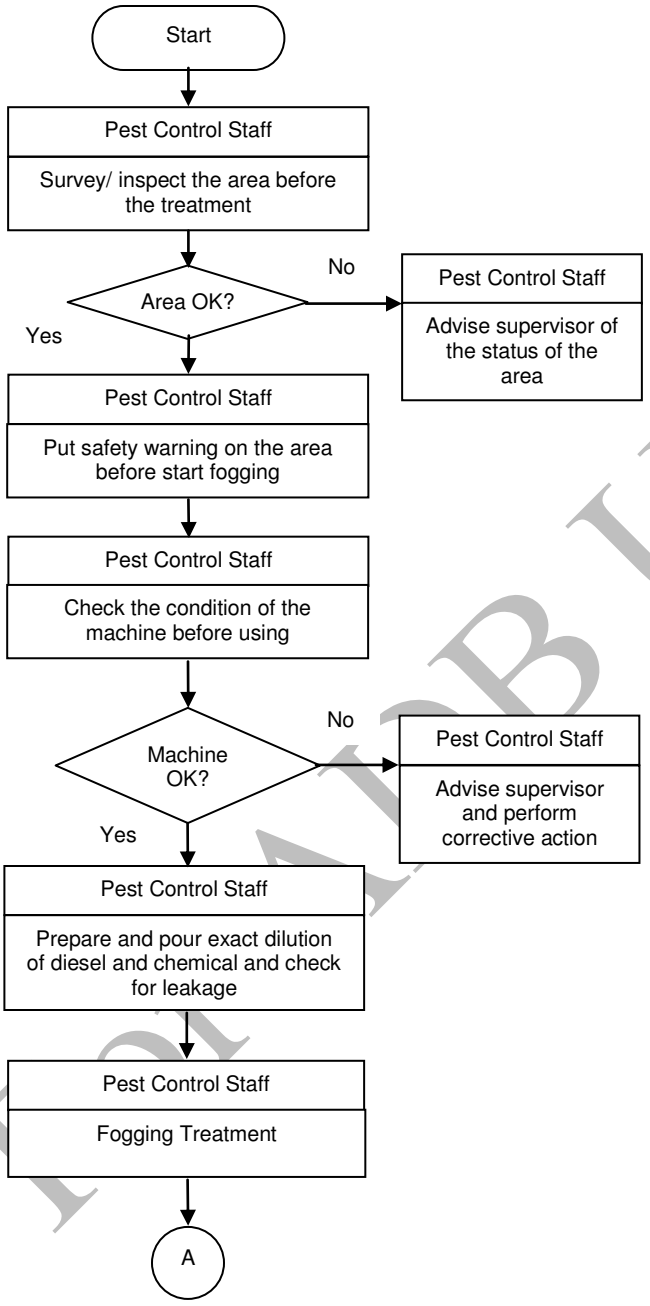
5.8.4 **Disposal of Rodents Caught in Traps**

a. The Institutional Animal Care and Use Committee (IACUC) of the Philippines suggests that rodents be considered as biohazards and undergo infectious waste disposal procedure. The animal must be wrapped in a tightly sealed biohazard bag prior to final disposal.
b. The drowning procedure can be done using a bucket and water for rodents while they are still in traps. Clean and disinfect the bucket and cage traps after undertaking the procedure.
c. If the rodent is caught alive in the pest trap, it is recommended that euthanasia be administered through asphyxiation. Prevent oxygen supply by wrapping the rodent in a plastic biohazard bag for 10 minutes or more. If the rodent is still conscious after asphyxiation, it is recommended that the animal be decapitated.
d. Disposal of dead rodents should comply with ADB Hazardous waste disposal procedures.

6.0 DETAILS

6.1 Procedure for Fogging

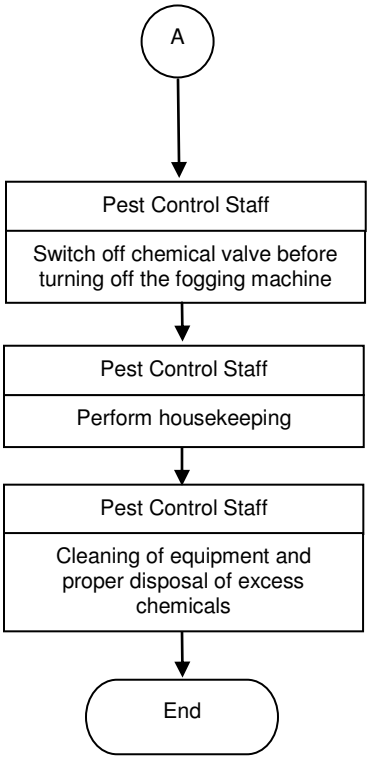
Activity/ Responsibility



Notes/ References

1. Always bring flashlight during the treatment.
2. Conduct monthly monitoring and maintenance for fogging equipment.
3. Wear PPE during the treatment such as ear-protector, gloves, mask, safety shoes and long sleeve shirt.
4. Fogging treatment should be 3-5 meters away from wall or any object that can easily burn. Do not fog near septic tank.

Activity/ Responsibility

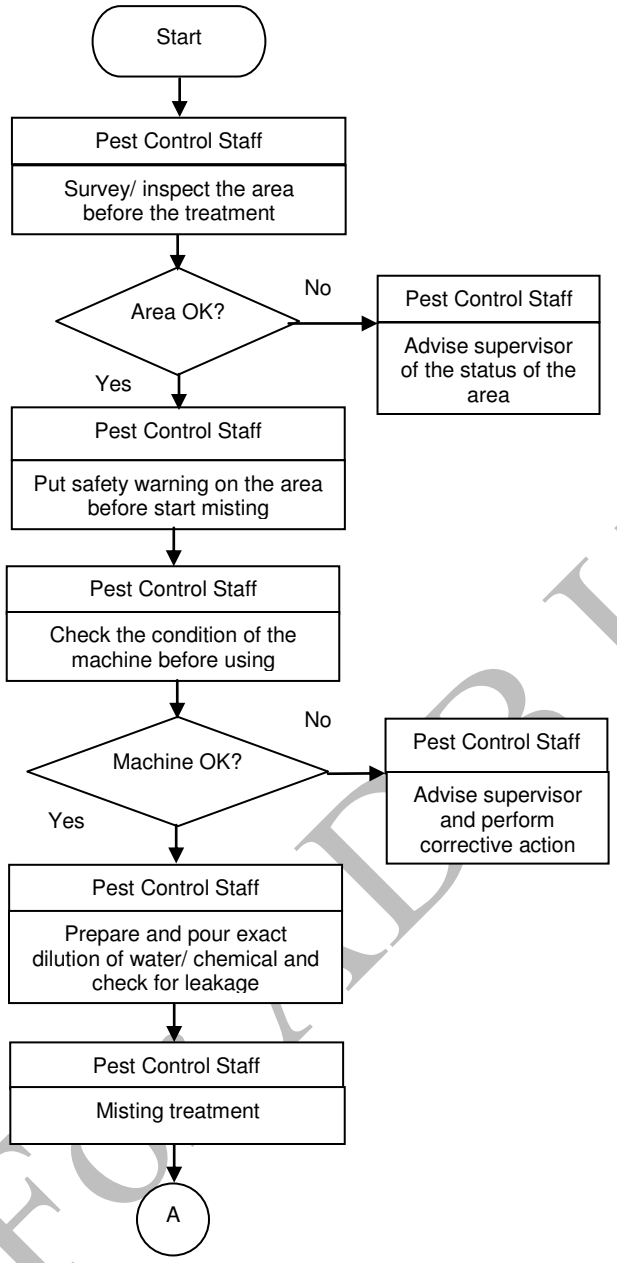


Notes/ References

5. Do not fog closely or directly to the garden/ plants. Analyze the wind direction before the start of fogging treatment.
6. Turn off the machine before filling of gasoline and prevent spillage.
7. This operation is done with accompanying technician
8. Put warning signage to the area under treatment and remove when the re-entry period was declared.

6.2 Procedure for Misting

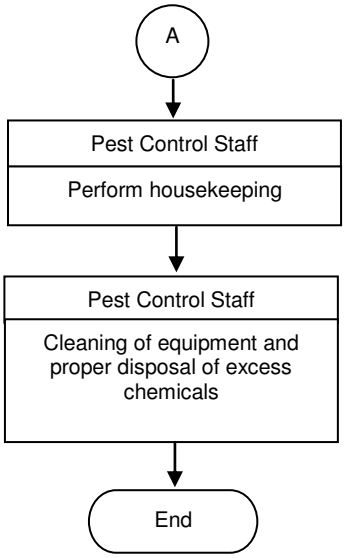
Activity/ Responsibility



Notes/ References

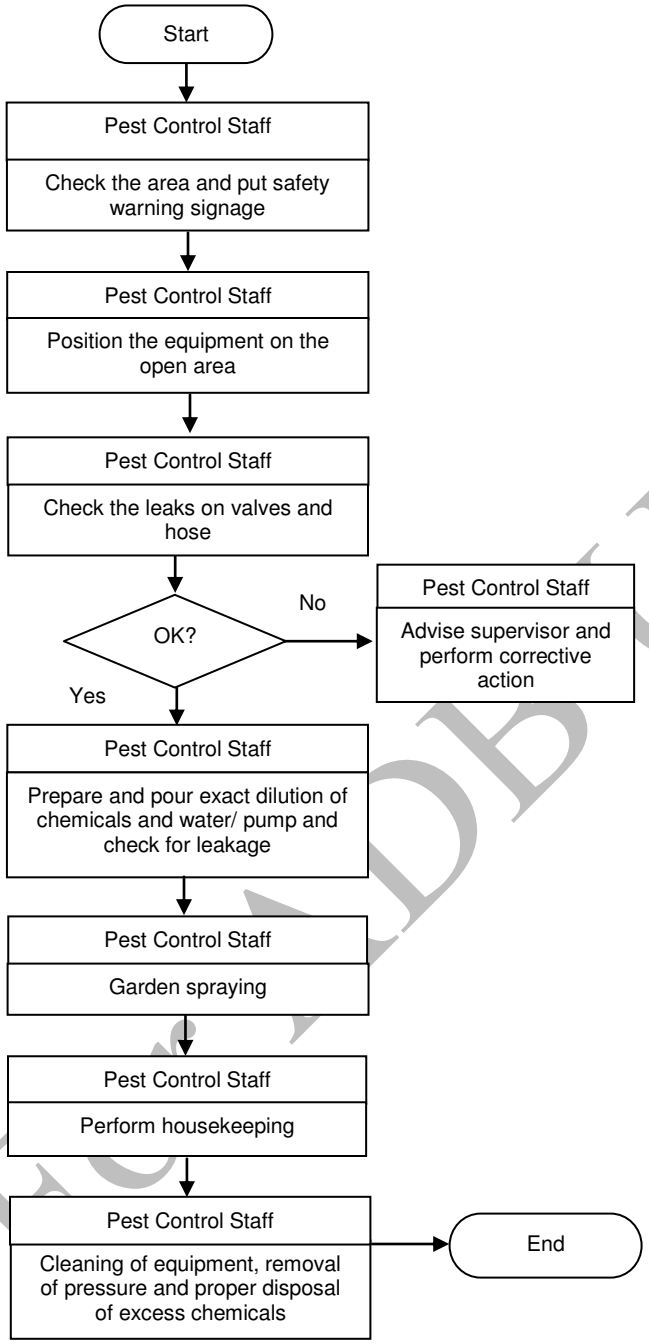
1. Always check the condition of the machine and do the following:
   a. Check the wires before plugging it to the main socket.
   b. Ensure that the male plug is not wet to avoid short circuit.
2. Conduct monthly monitoring and maintenance for misting equipment.
3. Wear PPE during the treatment such as ear-protector, gloves, mask, goggles, and long sleeve shirt.
4. Prepare chemicals and make sure that the amount is enough for the particular area to avoid chemical surplus.
5. Should always bring tools on every operation.
6. In preparing dilution, water is first poured in the tank before the chemical. Then filling it up with water to top desired amount.
7. This operation is done with accompanying technician.
8. Put warning signage to the area under treatment and remove when the re-entry period was declared.

Activity/ Responsibility | **Notes/ References**



6.3 Procedure for Garden Spraying

Activity/ Responsibility

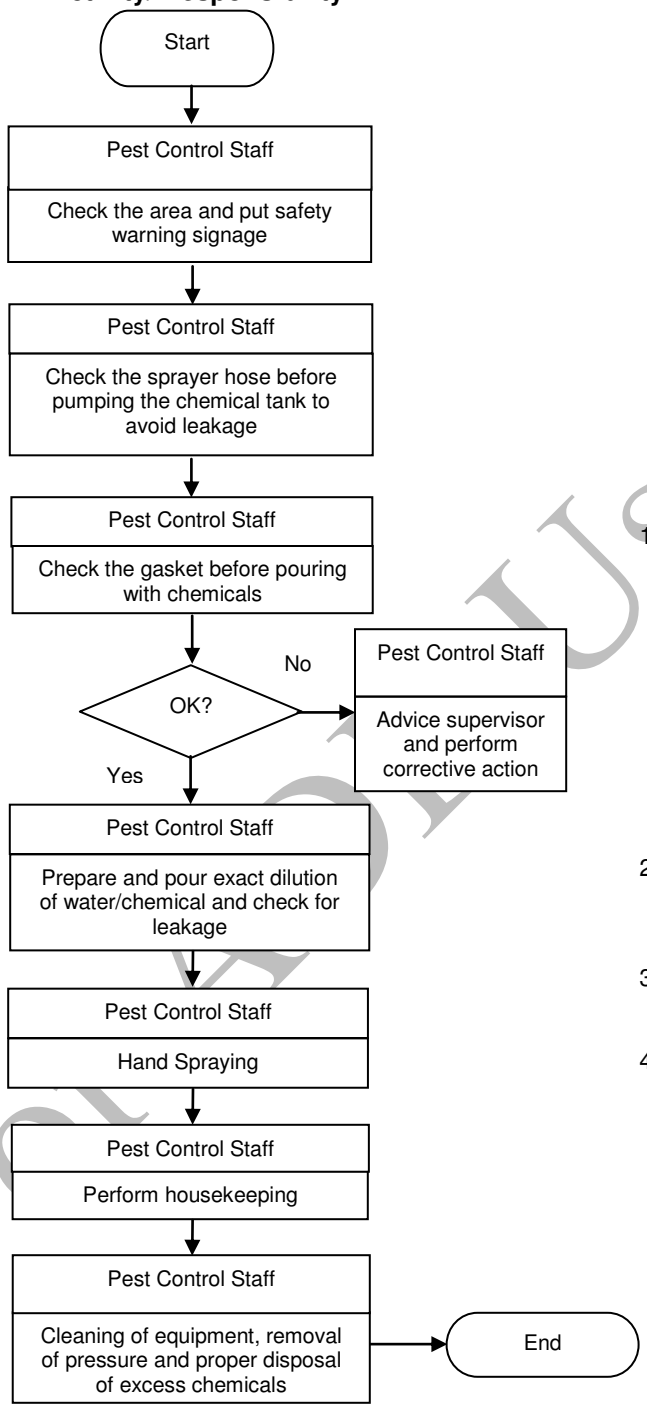


Notes/ References

1. Conduct monthly monitoring and maintenance.
2. Wear PPE during the treatment such as safety shoes, gloves, mask, goggles, and long sleeve shirt.
3. Analyze wind direction before spraying.
4. In preparing dilution, water is first poured in the sprayer tank before the chemical. Then, filling it up with water to top desired amount.
5. Put warning signage to the area under treatment and remove when the re-entry period was declared.

6.4 Procedure for using Pressurized Hand Spraying

Activity/ Responsibility



Notes/ References

1. Always check the gasket for leakage before pouring with chemicals.
2. In preparing dilution, water is first poured in the spray tank before the chemical. Then, filling it up with water to top desired amount.
3. Use PPE such as safety shoes, gloves, mask, goggles, and long sleeve shirt.
4. Put warning signage to the area under treatment and remove when the re-entry period was declared.

7.0 RELEVANT INFORMATION

7.1 Responsibilities of Involved Party(ies)

The implementation of the Integrated Pest Management (IPM) is under the responsibility of Unit Head, Facilities Planning and Management; Facilities Planning and Management Specialist; Senior Facilities Planning and Management Assistant; and support from service providers identified below. The Facilities Planning and Management Specialist, Associate Facilities Planning and Management Officer and Senior Facilities Planning and Management Assistant are responsible for developing and managing contracts with pest and landscape management vendors. Contractors involved with various elements of the IPM shall carry out their tasks according to their contracts, and report all relevant activities to the aforementioned parties. On occasion, several contractors may be engaged simultaneously in various elements of the IPM at the building and grounds. To ensure an effective and coordinated effort, the ADB staff responsible for overseeing the plan shall review all proposed activities before implementation.

IPM strategies for the entire property include actions performed by the following contractors:

Function	Company Name	Primary Contact	Phone
Pest Management Service contractor	Designated Contractor	General Supervisor	632-4444 loc 70142
Landscape and Ground Staff	Designated Contractor	General Supervisor	632-4444 loc 70199

7.1.1 Integrated Pest Management Coordinator

The Facilities Planning and Management Specialist is the Integrated Pest Management Coordinator for ADB. He/she will adopt and implement the IPM for ADB. The IPM will identify procedures to control pests and minimize the exposure of ADB Staff, service contractors, consultants and visitors to pesticides. The duties of the IPM Coordinator will include:

a. Maintaining information on pesticide applications at the ADB Headquarters, including records obtained from pesticide applicator, material safety datasheets (MSDS), and labels for all pesticide products used;
b. Develop contracts, bid specifications, and contract agenda that foster the ADB Headquarters' IPM Plan;
c. Respond to inquiries and provide information to all ADB Staff, consultants, service contractors and visitors regarding IPM in ADB Headquarters;
d. Provide access to the above information for public reviews;
e. Provide training in IPM practices to the concerned service contractors, ADB Staff (not pest control contractors), and the Ortigas Center community;

f. Develop and maintain a map/s of the ADB grounds/building/facility for the purpose of tracking all pest-monitoring activities;
g. Maintain a prioritized list of interior and exterior pest management issues, including such items as key pest, needed structural and landscape improvement, poor sanitation practices, leaky pipes, etc., for the ADB Headquarters.

7.1.2 Pest Management Service Contractor

The pest control service contractors should be properly accredited or licensed operators to apply pesticides in the ADB Headquarters. Their responsibilities include:

a. Inspection of ADB Headquarters building and grounds to identify potential problem areas and any structure or management practice, which may contribute to pest problems;
b. Notify the IPM Coordinator in writing when pests or signs of pest activity are found;
c. Make written recommendations to IPM Coordinator detailing corrective actions to be taken to reduce potential pest problem conditions;
d. Post sign prior to use of certain pesticides in all areas requiring its use; Provide the notifications required of the emergency use of certain pesticides;
e. Recommend to the IPM Coordinator appropriate non-pesticide procedures (cultural methods) as first line of defense to correct pest problems;
f. Offer a selection of low-impact pesticide first, when it is determined that pesticide must be used;
g. Provide the IPM Coordinator with the MSDS, and product labels of all pesticides that are applied in the ADB Headquarters; Maintain records of pesticide applications on regular basis;
h. Provide comments in writing regarding any necessary modification to the ADB Headquarters IPM Plan at the time of E^2HSMS Annual Review.

7.1.3 Landscaping and Ground Staff

The landscaping and grounds staff should maintain the landscape and grounds requirements of ADB including exterior cleaning. They should be diligent in reporting pest sightings and evidence of pest infestation to Pest Management Service Contractor/IPM Coordinator. They shall be responsible for implementing outdoor pest management activities.

7.1.4 Janitorial Services Staff

The janitorial services staff should maintain sanitation of the ADB Headquarters on a day-to-day basis, including diligent reporting of pest sightings or evidence of pest infestation to Pest Management Service Contractor/IPM Coordinator.

7.1.5 Food Services Contractor/Staff

The food services manager should ensure that all service contractor staff under their responsibility receive training in IPM monitoring and control. Evidence of this training should be submitted to the IPM Coordinator. The food services contractor staff should ensure proper cleanliness of the areas/warehouse to prevent pest infestation and report to Pest Management Service Contractor/ IPM Coordinator any pest sightings or evidence of pest infestation.

7.1.6 Facilities Engineering Staff

The facilities engineering operation and maintenance general supervisor should ensure proper cleanliness of the areas/workshops to prevent pest infestation and report to Pest Management Service Contractor/IPM Coordinator any pest sightings or evidence of pest infestation.

7.1.7 ADB Staff and Consultants

ADB Staff and consultants are responsible for the overall prevention of pest infestation which includes:

a. All must clean-up food left-overs, including but not limited to the following areas: work stations, filing cabinets, meeting rooms, and pantries.
b. Left-over foods should be wrapped and sealed in plastics for disposal in blue bins; not in comfort room waste bins.
c. In general, eating/serving of food is not allowed in conference rooms (i.e. auditorium, annex) and meeting rooms. However, eating/serving of food may be allowed if the facility and related infrastructure had been designed to minimize pest activity (i.e. Third Atrium)
d. Pest sightings or evidence of pest activity in these areas should be reported on a daily basis to the Pest management Service Contractor/IPM Coordinator.

7.1.8 General Responsibility

All Service Contractor Staff are required to attend the training on Integrated Pest Management Implementation in ADB. This will ensure that public health and safety precautions are considered as part of the IPM strategy. Information regarding IPM implementation will be disseminated through *ADB Today*, e-mails and the ISO website: http://iso.asiandevbank.org/.

7.2 Performance Metrics

Performance guidelines are in accordance with Annex 3 Work Performance Standards Pest Management Services and Service Level Agreement (SLA).

7.2.1 Emergency Conditions

In the event of an emergency, pesticides may be applied on the grounds without complying with the earlier stipulations for use of integrated and least-toxic methods.

Emergencies are defined as general building emergency plan policy, which provides with protection against numerous forms of pest problems that can spring up at any time. An infestation that is in danger of putting health at risk; causing damage to work place and making work place unsafe and uninhabitable due to pest infestation.

7.2.2 Universal Notification

ADB has adopted a universal notification system if a pesticide, other than a least-toxic pesticide as defined above, must be applied on site. This strategy requires ADB and its vendors to notify building occupants at least 72 hours in advance of a pesticide application under normal circumstances and no more than 24 hours after an emergency application through posted signs or other means of reaching 100% of potentially affected occupants. This notification system enables occupants and staff, and especially high-risk occupants such as children, pregnant women and the elderly, to modify their plans based on pesticide use at the building.

Notification must include the following:

a. Pesticide product name
b. Active ingredient
c. Product label signal word (e.g., “caution”, “danger”)
d. Time and location of application
e. Contact information for persons seeking more information

7.2.3 Recordkeeping

Recordkeeping is required to demonstrate ongoing compliance with the IPM plan. All applications of pesticides (include least-toxic options) shall be logged. The pesticide application log shall include the following information:

a. Date
b. Time
c. Method
d. Pesticide Application Date and Time
e. Application Manager
f. Location
g. Target Pest
h. Pesticide Trade Name
i. Pesticide Active Ingredient

j. FPA/EPA Registration Number
k. Least-toxic status (Y/N)

7.2.4 Cleaning Practices

In the event that cleaning products are used as a component of IPM, they shall meet LEED-EBOM criteria for sustainable cleaning products.

7.2.5 Animal & Vegetation Pest Control IPM Best Practices

Environmental best practices described below are incorporated into vendor contracts / SOP language as appropriate.

7.3 Quality Assurance / Quality Control Processes

The party(s) responsible shall periodically evaluate the success of the IPM. This evaluation may include producing and providing a report on an annual basis to senior management. Whenever possible, the annual reports shall include an evaluation of the performance, safety, cost and environmental/public health benefits achieved as a result of its implementation.

Prior to implementation, service providers involved in the building's IPM shall submit all proposed pest management activities to the responsible parties, listed in Section 7.1. Upon reviewing proposed activities, the responsible parties shall determine if they meet the criteria of the IPM and approve or deny action.

The responsible parties, listed in Section 7.1, shall regularly communicate with all service providers, and conduct regular site inspections and evaluations to ensure that the IPM is in place and functioning as intended. In addition to ongoing quality control measures, the contract supervisor will review all practices and products prior to contract renewal (typically annually) to identify opportunities for improvement and expansion of environmentally-friendly practices.

The pest control service contractors will be the one to verify if the Integrated Pest Management plan is being successfully implemented by using the Statistical Process Control (SPC), an effective method of monitoring a process through the use of various quality tools (i.e. Histograms, Pareto Chart). By collecting data from samples at various points within the process, variations in the process that may affect the quality of the service can be detected and corrected. With its emphasis on early detection and prevention of problems, SPC can detect and correct problems in the process.

7.4 List of Pesticides used in ADB Headquarters

Type	Product Name	CAS No.	Chemical Name	EPA Registration No.
I	Aqua Resigen Bote 21279 12X1L KH	2843-00-6 52645-53-1 51-03-6 36653-82-4 64742-47-8	S-Bioallethrin Permethrin Piperonyl Butoxide Cetyl Alcohol Odourless Kerosene	
I	Deluge 10SC	52918-63-5	(s)-alpha-cyano-3 Phenoxybenzyl Dibromovinyl Dimethylcyclopropane-carboxylate Deltamethrin	HSR5861
I	Demand CS	91465-08-6	Lambda-Cyhalothrin Technical	011-204-5491
I	Fendona 15SC	67375-30-8	Alpha-Cypermethrin	570-568-5219
I	Resigen 50 E	028434-00-6 052645-53-1 51-03-6 64742-47-8	S-Bioallethrin Permethrin 25/75 Piperonyl Butoxide Odorless Kerosene	HSR5133
T	Recruit II Termite Bait	086479-06-3	Hexaflumuron	

ABBREVIATIONS

Type = insecticide (I), Herbicide (H), Fungicide (F), Molluscicide (Mo), Rodenticide ('R), Miticide (Mi), Termiticide (T), Acaricide (A) and Gas

7.5 Species-Specific Animal Control Strategies

7.5.1 Ants

a. In areas where ants are present, wipe the areas down with soapy water in order to prevent the formation of major scent trails. If there already is an established trail, wipe backwards from the food source to the entrance of the trail.
b. Block all entry points to the building – ants will give up trying to find a way through after 1-2 days. Temporary blockades can be made using sticky substances such as petroleum jelly or chili powder, cinnamon, and boric acid.
c. Always keep foodstuffs in sealed containers or store them in the refrigerator or freezer. Clean out kitchen cabinets, drawers and shelves to remove crumbs and stains. Keep sinks and worktops clean and dry.
d. Baits are best put in the path of an ant trail and then removed after the ant activity stops, before they lure ants from another colony to the area.
e. Prune branches close to the building and remove fences or anything that might create a bridge for the ants to cross.
f. Low toxicity compounds to control ants include boric acid and diatomaceous earth (DE), a chalk-like powder consisting of the fossilized remains of diatoms, a type of hard-shelled algae.

7.5.2 Aphids

a. Manage sap-sucking pest mites and whiteflies by releasing predatory mites, ladybugs and lacewings onto the grounds several times over a period of weeks.
b. Consider using parasitic wasps to control scales on trees, shrubs and flowers.
c. If it is difficult to obtain supplies of beneficial insects for release into the garden, then it is possible to purchase a branded lure that simulates the scent of aphids and attracts ladybugs and lacewings to the area.
d. Spraying of soap dilution or organic oil is best before using least toxic chemicals.

7.5.3 Bed Bugs

a. Inspect the entire building for the presence of bed bugs and treat the affected areas with least toxic chemicals if no cultural method was effective.
b. Evaluate the findings and review the frequency of cleaning procedure.
c. Treat bed bug harborage such as beds and mattresses.

7.5.4 Caterpillars

a. Bacterial insecticides derived from natural ingredients are available to control caterpillars.
b. Cultural methods such as physical removal are applied first before least toxic chemicals are used.

c. Include site-specific caterpillar controls.

7.5.5 Cockroaches

a. Cockroaches contaminate food with their excrement and secrete an unpleasant odor that can permeate the indoor environment.
b. There are two main species of cockroaches, namely Periplaneta Americana and Blatella germanica, and effective control depends on identifying them correctly.
c. Integrated pest management measures for controlling cockroaches include effective hygiene and exclusion practices, sticky traps lined with pheromones, boric acid, and insect growth regulators.
d. All food handling areas should be cleaned frequently.
e. Cockroach control is best done through the application of least-toxic pesticides.
f. Control is necessary on a regular basis because of the mobility, reproduction, longevity, and behavior of cockroaches.
g. Ensure to know what pesticides are being used by the professional contractor and do not assume they are using an environmentally appropriate chemical.

7.5.6 Dust Mites

a. Fabrics, bedding and carpets attract and generate dust and dust mites. To keep dust mites at bay, keep building well-ventilated and dry.

7.5.7 Flies

a. Flies reproduce more readily in waste and manure, which is where control should begin. In warm weather conditions, the reproduction cycle – from egg, to larva, to pupa, to adult winged fly – requires approximately one week.
b. Collection of waste and residues should be carried out at least twice a week.
c. Keep refuse areas clean to avoid providing flies with breeding grounds.
d. Ensure dustbin lids fit tightly and the interiors of bins are cleaned regularly to keep surfaces free of food material.
e. Use fine mesh window and door screens as a barrier against entry by any flying insect.
f. Ultra-violet (UV) fly killing equipment/fly traps are very effective so long as it is situated correctly.
g. UV equipment disguised as up lighters in dining and lobby areas are discreet and highly effective because they attract and eliminate flies quickly and silently.
h. In food preparation areas, UV equipment should only be used once all possible precautions have been taken to keep flying insects out.
i. Position the UV equipment close to an entry point, at right angles to the nearest competing light source such as a window. In many catering establishments, poorly-situated UV equipment poses a greater food hygiene hazard than lacking pest repellants altogether.

7.5.8 Mosquitos

a. The best control method for mosquitoes is to eradicate their habitat.
b. Because they like moisture and lay their eggs in standing water, it is important not to leave flower pots, buckets, plastic sheeting or other open containers outside collecting water. Ensure that any rainwater collectors are fitted with lids.
c. Clear debris from gutters and drains to ensure there is no standing water after rain and drain unused pools or fountains so that the water cannot be stagnant.
d. Drain or fill depressions, mud flats, and other areas that might hold water.
e. Repair leaking taps and air-conditioning units so that puddles cannot form and ensure that septic tanks and sewage systems are properly maintained and in good working order.
f. Avoid over-irrigating lawns and gardens, and keep weeds and grass (where the insects rest) well-clipped.
g. If there is a pond or lake on the building grounds, fill it with mosquito-eating fish such as top-feeding minnows or goldfish – they will eat the mosquito larvae before they mature into adults.
h. Some buildings have successfully reduced the number of mosquitoes and other insects by attracting bats to their property. A simply-built bat house will usually accommodate up to 100 bats.
i. To prevent mosquitoes from coming indoors, fit fine-mesh screens to porches, doors and windows.
j. If these measures are insufficient, area repellents such as citronella candles, coils or sprays will repel mosquitoes from porches, patios and other unscreened outdoor areas, although they only work well when the air is still.
k. Exclusion is done by fixing air curtains, plastic strips and closure of door openings when not in use.

7.5.9 Fabric Clothing Moths

a. Moth larvae feed on a wide variety of natural and synthetic materials. They can be found in kitchens, food storage areas, clothing, carpets, blankets and upholstery.
b. Fabrics should be washed and then put in bags and placed in a freezer. When taken out to thaw, shake the fabrics vigorously to remove dead larvae.
c. Clean with vinegar and water the areas where fabrics have been stored.
d. Store fabrics in cedar chests or closets. Place cedar chips or blocks or lavender sachets in drawers.
e. For acute moth problems, re-usable traps can be baited with a controlled-release pheromone system to lure moths into the trap and disrupt their mating cycle.
f. Mothballs not only have an unpleasant odor, but they are also poisonous; avoid them if possible. Insect foggers are not recommended as they can pose a health threat and are not always effective.

7.5.10 **Pantry Moths**

a. Clean affected areas by vacuuming all surfaces, walls, shelves, cabinets and floors. Scrub hard surfaces rigorously with hot water and detergent, especially in corners and around the edges of removable shelves. Clean all surfaces that come into contact with food.
b. Rinse the affected areas with white vinegar, either in a spray or by wiping with a cloth.
c. Throw away all grain-based food items as well as nuts, raisins, flour and tea, even if it is in sealed containers.
d. Remaining food items and containers should be thoroughly cleaned with a detergent and water solution and wiped down with a vinegar rinse before putting back. Use air-tight containers made of hard plastic, glass or metal and not plastic bags.
e. Kill any moths with a fly swatter or moth traps.
f. After a severe infestation, freezing any new grain products and storing grain products in refrigerators or freezers can prevent reinfestation.
g. Peppermint gum, bay leaves, peppercorns and cloves may also help deter pantry moths.

7.5.11 **Rodents**

a. Rodent control should start with a survey to determine the source of the problem and the conditions that encourage the infestation. Following the survey, implement a program to kill the rodents, removing their sources of food and water, eliminating their place of refuge and making it rodent-proof, and educating and obtaining the cooperation of employees. If the food supply is removed before you eradicate them, the rodents will migrate to other areas, making elimination more difficult.
b. Openings in building foundations and walls should be closed or screened with wire mesh that has holes not more than 1.25 cm (0.5 in) wide. Where pipes enter masonry, force heavy hardware cloth or steel wool into the opening, and then fill it with concrete.
c. Continuous surveillance is necessary, and places where rodents have been gnawing to gain entry to a building should be sealed with metal flashing.
d. Doors are particularly vulnerable to rodent entry so ensure that external doors and windows close tightly with no gaps at the bottom.
e. Materials stored in the open, in sheds or in building should be stacked at least 30 cm (1 ft.) above the ground.
f. Stringent waste disposal practices should be observed – secure all waste in closed containers and not just plastic bags.
g. Wash dustbin areas regularly. Make sure composting bins are designed to prevent rodents from entering.
h. Traditional mouse and rat traps, or snap traps, kill instantly. If trapping efforts fail, it is usually due to too few traps being used.

i. Bait should be sticky to ensure that the mouse triggers the trap mechanism even if it only lightly touches the bait. Mice prefer peanut butter or chocolate to cheese. Bacon, oatmeal or apples can also be used as bait.
j. An alternative to snap traps is a battery-operated trap that generates a high voltage current once the rat or mouse is inside. The design is relatively safe and can be used in areas where children, pets or wildlife may be present.
k. Starve them out. Keep garbage and tightly cover metal containers of stored food in rat proof buildings, rooms or containers. Keep entire premises clean.
l. Tampered Proof Bait Stations should be placed on strategic locations.
m. Place Rodenticidal baits beside a well defined runs, in and around burrows, holes and other sheltered places, where signs of gnawing, footprints, smears or droppings are present.

7.5.12 Slugs and Snails

a. There are various non-chemical solutions to eliminated slugs and snails, including putting salt or sharp shingle around vulnerable plants, drowning them in beer or simply throwing them over a fence. Elemental copper bands also repel snails and slugs.
b. Cultural methods are commonly employed.

7.5.13 Yellow Jackets (Vespula spp.), Hornets (Orientalis), Paper Wasps (Bombus spp.)

a. Cultural methods are commonly used to remove unwanted presence of this kind by physically removing its nest.
b. These insects are considered to be beneficial for they feed on other insects and help plants in pollination. It is not necessarily considered as pest if it does not impede humans in doing their daily chores around the garden.
c. Use least toxic chemicals when cultural methods are exhausted.

7.5.14 Honey Bees (Apis mellifera), Bumble Bee, (Bombus spp)

a. Develop on a diet of nectar and pollen and usually considered as beneficial insect for its helpfulness in pollination activities.
b. Remove or treat the colonies to avoid danger on other staff.
c. Use least toxic chemicals when cultural method was proven ineffective.

7.5.15 Grubs (Family Scarabaeidae)

a. These are larvae of various beetles in the family Scarabaeidae such as cutworms, nematodes and armyworms.
b. Cultural methods are usually employed such as physical removal, cultivation and aeration.

c. Use least toxic chemicals when cultural methods are found ineffective.
d. Chemical treatments are done by a licensed contractor to ensure safety.

7.5.16 **Leaf Hoppers (Family Cicadellide)**

a. Usually are sap feeders from wide and diverse range of plants.
b. Could be vectors of diseases such as bacteria and viruses.
c. Cultural methods are the first line of defense.
d. Chemical application is done by a licensed contractor.
e. If least toxic chemicals are found ineffective, approval and justification is done by the service provider concern to warrant use of more toxic compounds but not withstanding human health and environmental impacts.

7.5.17 **Termites**

a. Elimination of existing termite colony using Sentricon baiting system.
b. Install Sentricon In-Ground (IG) stations in the soil around the outside perimeter of the building structure.
c. Install Above-Ground (AG) baits stations where infestation is found.
d. Monitor the bait stations once a month for any new termite intrusions.
e. Add Recruit* termite bait to and remove it from the stations as appropriate.
f. The Sentricon System involves initial installation and monitoring, colony elimination with Recruit termite bait and/or Above-Ground bait, and subsequent monitoring for continuous protection from new termite colonies.
g. The active ingredient in the Sentricon System is an insect growth regulator (hexaflumuron) which prevents worker termites from molting (critical to colony survival).
h. Conventional liquid treatment methods of termite control will be employed especially for garden termites. This has nothing to do with the effectiveness of baiting system which is used for indoor treatment.

7.5.18 **Cats**

a. Conduct an ocular cat inspection in the ADB premises.
b. Set up a cat trap early at night where cats are frequently sighted. The cat trap is closed during day time.
c. Inspect the cage trap early in the evening.
d. Check the trap frequently at least every two hours.
e. Once a cat is caught, cover the cage with a cloth. This helps calm the cats and reduce trauma. Provide water so the cats don't get thirsty.
f. Position the trap under a roof so cats do not remain under the heat or rain once caged.
g. Wear heavy gloves (welder's) when handling traps to prevent infections.
h. Transport the cat to the contractor's operation center. Provide food and water.

i. Deliver the cat to PSPCA or other related institution and entrust the cat into their custody.
j. Handle the cat humanely.

8.0 FORMS

OP-BE-1.06 F1 General Pest Control Treatment Report
OP-BE-1.06 F2 Pest Trap Inspection Form
OP-BE-1.06 F3 Pest Control Monitoring Form of Vending Machine
OP-BE-1.06 F4 Certificate of Vending Machine Inspection
OP-BE-1.06 F5 Kitchen Pest Control Inspection Form
OP-BE-1.06 F6 Monthly Mechanic Equipment Inspection
OP-BE-1.06 F7 Monthly PPE Replacement
OP-BE-1.06 F8 Monthly Schedule of Pest Control Activities
OP-BE-1.06 F9 Pest Control Inspection Form
OP-ADB-2.03 F3 Hazardous Waste Turnover Form
OP-ADB-2.06 F1 Permit-to-Work

9.0 REVISION HISTORY

Revision No.	Brief Description	DRR No.	Effective Date
0	Initial Release – Integration of OP-BE-1.06 (Pest Control) and OP-BE-1.06a (Integrated Pest Management Plan)	14-776	21-Jul-2014