

Guidebook on upgrading the pest control services of Hong Kong pest control SMEs

Organizer:

Hong Kong Pest Management Association



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Pest Control Personnel Association of
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Hong Kong Quality Assurance Agency



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Part 1 Introduction

The demand for pest control services has been increasing rapidly during the recent years due to public health hazards and disturbance caused by pests such as mice, cockroaches and mosquitoes. In regards to public health issues, pest control plays an important role. The pest control industry needs to establish service guidelines to enhance the professionalism of the industry. To meet the needs of the market, the Hong Kong Pest Management Association obtained support from the Trade and Industry Department's "SME Development Fund", have appointed the Hong Kong Quality Assurance Agency as an implementation agent to carry out "Upgrading the pest control services of Hong Kong pest control SMEs" project. The main objective of the project is to provide professional competence to industry practitioners and pest control SMEs ("the organization") to strengthen market competitiveness in providing pest control services to the market.

The guidebook formulated by analyzing the good practices, safety procedures and competence of pesticide operators of the organization and the pest control services in the advanced areas. A stakeholder group consists of industry representatives and relevant government departments have been formed to provide opinions to the guidebook. The organization can make reference to the guidebook and formulate their management and operational requirement, thus to improve their performance and enhance their professionalism.

Environmental awareness, environmental responsibility and toxic pesticides awareness have been a major driver for change in business environment today in regards to pest control. The organization can enhance the pest control services by strengthening corporate management, consolidating their operational ways of work and adopting Integrated Pest Management "IPM" to reduce or minimize risks to humans and the environment.

The second chapter of this guidebook provides information on IPM, including workflows and applications across different industries. In the third and fourth chapters, it introduced the relevant requirements at the corporate level and the operational level as well as reference templates provided to optimize the organizations for pest control services to achieve the ultimate goal of improving the competitiveness of pest control companies.

Part 2 Integrated Pest Management

Integrated Pest Management (IPM) can be defined as “the careful consideration of all available pest control techniques and the subsequent integration of appropriate measures that discourage the development of pest populations and keep pesticides and other interventions to levels that are economically justified and reduce or minimize risks to human health and the environment”. It is a comprehensive pest control management tool with the resolution of pest problems from root cause identification. It provides a safe, effective, economical and sustainable remedy for pest infestations which reduces the risks from pests and also unnecessary pesticide applications.

Compared with conventional pest control approaches such as routine applications of pesticides, IPM focuses more on pest prevention and judicious use of pesticides. It uses a variety of pest management techniques to prevent and reduce pest populations and eliminate conditions which lead to pest infestations. IPM programmes also place emphasis on the education of the community and residents in terms of home maintenance, sanitation and housekeeping in order to minimize the occurrence of pest infestations.

Benefits of IPM

- ✓ Prevent pests from entering the property and becoming pest infestations.
- ✓ Save time and money on tackling pest problems which can be prevented.
- ✓ Cost can be reduced in the long run as major pest infestations are avoided, pest damage to properties is minimized and fewer pesticide applications are required.
- ✓ Indoor air quality can be improved from a reduction in pesticide application.
- ✓ Decrease the presence of pathogens such as asthma triggers or allergens.
- ✓ Create a healthier living environment.
- ✓ Improve the positive rating of building services.

The five steps of IPM are as follows:

(1) Inspection/ Monitoring

- Examination of target areas for the presence of pests and conditions which are conducive to pest infestations.

(2) Identification of pests

- Determine the type of pests causing the infestation and design effective pest control methods and preventative measures required.

(3) Establishment of threshold levels

- Setup a predetermined threshold level at which the pest population may have potential impact on human health, the environment or causing property damage.
- This defined threshold level helps to decide if the size, scope and intensity of the IPM plan needs to be enhanced.

(4) Implementation of control measures

- *For pest prevention:* Elimination of essentials which pests need to survive such as food, water and shelter to reduce the pest populations.
- *For pest control:* Low risk and effective options should be considered such as pest trapping, physical removal or judicious application of pesticides if necessary.

(5) Monitoring and evaluation

- Perform regular follow-up to evaluate the effectiveness of the implemented control plan.

In the implementation of control measures, pest control companies generally use the following methods:

Physical control

- Use non-biological or non-chemical substance to control pests from living and reproducing in the target area

Biological control

- Utilise the pest's natural enemies to hunt or kill them from the pest habits

Habitat modification

- Improve the internal and external environment through cleaning, transformation, disinfection, isolations to control the breeding of pests

Chemical control

- Use high-efficiency and low-toxic pesticides

Case Study for Special Locations

IPM in Property Management

Pests not only cause physical damage to properties, they also cause serious health problems for residents. Traditional calendar-based pesticide extermination approaches have proven ineffective in managing pest problems in properties. The use of scheduled applications of pesticides fails to address the root cause of the pest problems.

IPM in property management involves sanitation, building maintenance and judicious use of pesticides. It is a cost-effective pest control practice by investing in pest prevention over pesticide applications. Measures are taken to prevent pests from entering the property and becoming pest infestations. The property management team can save time and money on tackling pest problems which can be prevented. The startup cost with IPM may be high as they include building maintenance, water leakage identification and education of residents to improve their housekeeping methods, etc. However, in the long run, the costs can be reduced as the major pest infestations are avoided, pest damage to properties is minimized and fewer pesticide applications are required. The indoor air quality can be improved through the reduction of pesticide application. Health-related cost is decreased as the presence of asthma triggers or allergens are decreased. Ultimately, residents are satisfied with a healthy living environment and the prompt and effective IPM services provided by the property management company will help to improve the positive rating of building services.

IPM in Schools

A conventional pesticide-based pest management approach is commonly adopted by most schools in controlling pest infestations. Without conducting a detailed investigation of the root cause and taking appropriate preventative measures, relying solely on extensive pesticide application cannot solve pest problems in schools. Children are facing increasing risks to their health when exposed to pests and the unnecessary use of pesticides.

The implementation of IPM in schools is not a single pest control approach, but rather a strategy of combined approaches to limit a pest's survival and its ability to thrive. It includes sound preventive maintenance, high sanitation standards and staff education, along with pest monitoring, accurate pest identification and record keeping. Since children are more vulnerable to the risks resulting from exposure to

pesticides, IPM encourages judicious use of pesticides when non-chemical measures are inadequate to provide reasonable control.

IPM addresses the reasons why there are pests in schools. To reduce the pest infestation, prevention-based programmes are conducted to limit pest access to food, water and shelter. There are fewer pest infestations and fewer pesticides are applied. Unnecessary pesticide application costs can be reduced. IPM place emphasis on prevention rather than control, and is a cost-effective method for long-term pest mitigation. The IPM approach helps to improve the environmental health in schools which eliminates environmental triggers including allergens and irritants. It is effective in managing pest problems and lowering the number of asthma cases when compared with conventional pesticide treatment. The US Centres for Disease Control and Prevention (CDC) recommends IPM to address asthma, especially in school children.

IPM in Hospitals/ Healthcare Centres

Hospitals and healthcare centres are premises with heavy flow of food, people and goods between buildings. Sources of food, water and harborage for pests are abundant and therefore hospitals/healthcare centres are easily infested with disease vectors or public health pests. Routine pesticide applications have been conducted in these places as part of the general pest management approach to maintain the environment in a high sanitary standard. However, healthcare patients and chemically sensitive individuals such as pregnant women and infants are more vulnerable to pesticides. They are at higher risk of suffering harmful effects from the exposure to pesticides. Moreover, the application of pesticides may not be allowed in some areas of hospitals and healthcare centres.

The implementation of an IPM programme focuses on long-term pest prevention and a variety of pest management techniques. Choices of non-chemical control methods are available such as sanitation, structural maintenance, trapping, screening and physical control. By reducing pesticide use, IPM helps to reduce the potential negative impacts on human health and the environment. If pest infestations are serious, IPM practitioners apply pesticides with precision and choose the least-toxic formulation.

IPM is more effective in controlling pests over long periods. It is also more cost-effective in terms of time, personnel and materials to prevent the recurrence of the pest problems than to remediate the same problems again and again.

IPM practice in healthcare facilities is recommended by the U.S. Environmental Protection Agency (USEPA), the US Centres for Disease Control and Prevention (CDC) and the American Hospital Association.

Selection of pest control management companies and methods:

- Engage several pest control companies to discuss the pest problems
- Request the companies to provide information on the design of the pest control programme, methods use and precautionary measures
- Request the Safety Data Sheets or pesticide product labels if pesticide applications are required
- Pest control operators from the companies should be trained in pest control techniques and knowledge. Training records or certificates can be obtained for reference
- Request a detailed quotation and work list. Price is not the most important criteria in selecting the right pest control service provider
- Select a company which can offer non-chemical pest control methods, e.g. physical control, environmental improvement methods or the IPM approach to conduct pest control

Finally, IPM combines appropriate measures to limit the pest reproduction and the application of pesticides and other pest interventions under economic principles at the same time reducing risks to humans and the environment. Thus, this enables consumers to make the most appropriate buying decisions on pest control services in the market.

Part 3 Corporate Level

Corporate level refers to pest control operation and management within the organization. This includes the competence of human resources, procurement of chemical pesticides, equipment readiness and safety precautions as well as hazard identification, etc. It is a fundamental requirement of running a pest control business. Details of corporate level requirements are described below:

(a) Legal requirements

The organization can develop its pest control management approach in compliance with applicable legal requirements, which include but are not limited to:

Cap. 60 Import and Export Ordinance
Cap. 132 Public Health and Municipal Services Ordinance
Cap. 133 Pesticides Ordinance
Cap. 295 Dangerous Goods Ordinance
Cap. 51 Gas Safety Ordinance
Cap. 502 Fire Safety (Commercial Premises) Ordinance
Cap. 572 Fire Safety (Buildings) Ordinance
Cap. 311 Air Pollution Control Ordinance
Cap. 354 Waste Disposal Ordinance
Cap. 358 Water Pollution Control Ordinance
Cap. 403 Ozone Layer Protection Ordinance
Cap. 509 Occupational Safety and Health Ordinance

(b) Competence of pesticide operators

The competence of pesticide operators is essential to ensure that chemical pesticides can be used sustainably and that the risks associated with pesticides can be reduced. Provision of training is a mechanism to ensure that operators are aware of their legal obligations and are able to identify, reduce and mitigate these risks.

Operators applying pesticides, particularly in open areas, shall be competent on the basis of appropriate education, training, skills and experience. Pesticide operators should possess relevant competence to ensure that the equipment and tools to be used are in good working condition.

The organization shall:

- Determine the necessary competence of operators carrying out work under its control that affects the performance and effectiveness of the pest control works;
- Ensure the operators are competent in carrying out pesticide application work on the basis of appropriate education, training, or work experience;
- Take actions to acquire the necessary competence for operators (such as the provision of professional training), and evaluate the effectiveness of the actions taken when applicable; appropriate documented records shall be retained as evidence of personnel competence.

Pesticide operators can acquire appropriate competence through training. The training programmes may include occupational health and safety, the safe and proper use of pesticides and the following aspects:

- Fundamental knowledge of the biology, including but not limited to the behaviour of mosquitoes, rodent, flies, fleas and cockroaches;
- Preventive and control measures against mosquitoes, rodent, flies, fleas and cockroaches;
- Use of equipment and techniques for the application of pesticides and rodenticides;
- Safety precaution and occupational hazards in the application of pesticides and rodenticides;
- Procedures for safe use of pesticide application equipment and associated tools.

Currently, the existing comprehensive regulatory framework for training and certification of those who work with pesticides is not stipulated in the regulatory requirements. Induction training of pesticide operators can be acquired from private organizations and institutions.

Professional training can be provided for enhancing the competence of operational staff through training programmes compatible with the abovementioned criteria, such as professionally-oriented programmes offered by tertiary education institutions in Hong Kong.

It is recommended that continuous training programmes are provided to the personnel engaged in the pest control industry, particularly the frontline pesticide operators. The objectives include:

- To maintain and enhance the technical knowledge and professional skills of the pesticide operators.
- To assist pesticide operators to apply new techniques, evaluate the risk and impact of existing pesticide application work for necessary improvement.

Operators can acquire continuous training through organization briefing, industry updates, professional seminars, industrial workshops, and external training programmes etc. The organization should retain training records for pesticide operators (see Annex 1 for an example of training record).

(c) Health hazards and occupational safety:

The organization shall ensure that the pesticide operators understand the potential health hazards and safety precautions during the site inspection and service delivery process. Effective measures are required to prevent potential incidents, occupational injury or illness caused by pesticide application. The causes of all hazards in the work environment shall be minimized or eliminated. Risk assessment should be conducted before the pesticide application work in order to identify the related hazards.

After conducting the risk assessment of work procedures, if hazards remain after minimization or elimination of the causes of all hazards in the work environment then the organization shall provide pesticide operators with appropriate personal protective equipment (PPE).

Useful tips:

- PPE generally includes overalls, PVC aprons, helmets or caps, goggles, gloves and protective respirators, etc.
- All PPE is required to be in good working condition.
- Proper training on the use and maintenance of PPE should be provided to pest control operators when necessary.
- The use of PPE can be referred to the relevant authority's guidelines, such as the Occupational Safety and Health Council (OSHC).

(d) Selection, procurement and storage of pesticides

i) Selection of Pesticides

The pesticides applied in Hong Kong shall be registered in Hong Kong and comply with the Pesticides Ordinance (Cap. 133). Pesticides must be clearly labelled in Chinese and English. Only Hong Kong registered pesticides are allowed to be distributed and supplied in Hong Kong under a Pesticide Licence .

ii) Procurement of Pesticides

The organization shall address activities for controlling of procurement process of pesticides in an appropriate manner:

Useful tips:

- The organization should retain pesticide procurement records, such as purchase orders, invoices, delivery orders, etc.
- All information relating to pesticide product distribution, access, retrieval and use shall be recorded. An example template of pesticide product stock records can be referenced in Annex 2.
- Pesticide information, such as in the form of Material Safety Data Sheets for Pesticides from manufacturers, shall be retained for reference if necessary.

iii) Storage of Pesticides

The organization shall establish proper storage practices so that pesticide chemicals can be stored properly in a safe environment away from food and drinks, children, pets and unauthorized persons, etc.

Useful tips:

- The storage location should take into account the protection of public health and the environment.
- The organization shall ensure pesticide chemicals are stored in their original containers with proper labels and in good condition.
- The organization shall comply with the relevant legal requirements such as the Dangerous Goods Ordinance when the pesticides are classified as dangerous goods. When the amount stored exceeds the number of exemptions, dangerous goods storage requirements shall be followed.
- Stock records for the storage of pesticides shall be retained for product storage traceability.

(e) Pesticide application equipment:

The organization should retain a detailed list of the equipment and tools used in service delivery, including routine inspection and maintenance records. The maintenance plan shall include the calibration and adjustment of equipment and tools when necessary (see Annex 3 for an example of inspection / maintenance of chemicals / equipment record).

Useful tips:

- Check all the pesticide application equipment to ensure that it is in good condition. Should there be any cracks or damage, the equipment should be stopped from use and arranged for replacement or maintenance.
- Use separate sprayers identifiable with a clear marker for the application of different pesticides.
- Provide regular maintenance, repair and calibration for the sprayers, and carry out troubleshooting checks on the sprayers, such as for leakage from joints, pipes and worn-out parts, corroded or blocked nozzles (resulting in uneven spraying), etc.
- After use, steps should be taken to:
 - Empty the residue left in the nozzles. Do not blow out clogged nozzles by mouth;
 - Rinse the spraying tank with clean water, flushing some through nozzles;
 - Repeat the rinse, and drain away the water inside the tank and nozzles completely; and
 - Store the sprayers in a dry place with the lid of the tank open.

(f) Record Control

The organization shall retain records such as service reports, staff training records, pest management plans in soft or/ and hard copies for a minimum of two years (or longer).

Useful tips:

- The documents should be retained using proper storage and preservation methods, including preservation of legibility with ease of traceability.
- The organization should establish a document disposition strategy when the records are retained after two years or longer.

Part 4 Operational Level

The organization shall plan, implement and control the processes for pesticide application work by:

- Taking into account the legal requirements and understanding the pest control operation and management as stipulated in Part 3;
- Establishing criteria for the pesticide application processes and customer acceptance of a resulting lower impact on the environment and human health.

This section describes the operation management for the general workflow for professional pesticide application services. Detailed operation practices guidelines can be referred to the “Code of Practice for the Safe and Proper Use of Pesticides in Public Areas” jointly provided by the Agriculture, Fisheries and Conservation Department, the Food and Environmental Hygiene Department and the Leisure and Cultural Services Department. Apart from the implementation of work procedures, relevant documented information regarding pest management should be maintained and retained.

(a) Risk assessment and precautionary measures prior to application of pesticides

Before undertaking pesticide application, the organization shall establish and implement processes to:

- assess health and safety risks, and environmental risks from the identified hazards, while taking into account the effectiveness of hazard procedure controls;
- determine the actions to be taken to address the risks arising during the whole process of pesticide application.

Please refer to Annex 4 for an example of a Risk Assessment Template.

Useful tips:

- Prior to application, the pesticide operators shall identify any sensitive areas that are located adjacent to the target area and use appropriate precautionary measures to prevent the direct discharge of pesticides into those areas
- The pesticide operators should be able to present the following documents to the client, if required:
 - Pesticide product labels

➤ Material Safety Data Sheets (MSDS)

- Notification information for the proposed pest control strategy shall be provided to the client for any potential associated safety and health hazards. Client awareness should be enhanced in terms of ventilation requirements, hygiene conditions, food handling, health and safety precautions, work arrangements, restoration of sanitary conditions, and the presence of fire and electrical sources, etc.
- Warning notices with respective follow-up duties for the client shall be displayed to restrict entry to areas treated with pesticides when necessary.
- Conduct an assessment to determine the need to make use of external resources to assist with the work, such as the involvement of the local authority to access the sewer system.

(b) Transportation of pesticides

The organization shall establish proper transportation means for pesticide delivery to the workplace. Proper transportation vehicles shall be used and maintained in good working condition.

Useful tips:

- Only the amount of pesticides and the application equipment needed to perform a task should be brought on board.
- Pesticide containers must be securely capped, and the labels on them must be intact with legibly printed words. Make sure that no container is contaminated by pesticides on the outside. Containers must be handled with care to prevent them from being crushed or punctured.
- Before transporting pesticides, pesticide operators should be well informed about how to deal with a pesticide spillage. If a pesticide is spilt inside or from a vehicle, the spilt pesticide must be dealt with immediately and properly.
- Pesticides must not be transported with materials which are for human or animal consumption or with which humans or animals will come into physical contact (e.g. foodstuff and garments), to prevent contamination of such materials.
- Pesticides must not be placed inside the passenger compartment of a vehicle. If no separate compartment or storage cabinet is available on a vehicle for such purpose, pesticides must be put in a securely capped plastic/metal container.
- All pesticides and application equipment must be appropriately placed inside a

vehicle, with all containers securely fitted to prevent them from moving from side to side or sliding down.

- In the course of transportation, all application equipment inside a vehicle must be empty of pesticides and must not be in a pressurized state.
- If necessary, keep the vehicle's windows open for good ventilation during transportation.
- Do not leave a vehicle loaded with pesticides unattended before locking its doors and windows.

(c) Display of warning notices

Pesticide operators shall ensure proper warning notices are displayed in prominent positions before and after the pesticide treatment. The warning notices are required in bilingual Chinese/ English version. When a pesticide is being applied indoors, in healthcare facilities, day-care centres or schools, etc., a warning notice is required to be displayed in a readily observable place at the primary point of entry.

Useful tips on information notices include:

- Name of the organization;
- Common name of the active ingredients in the pesticides;
- Hong Kong pesticide registration number ;
- Date and time for application of pesticides;
- Appropriate pictograms e.g.  is suitable for the application of rodenticides;
- The wordings "WARNING" and "ATTENTION" should be used in the warning notices for rodenticides and other pesticides respectively;
- Contact information of the organization ;
- Warning notices should be displayed in a bilingual Chinese/ English version;
- Warning notices should be printed in a suitable size such as minimum A4 size ;
and
- The size of the words and the characters should be clearly legible.

(d) Restrictions on entry to the area been treated with pesticide

The organization shall restrict the public from entering the area being treated with pesticide. Only work personnel wearing appropriate protective clothing are allowed to enter the application area.

Useful tips:

- The area being treated with pesticide should be isolated with distinguishable barriers, which can be easily identified by the public and non-work staff to prevent accidental entry to the application site until the no-entry period expires.
- If a no re-entry period is specified on the pesticide label, the organization may still consider prohibiting the public from entering the site, until the area treated with pesticide is completely dry or deemed appropriate to re-open for public access.

(e) Preparation and mixing of pesticides

Pesticide operators shall ensure proper preparation and mixing of pesticides. Operators shall follow the labels on pesticide containers and the prevailing pesticide application guidelines of the organization carefully. It is also essential to ensure emergency preparedness in case of pesticide spillage or an emergency situation encountered during the mixing of pesticides.

Useful tips:

- Wear waterproof rubber gloves, overalls with PVC aprons, masks and goggles as recommended.
- Prepare or mix the pesticides in a designated well-ventilated location, which should be separated from other rest areas or working places.
- Choose sprayers of appropriate size, adjust the spraying pressure and the distance of the spraying target, to minimize the generation of mist and splash-back pesticide droplets or excessive spraying.
- When mixing pesticides, do not eat, drink or smoke.
- Do not prepare pesticides in places frequented by non-authorized persons (such as general offices).
- When opening the container or pouring the liquid into the sprayer, avoid dust contamination and spilling the liquid.
- Do not use or mix pesticides in strong wind or it is expected to rain in the next few hours.
- Measure the required pesticides with appropriate apparatus. Applying an excessive amount of pesticides is wasteful and harmful, and is not able to control pests more efficiently.
- Do not mix pesticides in places where pesticides may leak into the water source due to spillage or overflow.

- In case of spillage, use chemical absorbent agents such as fine sand, clay, commercial absorbent agent for spillage or sand for pets. If such absorbent materials are not readily available, other absorbent materials such as mud and newspapers can be used to stop the diffusion of spillage within a short period of time.
- Do not allow pesticides to come into contact with mouth, eyes or skin.
- If the skin comes into contact with the pesticides, rinse off with large quantities of soap and water. If clothes are sprayed with pesticides, they should be changed immediately.
- Clean all the tools after used. Do not use any abraded glassware or plastic containers for preparing pesticides.

(f) Application of pesticides

The application of pesticide shall be carried out in line with the suggestions below:

- The pesticide shall only be used according to the instructions stated on the product label
- The application shall be undertaken in a manner that prevents off-target discharge of pesticides.
- Operators shall ensure equipment and tools are properly calibrated and in sound working condition.
- Pesticide containers shall be free of leaks and other defects that might cause pesticide to be discharged off-target.

During the application, pesticide operators shall be equipped with suitable PPE which includes the following:

- Long pants
- Protective footwear
- Long-sleeved clothing
- Masks and goggles
- Gloves impervious to the pesticide being used when the operator's hands are likely to come into contact with the pesticide

Please refer to Annex 4 for an example of Chemical / Pesticide Application Record Template.

Useful tips:

- Wear appropriate protective clothing and equipment such as helmets and

masks, goggles, ear muffs and gloves as recommended.

- Ensure the apparatus for pesticide application is accurately calibrated.
- Ensure the equipment for pesticide application is in good condition.
- The amount of pesticides to apply should be as instructed.
- Do not apply pesticides in liquid or powder form in strong wind.
- Apply pesticides only in suitable weather conditions.
- Should be cautious to avoid contamination of the fodder, food or water sources by pesticides.
- Do not apply pesticides to non-target areas.
- If soft tubes or nozzles become blocked, do not blow out by the mouth.
- Should there be any leakage from the equipment, stop using it and pending repair or disposal.
- Inform all occupants near the application area (if any) in advance, to ensure that they will not be affected by the pesticide application.
- No one is allowed to stay within the application area, apart from operational staff and their supervisors.
- Turn off the central air-conditioning system in the treatment areas before and during the application until the locations can be re-entered.
- Provide advice to occupants of the locations concerned not to enter the application area until allowed to do so.
- Remove dead insects using appropriate equipment.
- Provide advice to occupants of the locations concerned not to remove any dead insects with their bare hands.
- Clean all the tools used in the course of pesticide application.
- Wash the protective equipment and your hands thoroughly with soap.
- Stop applying pesticides immediately if you feel ill.

(g) Post-treatment measures

- The organization shall notify the customer to maintain good ventilation in the area treated with pesticide for a sufficient period of time before re-entering them.
- Warning notices should be posted in prominent positions in the application area.
- Decide on the enclosure time with reference to the label instructions when enclosing the affected application area.
- Rinse the skin immediately and thoroughly with water and put on clean clothing.
- Clean all tools, equipment, clothing and hard-paved concrete areas thoroughly.

(h) Emergency preparedness

The organization shall establish a contingency action plan for the event of circumstances that may affect the stability of the conditions for pesticide application. This shall be communicated to the operators along with their duties and responsibilities for handling emergency cases. The organization shall also implement processes to prepare for a response to emergency situations.

Useful tips:

- Prepare First Aid measures for incidents involving the health and safety of personnel;
- Check out the support and resources are available for effective communication in the event of an emergency, including 24-hour hotline, contact telephone numbers and name and title of person responsible.
- Prepare an emergency evacuation plan;
- Prepare an emergency work plan to follow in the event of breakdown or shortage of vehicles, shortage or absence of equipment / staff and when there are emergency circumstances to deal with, these include: pesticide leakage, adverse weather etc.

(i) Disposal of pesticides

The organization shall handle any excess pesticides and pesticide-containing materials in accordance with the pesticide label instructions. The disposal of excess pesticide should follow the relevant requirements in the Waste Disposal Ordinance to ensure that the waste does not cause damage to the ecological environment. A trip ticket system can be implemented when necessary. Pesticide chemical waste producers should arrange proper packaging, labelling and storage of chemical waste before delivery to the disposal facilities of the Environmental Protection Department.

Useful tips:

- Pesticide containers should be rinsed with water at least three times, and then punctured or crushed (so that they cannot be reused) before disposal.
- Rinse water from cleaning pesticide containers can be used to dilute pesticides.
- Do not reuse empty containers for other purposes.
- Store pesticides that are no longer needed in their original containers pending disposal, and deal with such pesticides in accordance with the instructions set

out on the label.

- Supervisors should be responsible for disposing of or dealing with empty containers or pesticides that are no longer needed.

(j) Customer Feedback

- The organization shall monitor customer feedback after providing pesticide application services in terms of comments, complaints and suggestions. The methods for obtaining and using this information shall be determined.
- Customer complaints may arise as a result of poor services, unsatisfactory results, incorrect procedures, prosecution, accidents, etc. The organization shall establish work procedures for handling complaints, including identification of the root causes of a complaint and the corresponding corrective actions.
- Relevant records shall be retained for continual improvement. An example of a Customer Feedback Form can be referred to in Annex 5.

Annex 2 Chemical / Pesticide Procurement and Stock Record Template

Chemical / Pesticide Procurement and Stock Record

For the year of _____

	Name of pesticide / chemical	A	B	C	D	E...
Month	Packing Unit					
Balance b/f	-					
Jan	Purchased					
	End Stock					
	Consumed					
	Disposed					
	Storage condition					
Feb	Purchased					
	End Stock					
	Consumed					
	Disposed					
	Storage condition					
Mar	Purchased					
	End Stock					
	Consumed					
	Disposed					
	Storage condition					
Apr	Purchased					
	End Stock					
	Consumed					
	Disposed					
	Storage condition					

May	Purchased					
	End Stock					
	Consumed					
	Disposed					
	Storage condition					
Jun	Purchased					
	End Stock					
	Consumed					
	Disposed					
	Storage condition					
Jul	Purchased					
	End Stock					
	Consumed					
	Disposed					
	Storage condition					
Aug	Purchased					
	End Stock					
	Consumed					
	Disposed					
	Storage condition					
Sep	Purchased					
	End Stock					
	Consumed					
	Disposed					
	Storage condition					
Oct	Purchased					
	End Stock					
	Consumed					
	Disposed					
	Storage condition					

Nov	Purchased					
	End Stock					
	Consumed					
	Disposed					
	Storage condition					
Dec	Purchased					
	End Stock					
	Consumed					
	Disposed					
	Storage condition					
YEAR END	Total Purchased					
	Total Consumed					
	Total Disposed					
	Balance c/f					

Annex 3 Record for Inspection / Maintenance of Equipment Template

Record for Inspection / Maintenance of Equipment

Date	Type of equipment	Description of inspection / maintenance	Comment	Service performed by

Annex 4 Pest Control Report Template

Basic Information	
Client name:	
Job No.:	
Date & Time:	
Location:	
Nature of job:	
Nature of client business:	
Nature/ value of assets impacted:	
Presence of facilities within 200m:	School / Hospital / Clinic / Care Centre/ Wetland/ Restricted area
Relevant risk factor:	
Part A - Risk Assessment and Site Investigation	
Impact/ Assess site	
Detect and identification of pest species:	
Assessment of the extent and distribution:	
Contributory factors which favour their proliferation:	
Identification of preventive measures:	
Review and evaluation of the effectiveness of previous inspections, treatments and interventions:	Effective / need improvement Description (if any): _____
Define pest management plan	
<input type="checkbox"/> Physical control _____	
<input type="checkbox"/> Biological control _____	
<input type="checkbox"/> Habitat modification _____	
<input type="checkbox"/> Chemical control _____	
<input type="checkbox"/> Any alternative control measures _____	

Part B – Pesticide Application		
Description		Remark
Name of pesticide:		
Pesticide registration no.:		
Globally Harmonized System of Classification and Labelling (GHS) Hazard Symbols:		
<input type="checkbox"/>  Acute Toxic	<input type="checkbox"/>  Oxidizing	<input type="checkbox"/>  Compressed Gas
<input type="checkbox"/>  Acute Health Hazard	<input type="checkbox"/>  Flammable	<input type="checkbox"/>  Chronic Health Hazard
<input type="checkbox"/>  Corrosive	<input type="checkbox"/>  Explosives	<input type="checkbox"/>  Environmental Hazard
Type of exposure:	Dust / Spray / Liquid / Vapour / Mist / Fume / Solid	
Application time:		
Occupational Exposure Limit (OEL) applied:	Y/N	
Mode of application:	Hydraulic nozzle / Granular / Fogging	
Route of Exposure:	Inhalation / Skin / Eyes / Ingestion	
Equipment Required:	Sprayer / Fogger / Duster	
Equipment / Tools adequate:	Y/N	<input type="checkbox"/> Remove dead insects using appropriate equipment
Operator involved:		
Staff training received:	Y/N	
PPE required:	Long pants / Footwear / Mask / Goggle / Gloves	<input type="checkbox"/> PPE and hands were cleaned after the task
Chemical data sheet required:	Y/N	
Safety advice required for non-operator:	Y/N	

Exposure monitoring required:	Y/N	
Disposal hazardous wastes:	<input type="checkbox"/> Proper packaging, labelling and storage of chemical waste <input type="checkbox"/> Return to Depot <input type="checkbox"/> Return to Supplier <input type="checkbox"/> Disposal by registered collector, trip ticket number: _____ <input type="checkbox"/> Other: _____	

Part C – Checklist for Application of Pesticides / Preparation and Mixing of pesticides / Transportation of pesticides

Item	Description	Acceptable		N/A	Remarks
		Y	N		
Pesticide	Brand: _____				
	Model: _____				
	Volume applied: _____				
	Proper label				
	Container condition				
PPE	Gloves				
	PVC aprons				
	Helmets				
	Goggles				
	Protective respirators				
Emergency Preparedness	MSDS				
	Spill kit				
	Proper/ Adequate washing with soap				
Environment	Transportation means				<input type="checkbox"/> separate compartment or storage cabinet is available <input type="checkbox"/> pesticides is put in a securely capped plastic/metal container
	Weather conditions (heavy rainfall, strong wind, typhoon)				

	Ventilation				<input type="checkbox"/> Turn off the central air-conditioning system in the treatment areas before and during the application
	Presence of flame or electrical equipment				
Public Awareness	Notice to client				
	Date of notification				
	Way of notification	<input type="checkbox"/> Verbal		<input type="checkbox"/> Email	
		<input type="checkbox"/> Telephone		<input type="checkbox"/> Letter / fax	
		<input type="checkbox"/> Mobile Apps		<input type="checkbox"/> Other	
	Proper warning sign displayed before and during application				
Warning sign location	<input type="checkbox"/> Entry of work boundary		<input type="checkbox"/> Notice board of Building / Premises		
Operator application practices	Proper spraying location				
	Proper spraying pressure				
	Good hygiene practices (eating/drinking/smoking)				
	Away from contamination of sensitive sources such as food contact				
	Team communication				

Part D – Risk Associated to Pesticide Application / Preparation and Mixing of pesticides / Transportation of pesticides

Processes / Situations (e.g.)	Risk	Possible Effect	Inherent Risk (H, M, L)*	Existing control (e.g.)	Acceptable (Y/N)
Emergency	Fire	Damage to facilities, human injury		Fire drill, follow fire escape plan	
Adverse weather	Strong wind/ typhoon	Damage to ambient environment		Terminate outdoor operation	
Adverse weather	Heavy rainfall	Washout of pesticide to storm drain to cause water pollution		Terminate outdoor operation	
Application/Spraying	Close proximity to people	Respiratory health risk		Careful dosage control, notification of related stakeholder	
Application/Spraying	Chemical over-dosage	Land contamination		Careful dosage control	
Loading	Equipment damage	Ineffective pesticide application		Regular equipment maintenance	
Mixing, Loading	Chemical leakage	Air, water pollution, and land contamination		Equip with spill kit	
Mixing, Application/Spraying, Cleanup	Human contact with pesticide chemical	Skin health risk		Equip with PPE, Preparation of first aid tools	

Application/Spraying	Improper application	Ineffective pesticide application, damage to facilities, human injury		Operators receive sufficient training	
Mixing	Mixing with wrong formula	Uncontrolled chemical reaction leading to facilities damage and human injury		Operators receive sufficient training, Equip with PPE, Preparation of first aid tools	
Disposal	Improper disposal of hazardous wastes	Damage to facilities, human injury, air, water pollution, and land contamination		Operators receive sufficient training, careful disposal control	

*Remarks: Inherent Risk (H: High, M: Middle, L: Low)

Recommendations/ Post-treatment precautions to Clients and Public /

Follow-up items for Clients:

Ventilation requirement

H&S precautions

Work arrangements

Restoration of sanitary conditions

Others:

For Internal Use

Prepared by: _____ Date: _____

Checked by: _____ Date: _____

For External Use (e.g. customer, independent assessor, etc.)

Acknowledged by: _____ Date: _____

Annex 5: Customer Feedback Form Template

Client Name

Client No.

Contact Person

Date

Dear Customer,

Please advise your thoughts on the below aspects and provide comments. Your valuable comment will help us to improve our service quality. Thank you.

Please "✓" when appropriate.	1	2	3	4	5	N/A
	Very Satisfied	Somewhat Satisfied	Neutral	Somewhat Dissatisfied	Very Dissatisfied	Not Applicable
1. Response to customer enquiry						
2. Clear and sufficient information provided in quotation						
3. Good understanding on the pest control operational procedure						
4. Conform to customer requirement						
5. Appropriate notification on pest control operation						
6. Environmental tidiness						
7. Environmental awareness						
8. Safety awareness						
9. Staff attitude						

Other opinions:

For internal use:	
Follow up issue:	
Cause of issue:	
Improvement:	
Outcome:	

References

Agriculture, Fisheries and Conservation Department,

- A Guide To Labelling Of Pesticides 2017
https://www.afcd.gov.hk/english/quarantine/qua_pesticide/qua_pes_pes/files/2017_labelling_guide_15G07E.pdf
- Safety Use of Pesticides Turf and Landscape Management 2017
https://www.afcd.gov.hk/english/publications/publications_qua/pub_qua_lea/files/Turf_Landsc_ape_2017.pdf
- Pesticide Safety- Increase Awareness Reduce Hazards 2002
http://www.afcd.gov.hk/english/publications/publications_qua/files/awareness_e.pdf
- Use Pesticides Safely in Schools, Follow Precautionary Rules 2014
http://www.afcd.gov.hk/english/publications/publications_qua/pub_qua_lea/files/common/Pestuse_school_B.pdf

Agriculture, Fisheries and Conservation Department, Food and Environmental Hygiene Department and the Leisure and Cultural Services Department, Code of Practice for the Safe and Proper Use of Pesticides in Public Areas 2014

https://www.afcd.gov.hk/english/quarantine/qua_pesticide/qua_pes_safe/files/COP_public_area_EN_G.pdf

Centres for Disease Control and Prevention (2007) – What is Integrated Pest Management?
https://www.cdc.gov/nceh/ehs/docs/factsheets/what_is_integrated_pest_management.pdf

Daniel Kass, Wendy McKelvey, Elizabeth Carlton, Marta Hernandez, Ginger Chew, Sean Nagle, Robin Garfinkel, Brian Clarke, Julius Tiven, Christian Espino and David Evans. Effectiveness of an Integrated Pest Management Intervention in Controlling Cockroaches, Mice and Allergens in New York City Public Housing. Environmental Health Perspective 2009 Aug; 117(8): 1219-1225

EPA - Introduction to Integrated Pest Management

<https://www.epa.gov/managing-pests-schools/introduction-integrated-pest-management>

European standard, BS EN 16636:2015, Pest management services. Requirements and competences

Food and Environmental Hygiene Department,

- Food and Environmental Hygiene Department, How to Select a Pest Control Company 2010

http://www.fehd.gov.hk/english/pestcontrol/library/pdf_pest_control/select_pestcntl_e.pdf

- Handbook on Pest Control 2017

https://www.fehd.gov.hk/english/pestcontrol/handbook_pest_control.html

Food and Agriculture Organization of the United Nations & World Health Organization, The International Code of Conduct on Pesticide Management 2014

http://www.fao.org/fileadmin/templates/agphome/documents/Pests_Pesticides/Code/CODE_2014Sep_ENG.pdf

Food and Agriculture Organization of the United Nations, International Code of Conduct on the Distribution and Use of Pesticides 2005

<http://www.fao.org/docrep/018/a0220e/a0220e00.pdf>

Food and Environmental Hygiene Department & Labour Department, Guidelines on Occupational Safety and Health for Pest Control Operators

http://www.fehd.gov.hk/english/pestcontrol/library/pest_control/pest_control.html

Hospitals for a Healthy Environment (2006). H2E 10 Step Guide to Implementing an Integrated Pest Management Program.

https://practicegreenhealth.org/pubs/epp/10Step_IPM_111910.pdf

International Standard Organization,

- ISO 9001:2015 Quality management systems – Requirements
- ISO 14001:2015 Environmental management systems – Requirements
- ISO 45001:2015 Occupational health and safety management systems – Requirements

Occupational Safety and Health Council, 非農業上使用-除害劑安全指引

http://www.oshc.org.hk/oshc_data/files/books/2016/CB006C.pdf Pest Control Personnel

Association of Hong Kong, 滅蟲(有害生物防控有害生物防控)專業操守 2011

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