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# Procedure – Insecticide Management for Plague Locusts

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## Revision History

Version	Date	Amendments	
		Section	Details
1	13 Nov 08		For approval
2	18 Aug 09	All	Update NSW DPI to I&I NSW
		3	Include manual handling equipment
		4	Include SWMS & risk assessments
		5.4.1	Clarify insecticide order information on task request
		5.4.3	Provision of insecticide to public land managers
		5.4.5	Change amounts for insecticide storage
		5.4.6	Update insecticide transport requirements

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### 1. Application / Scope

This procedure is issued with the concurrence of the Director-General of Industry & Investment NSW (I&I NSW) under Clause 6.2 of the Memorandum of Understanding between the Director-General of I&I NSW and State Management Council of the Livestock Health and Pest Authorities.

- Insecticides are used in the control of plague locusts and may be applied on the ground or by air.
- Landholders, contractors and Livestock Health and Pest Authority (LHPA) / I&I NSW personnel are responsible for ensuring insecticides are transported, handled, stored, used and disposed of according to the relevant legislation and regulations to ensure safety for non-target areas, people and the environment.
- Personnel managing and using hazardous substances must be trained and appropriately accredited to ensure his/her safety.

## 2. Abbreviations / Definitions

- APO Agricultural Protection Officer
- DECCW Department of Environment, Climate Change and Water
- EC Emulsifiable concentrate
- EOC Emergency Operation Centre
- FCP Forward Command Post
- LCC Local Coordination Centre
- LHPA Livestock Health and Pest Authority (formerly Rural Lands Protection Boards)
- MSDS Material Safety Data Sheet – required for each insecticide; must be less than 5 years since last review; must be provided by insecticide supplier (usually available on line)
- I&I NSW Industry & Investment NSW (formerly NSW Department of Primary Industries)
- PDO Program Development Officer
- PIDF Pest Insect Destruction Fund
- PPE Personnel Protective Equipment
- RA Risk assessment
- SCC State Coordination Centre
- SLC State Locust Commissioner
- SWMS Safe Working Method Statements
- ULV Ultra low volume

## 3. Resources / Equipment

- Personal Protective Equipment (PPE) according to the insecticide label and Material Safety Data Sheet (MSDS)
- Storage facilities that comply with WorkCover requirements
- Manual handling equipment
- Spray equipment eg booms, misters and boomless jets
- Appropriate forms and equipment for accurate calibration and application

## 4. Warnings

- Use of insecticides can result in undesirable environmental impacts. A risk assessment must be undertaken before every insecticide spray application in order to assist in reducing the likelihood of negative consequences.
- Insecticides can only be distributed to landholders who meet the criteria listed in 5.4.2 of this procedure.
- To avoid delays in insecticide delivery due to unavailability or difficulties in sourcing, careful planning is required. LHPAs must monitor their insecticide use and order new stocks in a timely manner.
- Only appropriately trained personnel are permitted to handle and use insecticides.
- Safety equipment including PPE required in controlling risks from hazardous substances, will be provided and must be regularly inspected, serviced, maintained and used accordingly.

### **ALWAYS READ AND COMPLY WITH THE PRODUCT LABEL, PERMIT AND MSDS**

- Please refer to/or develop the relevant Safe Working Method Statements (SWMS) as listed:
  1. [Driving vehicles](#)
  2. [Manual handling – stores](#)
  3. [Property visits](#)
- Risk assessments must be undertaken before personnel use insecticides. Refer to the following risk assessments.

1. [Environmental impact of insecticide application for locust control](#)
  2. [Insecticide application for locust control](#)
  3. [Use of spray units for the delivery of insecticide for control of plague locusts](#)
- Hazardous substances risk assessments for each relevant insecticide must be completed

## 5. Procedure

### 5.1 Safety

- Comply with requirements from the policy for Use of Insecticides for Plague Locust Control
- LHPA/I&I NSW personnel must supply a copy of the insecticide MSDS and permit (if applicable) every time an insecticide is issued, and ensure the label is intact, when supplying insecticides to the landholder and/or contractors
- LHPA/I&I NSW personnel must read and understand the MSDS, risk assessment, permit and label prior to handling an insecticide. Appropriate resources (eg PPE, atropine) must be available or accessible prior to use.
- I&I NSW/LHPA personnel must be monitored for insecticide exposure symptoms - refer to the MSDS for symptoms.
- A suitable (current) first aid kit must be available in EOCs and in all vehicles participating in plague locust activities.

### 5.2 Health Surveillance

- Personnel likely to be involved in plague locust control programs involving the application of organophosphate insecticides such as Fenitrothion must ensure that a base-line test is carried out prior to use and with at least 30 days free of exposure to any other organophosphate. This is followed by regular tests during the period of use, usually in the middle and the end of a campaign. Testing should be conducted based on a risk assessment approach and managed by the relevant LHPA.
- Blood samples should be taken at least 24 hours but not more than 48 hours after exposure. The one laboratory must be used for all tests and both plasma and red blood cell cholinesterase should be measured. Detection of excessive cholinesterase depression will result in removal of the individual from exposure to allow the enzyme to regenerate.
- Intermittent use of Fenitrothion over 2–3 days, with a gap of a month or more between exposure to Fenitrothion or other organophosphates, is unlikely to require health surveillance, unless symptoms of exposure develop. However, more extensive use of four days or more within a week and for several weeks continuously will require health surveillance.
- Health monitoring and surveillance for I&I NSW employees and the maintenance of associated records must be performed in accordance with the I&I NSW Procedure Health Monitoring and Surveillance.

### 5.3 Insecticide selection

- Decision matrices have been developed to inform insecticide planning and use. Refer to [Plague locusts, wingless grasshoppers and livestock residues](#) regarding residue information.
- Plague locust control campaigns will involve the use of insecticides as specified in the Use of Insecticides for Plague Locust Control policy (please note that insecticides may be added or withdrawn from this list).

- In the event that the supply of the specified insecticides is depleted, the decision matrix should be consulted to select the most appropriate alternate insecticide available.

## 5.4 Supply and issue of insecticide

### 5.4.1 Supply to LHPAs by I&I NSW

- Insecticides are purchased by I&I NSW with funds from the Pest Insect Destruction Fund (PIDF) and supplied to LHPAs for issue to landholders for spraying locusts.
- I&I NSW ensure sufficient insecticide for the season and bases estimates on locust reports from landholders and LHPAs.
- LHPAs must handle, store and dispose of the insecticides according to the MSDS and label requirements and comply with health and safety requirements.
- LHPAs must record transfers of insecticide from the licensed insecticide contractor or another LHPA office in the Insecticide Storage Inventory & Order form.
- The APO/PDO should ensure that LHPAs do not stockpile insecticide in excess of their foreseeable requirements.
- LHPAs may request insecticide from I&I NSW by completing a task request form. Information must include – contact person, street address of LHPA pesticide depot and insecticide amount and type (number of cartons x number of containers x volume of container eg 4x4x2.5L Fenitrothion = 16 containers of 2.5L Fenitrothion)

### 5.4.2 Supply to Landholders by LHPA/FCP

- Insecticide is supplied without charge to LHPA rateable landholders.
- Non-rateable landholders may purchase insecticide from LHPAs or from a rural supplier to comply with their responsibilities under the *Rural Lands Protection Act 1998*.
- Locust reports should be inspected, verified and recorded by the LHPA/FCP prior to issue of insecticide. Where inspection is not possible, document the reason for non inspection using the Landholder Consultation Record. Reasons may include large outbreaks or verified other locust reports in the area. **Insecticide will NOT be issued for the protection of crops or pastures from future/anticipated attack by locusts.**
- Advice must be given to the landholder of the insecticide transportation requirements prior to collection. Insecticide transport must be in accordance with the label, permit and MSDS.
- Check that the issued container is correctly labelled, undamaged and not leaking.
- Issue the oldest insecticide first. Check the batch number or date of manufacture.
- Complete the Landholder Consultation Record and issue the required information. A LHPA ranger must advise the landholder to read and adhere strictly to the label, MSDS and permit. If it is known that the landholder cannot read, the information should be read to them or it should be arranged for someone to read the label to them in each case where the insecticide is used.

- No insecticide is to be issued to a landholder without the written authority of authorised LHPA or I&I NSW personnel. This authority may be in the form of a facsimile or e-mail message.
- All insecticide issued must be recorded immediately by completing the Insecticide Issue form and the Insecticide Storage Inventory & Order form.
- The label on some insecticides allows for both ground and aerial application. Ultra Low Volume (ULV) insecticide can be issued by LHPAs to landholders in some cases for aerial control.

#### 5.4.3 Insecticide supply to public land managers

- Public land managers may purchase insecticide from their local LHPA or from a rural supplier for control of locusts on public lands. The revenue from this purchase will be returned to the PIDF.
- Where nymphs are directly transiting across public lands from one ratepayer property to another (for example over a roadway), consideration may be given to issuing the public land manager undertaking control of these locusts with insecticide from the PIDF.
- The LHPA ranger will approve the purchase in consultation with the LCC. The Issue of Insecticide to Public Land Managers form will be completed and forwarded to the LCC, and the public land manager will be invoiced for the insecticide.

#### 5.4.4 Records

- LHPA/FCP must have accurate records of insecticide on hand, received, transferred and issued using the Insecticide Storage Inventory & Order form.
- LHPA/FCP must supply the insecticide depot locations and contact details to I&I NSW.
- Documents and registers pertaining to the safe use of insecticides must be maintained and reviewed regularly to ensure information remains current and reliable. Hardcopy(s) must be signed and dated by an authorised person, and where required, signed by all person(s) using or at risk of exposure to the substance. These hardcopy documents must be retained as evidence of legislative compliance.
- Records for any agricultural insecticide including ordering, manifest, safety, training, use, maintenance and calibration of equipment, biological or environmental monitoring and disposal records must be retained as evidence of legislative compliance. These records must be made available to workers, auditors, emergency services personnel (eg fire brigade) and WorkCover upon request.

#### 5.4.5 Storage

- Control measures apply to all storages of pesticides. Storage must comply with the requirements of WorkCover NSW [Safe use and storage of chemicals \(including pesticides and herbicides\) in Agriculture, Code of Practice](#).
- Storage facilities must have minimum features to store Class 6.1 PG III and have appropriate signage. I&I NSW and LHPAs can use the Insecticide storage shed safety checklist to monitor compliance with storage requirements.
- Storage is limited to locations with appropriate insecticide storage facilities at LHPA and I&I NSW facilities, approved landholder's properties and licensed commercial premises.

- Storage facilities at LHPA / I&I NSW facilities and landholders should be limited to 600 L or 600 kg for locust insecticide at any time. This can be increased to a maximum of 800 L if the amount of insecticide being issued is greater than 200L per week.
- Licensed commercial premises can store quantities as defined by their licence.
- Ensure insecticides are stored according to the label requirements and separated from non-compatible chemicals. Insecticide to be kept within appropriate temperature range to maintain viability.
- Document and implement an emergency plan for the insecticide storage facility that includes access to MSDS, emergency equipment (eg correct fire extinguishes, spill kit), training for emergencies, clean up procedures and first aid kit.

#### **5.4.5.1 Storage at temporary field locations (for insecticide distribution to landholders)**

LHPA / I&I NSW may create temporary storage depots for insecticides at a remote site; the following criteria must be adhered to.

- A maximum limit of 200L of insecticide is to be kept at any field depot at one time; this will ensure that the rangers monitor the stores regularly.
- An authorised person must take responsibility for the field depot and personally hand out insecticide to landholders.
- A LHPA Ranger must inspect and verify that the proposed field depot complies with the [Safe use and storage of chemicals \(including pesticides and herbicides\) in Agriculture, Code of Practice](#) requirements prior to issue of insecticide to the field depot.
- The LHPA must keep copies of the storage manifest/inventory for each field depot.
- The person issuing the insecticide must keep a register (Insecticide Storage Inventory & Order form and Insecticide Issue form) of how much insecticide has been issued to whom and when. These forms are to be returned to the LHPA weekly to coincide with LHPA reporting requirements to I&I NSW.
- The person issuing the insecticide must complete the Landholder Consultation Record to ensure that all appropriate information is collected or given out.
- The LHPA is to keep records of where and when these field depots are active.

#### **5.4.5.2 Storage at remote airstrips**

Preferably no insecticide should be stored at remote airstrips. It should be arranged, where possible, for aerial spray companies to use their own or other facilities to load spray planes, or trucks to load planes at remote airstrips, each morning and then commute to the agreed airstrip close to the targeted area. Where this is not possible, for instance in the sparsely populated western areas, a temporary airfield insecticide storage depot may be set up. If temporary insecticide storage is established, the following requirements are mandatory.

- Insecticide to be kept within appropriate temperature range to maintain viability.
- A suitable portable bund to contain spills from the insecticide store.
- A temporary bund may be constructed of heavy duty builders' plastic film (heavy duty 4m wide film) and sand (not timber). A near-level site cleared of larger stones and material that may pierce the plastic should be selected for the banded area. A thin layer of coarse sand should be spread over the area to further reduce the risk of a puncture. A slight bump of sand should be prepared around the perimeter to form the bund. The plastic sheet is then laid over the sand. A further 50 mm of sand should be placed on the top of the plastic to prevent the insecticide drums from piercing the plastic.
- The storage must be greater than 10m from a dwelling.
- The storage must be greater than 15m from the property boundary.
- The storage must be greater than 5m from a fuel depot.
- No more than 900L may be at the store at any one time.

- An airfield spill kit must be available at all times when insecticide is in the store; this includes a broom, a 20L drum with large mouth lid, 15kg of sand or agricultural lime, shovel, chemical resistant gloves and goggles or face shield (refer to appropriate MSDS — Spills and Disposal).
- A temporary fence must be constructed around the temporary storage.

#### 5.4.6 Transport

- All persons transporting insecticide must comply with label directions, [Safe use and storage of chemicals \(including pesticides and herbicides\) in Agriculture, Code of Practice](#), Dangerous Goods regulations and OH&S Act and Regulations requirements during transport. Insecticides classified as Dangerous Goods (Classes 2, 3 or 6) are covered by special conditions when being transported.
- Bulk transport of insecticide will routinely be conducted by licensed contractors. I&I NSW and LHPA personnel will transport insecticide between LHPA depots and end users.
- I&I NSW and LHPA personnel should not carry more than 205 L of locust insecticide on any one vehicle at one time; must have appropriate safety equipment in case of a spill/accident; must ensure that insecticide is secured for transport to avoid leaks and spills; must not carry 70L drums in utes and must be transported in a compartment separate to the driver and passengers eg tray of vehicle. For loads that exceed 205L (but not greater than 550L) the load capacity of the vehicle must not be exceeded; an additional risk assessment completed and the trip approved by a senior manager.
- Insecticide must not be loaded or accepted if the containers are damaged or leaking or if containers are incorrectly labelled.
- LHPA / I&I NSW personnel must not issue landholders with more than 200L of locust insecticide on any one vehicle at one time. Above these limits it is necessary to seek special advice on the marking of vehicles and other matters. Consult the [Road and Rail Transport \(Dangerous Goods\) Act 1997](#) or the [DECCW](#).
- Any pollution incidents must be reported in accordance with Part 5.7, Clauses 147-153 of the Protection of the Environment Operations Act 1997
- When any insecticide is delivered by a carrier a delivery docket or consignment note (which is acknowledged by the consignee) must be provided to the consignee (eg LHPA). A copy must be retained by the carrier. The delivery docket or consignment note should contain the following:
  - technical name of product
  - class of product
  - United Nations number
  - Subsidiary Risk Number
  - Packaging Group Number
  - aggregate net quantity
  - number and type of containers
  - MSDS and permit
- All carriers transporting above 1000L of insecticide (excluding Metarhizium) MUST have a Dangerous Goods licence and the vehicle must be driven by a person registered with the Department of Environment, Climate Change and Water (DECCW) to drive a vehicle carrying Dangerous Goods.

### 5.5 Use of Insecticide

#### 5.5.1 Application of EC Insecticides at High Temperatures

At high ambient (air) temperatures (30°C and over) and low relative humidity (less than 45%), EC formulations (emulsifiable concentrates – mixed with water) can become less effective.

At high temperatures water can be evaporated off as the droplet spray falls onto the target. This leaves the insecticide exposed and it will readily vaporise, rendering the spray job ineffective.

To prevent ineffective spraying during warm temperatures, a few simple steps should be followed:

- do not use less than 50L of water per hectare: try to use a higher rate of water (70–80L/ha is recommended);
- increase droplet size – to around 400 micron;
- do not use misters unless droplet size can be increased suitably; and
- try to spray at a cooler time of day, if targets are still suitable.

### 5.5.2 Application Rate in Aerial Control

The application rate for insecticides appears on the label or on the off-label Permit.

The pilot and aircraft company will supply appropriate equipment for aerial application and must ensure their spray equipment can deliver the correct rate of insecticide.

The spray pilot will determine the appropriate airspeed and track spacing for spraying.

The spray pilot must correctly calibrate the spray equipment and check calibration regularly. The FCP must confirm with the pilot that effective calibration has been carried out prior to commencement of spraying operations.

## 5.6 Management of Returned/Unused Insecticides

### 5.6.1 Returned Insecticides

To minimise OHS issues for locust control personnel, insecticides are not to be decanted into other containers.

If a landholder receives more insecticide than they require and wishes to return unopened locust insecticide, they should return the insecticide to their local LHPA Ranger/depot. Partially used insecticide containers should be retained 'on-farm' and will not be accepted as returns by LHPAs.

Most insecticide containers do not have a tamper-proof seal. Therefore if a landholder returns an unused insecticide container and the LHPA Ranger considers that the insecticide has **not** been tampered with, then the unused container may be returned to the insecticide store for redistribution.

If the LHPA Ranger considers that the insecticide has been tampered with, then, as the quality of the product cannot be assured, the container will not be accepted as a return by the LHPA.

### 5.6.2 Disposal of Surplus Mixed Spray

- Apply to an untreated area at the normal application rate following all directions on the label; or
- Dispose of according to label directions.

### 5.6.3 Disposal of Empty Pesticide Containers

- Follow the label directions.
- If no directions are on the label:

- dilute residual contents with water to at least the rate used during spraying;
- add to spray tank and dispose as surplus mixed spray;
- triple-rinse containers (not ULV containers);
- take to drum MUSTER (or equivalent) collection site (not ULV containers); and
- I&I NSW / LHPAs should organise the washing and disposal of ULV drums with a DECCW accredited company.

## 5.7 Insecticide Spills

The transportation, storage and use of insecticide bring risks of leaks and spillage. The importance of preventing spills and leaks and taking the necessary steps cannot be over-emphasised.

- Document an emergency plan for spills and fires using [Safe use and storage of chemicals \(including pesticides and herbicides\) in Agriculture, Code of Practice, Chapter 12](#).

### 5.7.1 Notification of Incident

All spills and associated injuries must be recorded on an Incident Report Form and Injury Report Form, respectively and copied to I&I NSW.

Significant spills must be reported immediately to the NSW Fire Brigade, DECCW and the local council and accordance with Part 5.7, Clauses 147-153 of the Protection of the Environment Operations Act 1997. In such situations, the person (individual, corporation or public authority) needs to be satisfied whether or not the requirements under these sections would require notification of an appropriate regulatory authority.

Section 147 of the [Protection of the Environment Operations Act 1997](#): Meaning of material harm to the environment:

- (1) For the purposes of this Part:
  - (a) harm to the environment is material if:
    - (i) it involves actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial, or
    - (ii) it results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding \$10,000 (or such other amount as is prescribed by the regulations), and
  - (b) loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment.
- (2) For the purposes of this Part, it does not matter that harm to the environment is caused only in the premises where the pollution incident occurs.

## 6. References

### Policies

- [Use of Insecticides for Plague Locust Control](#)
- A-067 NSW DPI Policy Workplace Substances
- A-038 NSW DPI OHS Policy

### Procedures

- NSW DPI Procedure Control of Workplace Substance
- NSW DPI Procedure Dangerous Goods Placarding and Manifest Requirements
- NSW DPI Procedure Health Monitoring and Surveillance
- NSW DPI Procedure Labelling Workplace Substances
- NSW DPI Procedure Spill Management

## Forms

- Hazardous substance risk assessment form
- [Incident Report Form](#)
- [Injury Report Form](#)
- [Insecticide Issue form](#)
- [Insecticide Storage Inventory & Order form](#)
- [Insecticide storage shed safety checklist](#)
- [Issue of Insecticide to Public Land Managers form](#)
- [Landholder Consultation Record](#)
- [Task request form](#)

## Material Safety Data Sheets and labels

### Risk assessments

- [Decision matrices – insecticides](#)
- [Environmental impact of insecticide application for locust control](#)
- [Insecticide application for locust control](#)
- [Use of spray units for the delivery of insecticide for control of plague locusts](#)

### Safe Work Method Statements

- [Driving vehicles](#)
- [Manual handling – stores](#)
- [Property visits](#)

### Information

- [Plague locusts, wingless grasshoppers and livestock residues](#)
- [Safe use and storage of chemicals \(including pesticides and herbicides\) in Agriculture, Code of Practice, 2006](#)
- [Storage and Handling of Dangerous Goods Code of Practice 2005](#)

### Legislative Acts and Regulations

- [Occupational Health & Safety Regulation 2001](#)
- [Occupational Health and Safety Act, 2000](#)
- [Protection of the Environment Operations Act 1997](#)
- [Road and Rail Transport \(Dangerous Goods\) Act 1997](#)
- [Rural Lands Protection Act, 1998](#)

## 7. Appendices

Nil