

**PERSONAL PROTECTION**

**A. APPLICATORS, SUPERVISORS, SANITARIANS, AND AGRICULTURAL EXTENSION OFFICERS**

Subject A: Should know the rules for protection by hygiene.

Subject B: Should know how to protect the parts of the body.

Subject C: Should know how the methods set out in subjects A and B are applied to specific tasks, and the use of certain types of equipment.

**B. OTHER HEALTH AND MEDICAL PERSONNEL**

Subject A: Should know the rules for protection by hygiene.

Subject B: Should know how to protect the parts of the body.

Subject C: May be omitted.

**C. REGISTRATION PERSONNEL:**

Subject A: Should know the rules for protection by hygiene.

Subject B: May need to know how to protect the parts of the body.

Subject C: May need to know how the methods set out in subjects A and B are applied to specific occupations involving special hazards.

Section: III Personal protection  
Subject: A Protection by hygiene  
Number: 1 Objective of protection

**Main points:**

**PERSONAL PROTECTION HAS ONLY ONE OBJECTIVE:  
TO KEEP THE EXPOSURE OF WORKERS HANDLING A PESTICIDE  
AS LOW AS POSSIBLE.**

**PERSONAL PROTECTION DOES NOT BENEFIT  
ANYONE EXCEPT THE PERSON WHO USES IT.**

Personal protection is used in many industries,  
and is an important part of the control of many environmental hazards.

-In handling pesticides, it is important to avoid absorption through the skin, the eyes and by the mouth. With some formulations, protection of the lungs is necessary.

-Whenever any pesticide formulation is used, good hygiene is essential.

Some type of protective clothing is always needed. It may be only working clothing; the use of other items will depend on the hazards of the formulation being handled.

These are often listed on the label.

**Subsidiary points:**

1. All workers should know the hazard of the work that they are required to carry out.
2. It is the responsibility of the employer to provide correct information to workers, and if special protective equipment is needed, the employer should provide this, instruct the workers in its proper use, and see that it is maintained and replaced if faulty.

**For discussion:**

What sort of protection is provided in other industries?

Do local climatic conditions influence the use of protective equipment?

**Suggested visual aid:** Text, using the words in capital letters above.

Section: III Personal protection  
Subject: A Protection by hygiene  
Number: 2 Washing

**Main points:**

**MUCH OF THE PESTICIDE ON THE SKIN WILL BE REMOVED BY WASHING,  
AND THE ABSORPTION IS REDUCED.**

**USING SOAP WILL REMOVE MORE, ESPECIALLY IF THE FORMULATION IS OILY.  
ANY PESTICIDE ON THE SKIN SHOULD BE WASHED OFF IMMEDIATELY.**

**ALWAYS WASH HANDS, ARMS AND FACE**

- BEFORE EATING
- BEFORE DRINKING
- BEFORE SMOKING
- BEFORE TRAVELLING BACK TO BASE
- BEFORE URINATING.

**AT THE END OF THE DAY TAKE A BATH OR SHOWER**

Hand sprayers can sometimes wash their hands and arms  
each time the pump is refilled.

**Subsidiary points:**

1. Use clean water for washing, but do not wash in streams. If there is little or no water at the application site, it should be taken to the field in a clean drum, preferably fitted with a tap.
2. If practicable, collect the water used for hand and arm washing and dispose of it in the same manner as the water used for washing equipment or use it for mixing.

**For discussion:**

Are there any local difficulties in arranging for the supply and disposal of water for washing?

**Other information:**

Disposal of water contaminated with pesticide is the subject of module IV B 2.

**Suggested visual aid:** Photograph of worker washing hands or face in field or other workplace.

**Section: III Personal protection**  
**Subject: A Protection by hygiene**  
**Number: 3 Eating and drinking at work**

**Main points:**

**NO ONE SHOULD EAT OR DRINK WHILE HANDLING PESTICIDES  
WITHOUT FIRST WASHING HANDS, ARMS AND FACE IN CLEAN WATER,  
PREFERABLY WITH SOAP.**

**IF FOOD IS CARRIED TO THE FIELD,  
IT SHOULD BE CARRIED IN A TIN WITH A TIGHT FITTING LID.**

**For discussion:**

If a worker eats or drinks during work without washing, by which route is the pesticide likely to be absorbed?

**Suggested visual aid:** Photograph of a man eating in the workplace, clearly marked as a wrong practice with an X.

**Section:** III Personal protection  
**Subject:** A Protection by hygiene  
**Number:** 4 Smoking at work

**Main points:**

**WORKERS HANDLING ANY PESTICIDE  
SHOULD NOT SMOKE AT ALL WHILE AT WORK**

**IF THEY ARE ALLOWED TO SMOKE DURING A WORK PAUSE,  
THEY SHOULD FIRST WASH THEIR HANDS, ARMS AND FACE IN CLEAN WATER.**

**Subsidiary point:**

If workers carry cigarettes or other smoking material in the pockets of their working clothing, the materials should be kept in a tin with a tight fitting lid.

**For discussion:**

If a worker smokes during work without washing, by which route is the pesticide likely to be absorbed?

What other (non-pesticide) hazards are associated with smoking?

**Other information:**

When a cigarette contaminated with pesticide is smoked, apart from the pesticide absorbed through the skin of the lips and mouth, there may be unknown hazards from compounds formed when the pesticide is partly burnt at the tip of the cigarette, and inhaled.

**Suggested visual aid:** Photograph of a man smoking in workplace, clearly marked as a wrong practice with an X.

Section: III Personal protection  
Subject: A Protection by hygiene  
Number: 5 Chewing at work

**Main points:**

**WORKERS HANDLING PESTICIDES SHOULD NOT CHEW  
ANYTHING WHILE AT WORK.**

**IF THEY ARE ALLOWED TO CHEW DURING A WORK PAUSE,  
THEY SHOULD FIRST WASH THEIR HANDS, ARMS AND FACE IN CLEAN WATER.**

**Subsidiary points:**

1. The point above includes preparing anything for chewing.
2. If workers carry materials for chewing in the pockets of their working clothing, these should be kept in a tin with a tight closing lid.

**Other information:**

This module is intended for use in those countries where betel and other materials are chewed. The hazard from chewing gum in commercial packings is probably very low since it is well wrapped, and the tin is not necessary. The other parts of the module still apply.

**Suggested visual aid:** Photograph of a man putting chewing materials in his mouth, clearly marked as a wrong practice with an X.

**Section:** III Personal protection  
**Subject:** A Protection by hygiene  
**Number:** 6 Household pesticides

**Main points:**

**ONLY USE PESTICIDES APPROVED FOR USE IN HOUSEHOLDS.**

This means pesticides sold in shops in properly labelled containers,  
to members of the general public.

Never use pesticides offered by someone else  
who might be using them professionally to control  
other pests or the same pests in other places.

**FOLLOW THESE SIMPLE RULES:**

- READ AND FOLLOW THE DIRECTIONS FOR USE ON THE LABEL.
- COVER ALL FOOD BEFORE USING SPRAYS.
- VAPORIZERS AND MOSQUITO COILS SHOULD ONLY BE USED IN WELL-VENTILATED ROOMS.
- ALWAYS WASH HANDS WITH WATER AND SOAP AFTER USING PESTICIDES.

**Subsidiary points:**

1. The description 'household pesticide' sometimes covers pesticides sold for use in gardens. These may be in the form of concentrated formulations which need to be diluted before use. Do not use these pesticides on any crop or for any pest which is not mentioned on the label, and use only the concentrations recommended.
2. The concentrates may be hazardous, and the precautions on the label should be carefully studied.
3. Be careful not to spray any food crops during the time before harvesting which is specified on the label.

**For discussion:**

By which routes may pesticides be absorbed if these rules are not followed?

**Suggested visual aid:** Text using words in capital letters.

**Section: III Personal protection**  
**Subject: B Protection of the body**  
**Number: 1 The main part of the body**

**Main points:**

**FOR THE PROTECTION OF THE MAIN PART OF THE BODY, THE AIM IS TO COVER AS MUCH SKIN AS POSSIBLE WITH SUITABLE MATERIAL, TO PREVENT THE SKIN BEING CONTAMINATED BY PESTICIDE.**

Overalls or a shirt and trousers with long arms and legs are the best ways of protecting the body.  
They cover about 85% of the skin.

The clothing should be made of cotton, washable, without holes, and it should be worn with the front zipped or buttoned up to the neck while working.

**CLOTHING WHICH BECOMES SOAKED WITH A PESTICIDE IS NO PROTECTION AND CAN INCREASE ABSORPTION. IT SHOULD BE CHANGED IMMEDIATELY.**

**Subsidiary points:**

1. Pockets are not essential.
2. Cigarettes, chewing materials, or any type of food should not be carried in the pockets of overalls, except in tins with tight fitting lids.
3. National dress may provide the same protection as an overall if it meets the following conditions:
  - it is made of washable cotton;
  - it covers the body without openings;
  - it has long sleeves;
  - it is long enough to cover the top of boots, if worn;
  - it is repaired or replaced if it wears into holes.

**For discussion:**

What clothing is worn in this country?

What are the advantages and disadvantages of each type, and which is the best?

**Other information:** Overalls are known as coveralls in some countries.

**Suggested visual aid:** Picture of a sprayman or other applicator wearing an overall (or national dress, if appropriate).

**Section: III Personal Protection**  
**Subject: B Protection of the body**  
**Number: 2 The head and neck**

**Main point:**

**PROTECTION OF THE HEAD AND NECK IS NEEDED  
WHEN USING PESTICIDE FORMULATIONS  
OF SLIGHT, MODERATE OR HIGH HAZARD.**

When spray is being applied above waist level to crops, weeds, walls or eaves, a wide-brimmed cotton hat should be worn.

A washable scarf is desirable when pesticide formulations of slight hazard are being used and necessary when the formulations present moderate hazard.

**Level: INTERMEDIATE**

**Subsidiary points:**

1. Pest control operators using highly hazardous liquid formulations should wear a full head covering of impermeable material, incorporating a transparent panel. This should be worn loose over the shoulders and not tucked into the clothing. An independent air supply is needed for fumigation.
2. Hard hats may be needed for some tasks.

**Other information:**

Later modules in this subject cover eye, nose and mouth protection.

**Suggested visual aid:** Photograph of a sprayman with hat, using wand above waist level.

**Section: III Personal protection**  
**Subject: B Protection of the body**  
**Number: 3 Lower legs and feet**

**Main points:**

**THE SKIN OF THE LOWER LEGS AND FEET CAN BE CONTAMINATED:**

- DURING PESTICIDE APPLICATION, ESPECIALLY BY SPRAY, OR
- BY WALKING THROUGH VEGETATION THAT HAS RECENTLY BEEN SPRAYED.

**NEVER APPLY PESTICIDES IN BARE FEET OR WEARING OPEN SANDALS.**  
**IF POSSIBLE, DO NOT WALK THROUGH RECENTLY SPRAYED AREAS.**

**ALWAYS SPRAY AWAY FROM THE WIND.**

The best protection is canvas or PVC boots.

Trouser or overall legs should be worn **OUTSIDE** the boots.

This prevents any splashes of pesticide entering the boots.

**Subsidiary points:**

1. If boots are not available, canvas or leather shoes can be worn, provided that:
  - they are in good condition;
  - the legs of the overall or trousers are over the top of the shoes.
2. For some tasks, especially in forestry, safety boots with a steel toe inset may need to be used.
3. After work, wash the boots outside with water. If the boots or shoes are canvas or have been splashed, wash the inside as well; stand boots upside down to dry.
4. To prevent foot infections, rubber boots should not be used. If possible, each man should have his own footwear.

**For discussion:**

Why are the trousers not tucked into boots?

**Suggested visual aid:** Photograph of the feet of a worker with canvas or PVC boots and trousers worn over the boots.

**Section: III Personal protection**  
**Subject: B Protection of the body**  
**Number: 4 Hands**

**Main point:**

**HANDS MUST BE PROTECTED BY GLOVES.**

- WHENEVER HANDLING CONCENTRATE,
- WHENEVER APPLYING FORMULATIONS OF HIGHER HAZARD,
- WHENEVER WASHING OR MAINTAINING PESTICIDE APPLICATION EQUIPMENT.

Gloves should be in good condition, without holes,  
made of neoprene, not rubber,  
and long enough to reach the sleeves.

IT IS MORE DANGEROUS TO WEAR GLOVES WITH HOLES THAT ALLOW FLUID  
TO ENTER THE GLOVE, THAN NOT TO WEAR GLOVES AT ALL.

**Subsidiary points:**

1. Gloves with holes should be changed as soon as possible.
2. Gloves should be washed at least daily, or whenever removed, inside and out.
3. The wearing of gloves in no way reduces the need to wash the hands before eating, drinking, (chewing) or smoking. The skin of the hands may become lightly contaminated when gloves are put on or taken off.
4. Disposable gloves wear very quickly, and are not suitable unless more than 0.4 mm thick. If used they must be disposed of safely, in the same way as plastic bags that have contained pesticides.

**Other information:**

Ideally, sleeves should be worn outside the tops of gloves, in the same way as trousers should be worn over boots, and for the same reasons. However, this is often impracticable as the ends of sleeves are too narrow. If there is a danger of splashes with hazardous formulations, this can be minimized by wearing gauntlet gloves.

**Suggested visual aid:** Photograph of worker wearing suitable gloves.

**Section: III Personal protection**  
**Subject: B Protection of the body**  
**Number: 5 The eyes**

**Main points:**

**EYES SHOULD BE PROTECTED FROM SPLASHES.  
WHENEVER MIXING OR LOADING PESTICIDES,  
OR WHEN SPRAYING AT HIGH LEVELS.**

There are three ways of protecting the eyes:

**THE BEST IS A VISOR,**

a curved sheet of transparent plastic, which is attached to a hat  
or a headband and stands in front of the whole face.

It is comfortable to wear.

Goggles fit tightly around or over the eyes. They are efficient, but  
are uncomfortable to wear in hot climates.

If neither of these are available, safety spectacles are better than  
nothing.

**Subsidiary points:**

1. All eye protection equipment must be kept clear, and the outside should be washed and wiped with a soft rag if vision becomes blurred.
2. The equipment and the rag should be carefully washed each day at the end of work.
3. Plastic visors and goggles should not be placed on rough surfaces as the plastic can be easily scratched.
4. Badly scratched or damaged equipment must be replaced before it starts to produce eye strain.

**Suggested visual aid:** Photograph of a worker wearing a visor.

Section: III Personal protection  
Subject: B Protection of the body  
Number: 6 The lungs

**Main points:**

**PROTECTION BY WEARING A RESPIRATOR TO AVOID INHALATION OF DUSTS,  
VAPOURS AND GASES**

**IS ONLY NEEDED IN SPECIALIZED OPERATIONS  
WITH FORMULATIONS OF MODERATE OR GREATER HAZARD.**

**OTHERWISE, AND FOR DUSTY FORMULATIONS OF SLIGHT HAZARD,  
A CLOTH AROUND THE FACE,  
OR A LIGHT WEIGHT DISPOSABLE FACE MASK COVERING  
THE MOUTH AND NOSE IS ADEQUATE.**

**THE CLOTH OR MASK MUST BE REPLACED AS OFTEN AS IT BECOMES WET  
WITH SWEAT.**

**THE CLOTH MUST BE WASHED AND THE MASK DISPOSED OF  
WHENEVER SOILED AND AT THE END OF EACH WORKING DAY.**

**Subsidiary points:**

1. A respirator must:
  - be fitted with the proper type of canister, and this must be regularly replaced, in accordance with the instructions on the canister;
  - fit closely around the mouth and nose;
  - be washed daily after removal of the canister, and dried;
  - be kept in a clean plastic bag when not in use;
  - be regularly inspected;
  - be worn only by those trained in its use.
2. Respirators can only be worn for short periods in hot climates.

**Suggested visual aid:** Photograph of a worker wearing a cloth around face or a lightweight dust mask.

**Section:** III Personal protection  
**Subject:** B Protection of the body  
**Number:** 7 Washing of clothing and equipment

**Main points:**

**PERSONAL PROTECTION IS NOT COMPLETE UNLESS  
ALL WORKING CLOTHING AND EQUIPMENT IS WASHED  
AT THE END OF EACH WORKING DAY.**

**AFTER WASHING THE CLOTHES OR EQUIPMENT, RINSE THEM IN CLEAN WATER  
AND SPREAD OR HANG THEM OUT TO DRY.**

**Subsidiary points:**

1. Working clothing should never be washed with domestic clothing.
2. The water used for washing will probably be contaminated with the pesticide and must therefore be disposed of in a safe manner. If the washing has been done properly, rinsing water can be disposed of as any other waste water.
3. Clothing and equipment should never be washed in running water, as the stream or river may be used lower down for drinking or swimming. Fish can also be killed or affected close to the washing point.

**For discussion:**

If clothes are not washed, what is the danger?

**For information:**

For disposal of wash water, see module IV B 2.

**Suggested visual aid:** Photograph of a worker washing clothing or gloves.

**Section:** III Personal protection  
**Subject:** C Protection by task  
**Number:** 1 Responsibility of controllers and supervisors

**Main points:**

**IN ANY PESTICIDE APPLICATION, ALL THOSE RESPONSIBLE**

**FOR THE OPERATION MUST KNOW:**

- THE HAZARD CLASSIFICATION OF THE FORMULATION BEING USED;
- THE PRECAUTIONS THAT MUST BE FOLLOWED BY THE APPLICATORS,
- WHETHER ANY SPECIAL PROTECTIVE CLOTHING AND EQUIPMENT SHOULD BE PROVIDED;
- THE FACILITIES REQUIRED FOR THE HYGIENIC PROTECTION OF THE APPLICATORS, AND THE CARE AND MAINTENANCE OF THE EQUIPMENT.

**Subsidiary points:**

1. Pesticide application is always an operation that must be planned with care, even if the pesticide presents very low hazard.
2. A group of applicators who have been working with a pesticide of very low hazard for long periods without any problems can become very careless in taking precautions. If a pesticide with a higher hazard is later substituted without informing and warning all those handling it, their poor technique can lead to serious absorption.
3. There are a minimum number of precautions that must be taken in the application of any pesticide, and there must be a minimum standard of maintenance for the application equipment.

**For discussion:**

What are the minimum precautions to be followed?

**Other information:**

Minimum precautions will be found in subject A and modules B 1 and B 3 of this section.

**Suggested visual aid:** Text, using words in capitals above.

**Section: III Personal protection**  
**Subject: C Protection by task**  
**Number: 2 Knapsack spraying**

**Main points:**

Motorized or hand-pumped knapsack sprayers are usually used for low level spraying. ULV sprayers may be battery operated.

**ORDINARY PROTECTION MUST BE WORN FOR THE BODY AND FEET.**

**A BLOCKED NOZZLE SHOULD NEVER BE CLEARED BY  
BLOWING THROUGH IT.**

**USE THE PRESSURE RELEASE VALVE OR A WIRE.**

**FOR ULV SPRAYING, A CLOTH OVER THE MOUTH AND NOSE MAY BE USEFUL.**

**Subsidiary points:**

1. A common fault is for sprayers to spray in front of themselves, and then to walk through the wet vegetation. The wand must always be held so that the spray is applied at the side of the sprayer, with the wind blowing away from him.
2. It is important that hose connections should be regularly checked to prevent a leak wetting the back of the clothing. If this happens, wet clothing must be changed immediately, and the sprayer should shower or bathe as soon as possible.

**For discussion:**

In case of motorized sprayers, there is another chemical hazard which is not related to the pesticide. What is it, and how can it be prevented?

**Other information:**

1. Details of body and feet protection will be found in Subject B of this Section.
2. The protection to be provided will need modification if a formulation of more than slight hazard is to be applied.

**Suggested visual aid:** Photograph of a worker wearing a knapsack sprayer, correctly dressed.

**Section: III Personal protection**  
**Subject: C Protection by task**  
**Number: 3 Pressurized hand spraying**

**Main points:**

The pressurized hand sprayer is usually used for spraying residual pesticides in and around houses for the control of pests of public health importance, and for the application of larvicides to water.

**ORDINARY PROTECTION MUST BE WORN FOR THE BODY AND FEET.**

**AS SPRAYING IS SOMETIMES HIGH, UNDER THE EAVES OF A HOUSE,  
A WIDE BRIMMED HAT IS ALSO NEEDED.**

**A BLOCKED NOZZLE SHOULD NEVER BE CLEARED BY BLOWING  
THROUGH IT.**

**Subsidiary points:**

1. A residual pesticide is a formulation sprayed on a surface, and intended to retain its activity for a period of weeks or months.
2. Before spraying a house, it is important to check that all food, cooking utensils and bedding is covered or moved outside.

**For discussion:**

What parts of a pressurized sprayer need regular checking and maintenance?

**Other information:**

Details of body and feet protection will be found in Subject B of this Section.

**Suggested visual aid:** Photograph of a public health worker with a pressurized sprayer, correctly dressed.

**Section: III Personal protection**  
**Subject: C Protection by task**  
**Number: 4 Mechanized spraying**

**Main points:**

Mechanized sprayers are mainly used for applying pesticides through wide booms over ground crops, for applying pesticides at a high level to trees, and for the generation of fogs and mists in cities for the control of pest insects.

**BOTH DRIVING AND LOADING A MECHANIZED SPRAYER CAN BE HAZARDOUS, DEPENDING ON THE FORMULATION USED.**

**ALL WORKERS MUST WEAR BODY AND FEET PROTECTION AND LOADERS MUST WEAR VISORS, PLASTIC GLOVES, AND PLASTIC APRONS.**

**FOR HIGH LEVEL APPLICATION, FULL WATERPROOF PROTECTION, INCLUDING HAT, AND A VISOR MAY BE NEEDED, IF THE OPERATOR IS NOT IN A FULLY ENCLOSED CAB.**

**Subsidiary point:**

During fogging or misting, workers may feel more comfortable with a clean cloth over the mouth and nose. For formulations of moderate or higher hazard as applied, a respirator may be needed.

**Other information:**

Some points made in the modules in this Section on loading aircraft (C 12) are also relevant to loaders of mechanized sprayers, and on piloting agricultural aircraft (C 13) to operators working in a cab.

**Suggested visual aid:** Photograph of a mechanized sprayer at work, with driver correctly protected.

**Section: III Personal protection**  
**Subject: C Protection by task**  
**Number: 5 Dusting**

**Main points:**

Dusting is the application of a pesticide in a powder formulation.  
It can be applied by a distributor operated by hand or motorized.

**DUST CLINGS TO THE CLOTHING AND TO SWEATY SKIN.**

**ORDINARY PROTECTION MUST BE WORN FOR THE BODY AND FEET.**

**A LIGHT DISPOSABLE DUST MASK SHOULD BE WORN.**

**A CLEAN CLOTH OVER THE MOUTH AND NOSE IS ONLY SUFFICIENT IF THE  
FORMULATION IS OF VERY SLIGHT HAZARD.**

**Subsidiary points:**

1. The worker should apply the dust so that he is never walking in the dust cloud.
2. Make sure that the application line is so chosen that the wind blows away from the applicator.
3. Formulation of dusts as granules reduces hazard, but friction between the granules during transportation results in some dust always being present. Precautions should be taken accordingly.

**Other information:**

This module presumes that the dust formulation presents no more than a slight hazard. Otherwise, more comprehensive protection will be needed, for head, hands, eyes and lungs.

**Suggested visual aid:** Photograph of a worker hand dusting a crop, wearing correct protection.

**Section:** III Personal protection  
**Subject:** C Protection by task  
**Number:** 6 Mixing pesticides

**Main points:**

The mixing of pesticides is the dilution of a concentrated formulation to prepare a solution for application.

It does NOT mean the mixture of two separate pesticide formulations. This is a highly undesirable practice unless it is clearly stated on the label that the two formulations are compatible.

**THE HAZARD TO THE MIXER IS GREATER THAN THAT TO ANY OF THE APPLICATORS.**

**THEREFORE THE MIXER NEEDS MORE PROTECTION OF THE BODY, FEET, HANDS AND EYES.**

**A PLASTIC APRON IS ADVISABLE WHEN POURING THE MIXTURE INTO APPLICATION EQUIPMENT**

**ALWAYS USE A PADDLE OR STIRRER WHEN MIXING.**

**NEVER MIX WITH BARE HANDS AT ANY TIME.**

**Subsidiary points:**

1. Make sure that water for washing splashes off the skin is close at hand.
2. The mixer must also wear protection when disposing of empty concentrate containers.

**For discussion:**

What are the characteristics of a good mixer?

**Suggested visual aid:** Photograph of a worker mixing pesticide, wearing correct protection.

**Section: III Personal Protection**  
**Subject: C Protection by task**  
**Number: 7 Bagging pesticides**

**Main points:**

Bagging is the weighing of a solid formulation into quantities to take to the field for dilution at the point of application. Each amount weighed is sufficient for one pump charge. This procedure has to be carried out under supervision.

**BAGGING MUST BE CARRIED OUT IN WELL-LIT AND WELL-VENTILATED  
CONDITIONS.**

**PROTECTION IS NEEDED FOR BODY, FEET AND HANDS,  
AND A LIGHT DUST MASK SHOULD BE WORN.**

**Subsidiary points:**

1. It is important that the bagging area should be kept clean. Damp the floor before sweeping up spilled pesticide. No dry sweeping should be allowed at any time.
2. Avoid touching the outside of bags with contaminated gloves.
3. Each bag must be securely closed with a tie to prevent any spillage.
4. Because the bags are unlabelled, a careful count must be made of the number of bags taken each day to the field. At the end of the day, all bags should be accounted for, and the empty bags should be taken back to the base for disposal.

**For information:**

The disposal of contaminated soil, unwanted pesticide and empty bags is described in modules in Section IV, Subject B.

**Suggested visual aid:** Photograph of a mixer at work, wearing correct protection.

**Section: III Personal protection**  
**Subject: C Protection by task**  
**Number: 8 Supervising in the field**

**Main points:**

**THE FIELD SUPERVISOR MUST SET AN EXAMPLE TO WORKERS  
AND CAN THEN INSIST THAT THE WORKERS FOLLOW SAFE PRACTICES.**

**WHEN TRAINING WORKERS, THE SUPERVISOR MUST TAKE CARE  
THAT WORKERS WEAR ALL THE PROTECTION NEEDED FOR THE ACTUAL  
OPERATION,  
EVEN IF NO PESTICIDE IS BEING APPLIED DURING THE TRAINING SESSION.**

**IN THE FIELD, THE SUPERVISOR MUST ALWAYS WEAR APPROPRIATE  
PROTECTION.**

**THE SUPERVISOR IS RESPONSIBLE FOR SEEING:**

- THAT WASHING WATER IS AVAILABLE,
- THAT THE WORKERS WASH BEFORE EATING, (CHEWING) OR SMOKING,
- THAT CLOTHING AND PROTECTIVE EQUIPMENT IS WASHED AT THE END OF EACH DAY.

**THE SUPERVISOR SHOULD CHECK APPLICATION EQUIPMENT FREQUENTLY  
TO SEE THAT IT IS OPERATING EFFICIENTLY AND IS NOT LEAKING.**

**Subsidiary point:**

The supervisor should also follow all the rules of hygiene for his/her own protection, especially washing before eating, etc.

**Suggested visual aid:** Photograph of a supervisor talking to a worker, both wearing correct protection.

Section: III Personal protection  
Subject: C Protection by task  
Number: 9 Maintaining the equipment

**Main points:**

The maintenance engineer will service not only the pesticide application equipment itself, but also the vehicle, or other machinery associated with the equipment. Parts of these may be heavily contaminated with pesticide. The engineer is often the forgotten worker, who may be more at hazard than some applicators.

**THE MAIN HAZARDS FOR A MAINTENANCE ENGINEER ARE TANKS AND HOSES CONTAINING RESIDUES OF PESTICIDE FORMULATIONS, AND PARTS COATED WITH DRIED PESTICIDE RESIDUES.**

**THE DRIED RESIDUES MAY PRESENT A HIGHER HAZARD THAN THE ORIGINAL FORMULATION, PARTICULARLY IF THEY ARE HANDLED, MACHINED, OR HEATED.**

**THE SUPERVISOR SHOULD INFORM THE ENGINEER IF THE TECHNICAL PRODUCT OF THE PESTICIDE USED IN THE EQUIPMENT WAS OF MORE THAN SLIGHT HAZARD.**

**THE ENGINEER SHOULD HANDLE HIGHLY CONTAMINATED PARTS WITH GLOVES, UNTIL THEY CAN BE DECONTAMINATED.**

**Subsidiary points:**

1. The engineer should wash working clothing daily when working on pesticide application equipment, and should follow the other rules of hygiene.
2. Liquid residues and washings should be collected and given to the pesticide applicator for safe disposal, or disposed of in waste oil that is NOT to be recycled. They should not be put down drains.

**Suggested visual aid:** Photograph of maintenance engineer at work on application equipment, with gloves in view.

**Section: III Personal protection**  
**Subject: C Protection by task**  
**Number: 10 Acting as a flagman**

**Main points:**

A flagman is usually only used in aerial pesticide operations. He does not apply any pesticides himself, but holds a flag at the point where the aircraft should begin its next spraying run. In this position, the flagman is at serious risk of being sprayed by the aircraft as it begins its run. If this happens a number of times during a day, exposure can be substantial.

**WOMEN AND CHILDREN SHOULD NEVER BE EMPLOYED ON THIS TASK.**

**A FLAGMAN MAY BE A CASUAL WORKER,  
BUT HE MUST STILL HAVE BODY AND FOOT PROTECTION.  
HE SHOULD ALSO WEAR A WIDE-BRIMMED HAT.**

**THE FLAGMAN SHOULD NOT STAND IN THE MIDDLE OF THE RUN,  
BUT TO THE WINDWARD SIDE.**

**Subsidiary points:**

1. If the formulation being applied presents more than a slight hazard, lung protection will also be required.
2. There are alternatives to the use of flagmen, such as the positioning of balloons or flags on poles between aircraft runs. These diminish the risk of exposure, but all workers on the ground during aerial applications need basic body, feet, and head protection.

**Suggested visual aid:** Photograph of flagman at work wearing correct protection.

**Section: III Personal protection**  
**Subject: C Protection by task**  
**Number: 11 Controlling pests commercially**

**Main points:**

Pest control officers work for commercial concerns (or public bodies) engaged in the control of pests in warehouses, food premises, homes, and other places where a particular pest problem might arise. In this capacity, they are usually allowed to use pesticides of much higher hazard than are allowed to be distributed to other sections of the community.

**PEST CONTROL COMPANIES MUST TRAIN THEIR OFFICERS CAREFULLY.**

**PEST CONTROL OFFICERS MUST BE AWARE  
OF THE HAZARD CLASSIFICATION OF THE PESTICIDES THAT THEY HANDLE,  
AND USE PROTECTIVE EQUIPMENT ACCORDINGLY.**

**MANUFACTURER'S INSTRUCTIONS MUST BE FOLLOWED WITHOUT ANY SHORT  
CUTS.**

**THE LABEL WILL INDICATE THE TYPE OF PROTECTION NEEDED,  
AND THIS SHOULD ALWAYS BE FOLLOWED.**

**WHEN PESTICIDES OF HIGH HAZARD HAVE BEEN USED,  
WORKING CLOTHING SHOULD NOT BE WASHED WITH DOMESTIC CLOTHING.  
PROTECTIVE EQUIPMENT SHOULD BE WASHED AT THE WORK BASE.**

**Subsidiary points:**

1. Pest control officers have a particular responsibility to dispose of unwanted pesticide and used containers in a safe manner.
2. Pest control officers must not give to friends or any other persons any samples of the pesticides that they use in the course of their work.

**For discussion:**

In this country, do pest control officers have to take a course in techniques and protection before being allowed to work? If not, would this be useful?

**Suggested visual aid:** Photograph of a pest control officer at work, wearing correct protection.

**Section: III Personal protection**  
**Subject: C Protection by task**  
**Number: 12 Loading pesticides**

**Main points:**

Loading pesticides from a drum, or other container in which pesticide has been mixed, into the hopper of an aircraft or a mechanized applicator can be hazardous. Major exposure can take place if a hose is punctured or bursts during loading or if it leaks at its joints at either end. Lesser but more frequent and substantial exposure may occur on each occasion that the hose is disconnected from the inlet to the hopper.

**A LOADER NEEDS A HIGH STANDARD OF PROTECTION AT ALL TIMES.**

**THE WORKER NEEDS BODY, FEET, AND HAND PROTECTION, AND A PLASTIC APRON.**

**EYE PROTECTION USING A VISOR IS NEEDED AT ALL TIMES.**

**HEAD PROTECTION MAY BE NEEDED IF THE LOADING POINT IS HIGH.**

**Subsidiary points:**

1. Water in quantity for washing should be provided in the loading area.
2. Clothing that becomes soaked must be removed immediately, and the worker should wash contaminated skin or shower as soon as possible.
3. Care must be taken not to overfill a hopper, causing spillage.
4. Those loading aircraft must clearly understand their task in order to avoid overloading. Loading sites must be selected with care to avoid exposure of humans and animals, or of watercourses to pesticides spilled at the time of loading or later.

**Other information:**

The risk of massive exposure of a loader is such that full protection as outlined above should be used when loading any pesticide formulation, diluted or not. Non-pesticidal components of a formulation may be hazardous or locally irritating if massive exposure occurs.

**Suggested visual aid:** Photograph of a loader at work wearing correct protection.

Section: III Personal protection  
Subject: C Protection by task  
Number: 13 Piloting an aircraft applying pesticides

**Main points:**

**THE PILOT OF AN AIRCRAFT APPLYING PESTICIDES MUST KNOW  
THE TYPE OF PESTICIDE AND THE HAZARD CLASSIFICATION OF THE  
FORMULATION.**

**HE MUST AVOID ALL CONTACT WITH PESTICIDE AS FAR AS POSSIBLE BY:**

- WEARING USUAL BODY AND FEET PROTECTION;
- NOT GETTING CONTAMINATED TRAMP DUST INTO HIS COCKPIT

by not walking in the mixing area and over places where pesticide might have been spilt;

- KEEPING VENTILATORS IN THE DECK AREA OF THE COCKPIT  
CLOSED WHILE FLYING THE AIRCRAFT

to avoid suspending tramp dust in the air inside the cockpit;

- TAKING CARE NOT TO FLY BACK THROUGH THE SWATHE,  
OR TO THE LEE OF RECENTLY SPRAYED AREAS.

TURN INTO WIND WHENEVER POSSIBLE

**Subsidiary points:**

1. Pilots should also follow the rules for protection by hygiene.
2. Pilots must take particular care when working with organophosphorous compounds, as many of these have a local effect on the eye, even when exposure may be so low as to produce no other adverse effects. Impairment of visual accommodation may result in blurred vision, and inability to judge distance correctly. If this occurs, the pilot must land as soon as possible, and not fly again for at least a day. The eyes should be washed out with clean water.
3. Maintenance engineers should be warned that the aircraft has been used for applying pesticides and advised to take precautions in handling contaminated parts. The outside of the aircraft may be contaminated if it has not been washed since operating.
4. A pilot should not normally load his own plane, but if there is no alternative, he must take care to use on every occasion all the protective measures required for loaders while actually loading.

**Suggested visual aid:** Text, using words in capital letters.