

# ENTOMOLOGY BULLETINS : NO.9

## SAFE HANDLING AND USE OF PESTICIDES

### — A CODE OF PRACTICE

by  
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From time to time, growing crops are damaged by certain insects. When these insects appear in such large numbers that they could damage the whole crop, they must be controlled.

The three main ways of controlling insects are by physical methods such as hand picking; biological methods such as releasing pests or predators of the insects, and chemical methods using insecticides.

Insecticides are poisonous to insects and, often, to people as well. Some insecticides are so dangerous to people and domestic animals that they are not used in Papua New Guinea.

The Department of Primary Industry (D.P.I.) makes recommendations for the use of specific insecticides to control the pests of certain crops. These recommendations are published in *Harvest* articles, *D.P.I. Entomology Bulletins* and the *Information Bulletins* of Research Stations at which entomologists are based.

Because of the dangerous nature of insecticides, certain precautions (safety measures) have to be taken when handling, applying and storing them.

Insecticides can be taken into people's bodies in three ways:-

1) by being inhaled (breathed in) as fumes given off by an insecticide concentrate, or as spray droplets of the diluted insecticide;

2) by absorption through the skin;

3) by ingestion (being eaten or drunk).

This code of practice has been written to tell people how to avoid taking in insecticide in any of these three ways.

The code is divided into three parts to cover precautions needed when handling insecticides before use, during use and after use.

#### 1. BEFORE USE

1.1 Make sure that the insecticide you use is the correct one for the insect that you want to control. The Department of Primary Industry carries out experiments to find out which insecticides are best for each pest and how much and how often they should be sprayed. When several insecticides are available for controlling a particular pest, D.P.I. will usually only recommend the safer ones. Some insecticides are so poisonous that they are never recommended by D.P.I.



1.2 Before using the insecticide, read the instructions on the label carefully. Sometimes the amount of insecticide to use or the timing of applications stated on the label will be different from the D.P.I. recommendations. Label details usually come from experiments carried out in other countries. In these cases, the D.P.I. recommendations, which are based on experiments carried out in Papua New Guinea, should be followed.

The label will also tell you what precautions to take when handling the insecticide. It is very important that you carry out these precautions exactly.

1.3 You must take special precautions when storing the insecticide to avoid poisoning people or animals. Firstly, make sure that the chemical is stored in a safe place where children and animals cannot reach it. Secondly, do not store the insecticide in the same room as food or drink or it may leak onto the food and make anyone who eats it very sick. Even the smell of the insecticide can make food poisonous if it is stored in the same place.

1.4 The insecticide should always be kept in the original container so that its name and the precautions needed when handling it can be seen from the label. You should check the containers regularly to make sure that they are not leaking.

NEVER put the insecticide into beer or lollywater bottles or any other container associated with food. If you do, someone might drink it by mistake and could become very sick or even die.

1.5 Because of the dangers from stored insecticides' (see 1.3 and 1.4), and since insecticides do not work so well when they become old, you should only buy enough insecticide to last for a short time (a few months).

1.6 The most common method of applying insecticides is in the form of a liquid spray, although some insecticides come in the form of dust to be dusted over the plants and others are in the form of granules to mix into the soil.

If you are going to spray an insecticide, make sure that the spraying equipment (knapsack sprayer, mister, etc) is working well, that the hoses do not leak and that the nozzles are not blocked (see 2.7). Make sure that you also have some means of measuring out the correct amount of insecticide and that a supply of water is available for mixing the insecticide, and for washing yourself if you spill any insecticide onto your skin.

Protective clothing will be necessary for handling the concentrate (the strong insecticide before it is mixed with water) and for spraying. The type of clothing required is discussed in points 2.1 and 2.5. Make sure that this is available before you start.

## 2. DURING USE

2.1 Handle the concentrate carefully. This is when the insecticide is most dangerous since it has not yet been diluted with water. You should always wear rubber gloves to prevent any insecticide from getting onto your hands. In some cases, other protective clothing will also be necessary.



This will be mentioned on the label.

Pour the insecticide slowly and carefully to avoid splashing. Have plenty of clean water ready to wash off any insecticide which drops onto your skin. Always handle the concentrate in a well ventilated (airy) place and try not to breathe in the fumes.

2.2 You should not use more insecticide than is recommended. Some insecticides can damage your crops if you put on too much. You will also be wasting money if you apply more insecticide than is necessary.

2.3 You should not mix up more insecticide than you will use in one day. Diluted (mixed) insecticide does not store well.

2.4 Never fill the spray container right to the top. If you do, the insecticide may leak onto your back.

2.5 When spraying, wear some form of protective clothing such as overalls, or at least clothes that can be washed immediately after use. If you wear rubber boots, your trouser legs should not be tucked into them. If they are tucked in, any insecticide which gets onto your trouser legs will run into your boots and could be absorbed through the skin of your feet.

The label on the container will tell you if you need to wear any special clothing or a respirator (a special mask) to stop you breathing in the spray droplets.

2.6 You should not spray if it is very windy. If you do the spray could blow onto your body, onto other people or onto crops

which you do not want to cover with insecticide (e.g. crops which you want to harvest very soon - see 3.6). If there is only a light breeze, you can spray, but try to spray downwind so that the insecticide is carried away from you. You must be especially careful not to spray near to children or other people, animals or prepared food.

2.7 If the spray nozzles become blocked you must NEVER suck or blow them, or you will get some insecticide into your mouth. Instead you should always carry a piece of wire with you to clean the nozzles.

2.8 You should NEVER eat, drink or smoke while you are handling or applying the insecticide.

### 3. AFTER USE

3.1 After you have finished spraying, you must wash out the sprayer well. Use plenty of water and spray with some of it so that it cleans the wand and nozzle. When you have done this, you should wash yourself and put on clean clothes. Wash the clothes which you have used for spraying straight away. In this way you will avoid contact with the insecticide for any longer than necessary.

3.2 You should not eat, drink or smoke until you have washed and changed your clothes.

3.3 If there is any insecticide left over in the sprayer do not empty it out anywhere near water which is used for drinking. You must not wash out the sprayer near a drinking water supply. If some insecticide gets into the water, many people can become sick.



3.4 All empty insecticide containers must be destroyed or disposed of safely. Bags, packets, and polythene containers can be burnt, but take care not to breathe in the smoke as it could be poisonous. Tins and glass containers should be crushed or broken and then buried at least 50 centimetres below ground level in an area where they will not come into contact with drinking water.

3.5 Empty insecticide containers should NEVER be used for storing or carrying food or drink. No matter how well they are washed, there will still be some insecticide in the containers which could make you very sick. You should ALWAYS destroy or dispose of empty containers safely as explained in 3.4.

3.6 When you have sprayed your crop, the leaves will be covered with a poisonous insecticide. If you eat the crop at this time, you may become sick. However, with time, the insecticide will break down and will eventually disappear. Once this has happened, the crop will be safe to eat.

Some insecticides break down very quickly (in a few days), others take much longer. The time that you have to wait between spraying the crop, and when it is safe to eat is called the waiting period. When DPI makes a recommendation for an insecticide which is sprayed onto the edible parts of a crop, the length of the waiting period is always stated. The waiting period should also be printed on the label on the insecticide container.

3.7 If you feel sick after using an insecticide you should go and see a doctor straight away. You may have become

poisoned with the insecticide in one or more of the three ways mentioned in the introduction. The doctor will be able to give you some medicine to make you better. However, as he must give different medicines for different insecticides, it is very important that you can tell him the exact name of the insecticide you were using. The best way to do this is to take the insecticide container with you.

If you are in doubt about any of these instructions, contact the entomologist nearest to you for advice on using insecticide. The addresses and telephone numbers are:

#### PORT MORESBY

The Chief Entomologist, Department of Primary Industry,  
P.O. Box 2417, Konedobu  
Tel. 214699

#### LAE

The Entomologist, Agriculture Research Centre, Bubia,  
P.O. Box 348, LAE  
Tel. 424933

#### MOUNT HAGEN

The Entomologist, Kuk Agricultural Research Station,  
P.O. Box 339, MT. HAGEN  
Tel. 551235

#### POPONDETTA

The Entomologist, D.P.I.  
P.O. Box 94 POPONDETTA.  
Tel. 297927

#### RABAU

The Entomologist, Lowlands Agricultural Experimental Stations, KERAUAT.  
Tel. 926251

This code of practice will soon be available as comic books with texts in easy English and Pidgin. Copies can be ordered from any of the entomologists listed above, or from the Publications Officer, Publications Section, D.P.I., P.O. Box 2417, Konedobu.

Copies of this Entomology Bulletin are also available from the Publications Officer at the above address.

#### FURTHER READING

Firman, I.D. (1976). *Pesticide Handbook*. South Pacific Commission, Noumea. pp. 72.

New South Wales Department of Agriculture (1971). *Insecticides: How to use them safely and effectively*. Bulletin S62. pp. 32.

Pesticides Section, D.P.I., Canberra (1980). *A manual of safe practice in the handling and use of pesticides*. Australian Government Publishing Service, Canberra. pp. 253.

Smith, D.J., 1976. *Pesticide Labels*, L.A.E.S. Information Bulletin No. 10. Lowlands Agricultural Experimental Station, Keravat. pp. 6.