

## Section 2 – Pesticides and herbicides

### Introduction

Pesticides and herbicides are designed to destroy or control harmful organisms and diseases to preserve plants or crops. There are, in addition, a range of other “farm chemicals” such as animal medicines, dairy hygiene products, fertilizers and food preservatives, commonly found in storage, which can safely be considered as suitable for being dealt with as pesticides in the absence of other information.

### Storage and transportation of pesticides and herbicides

Pesticides and herbicides are used as an essential part of efficient modern farming. Their use is partly seasonal with much larger stocks being encountered in farm stores in the spring and autumn.

Distribution of pesticides and herbicides is through a network of distributors who will normally be registered members of the British Agrochemicals Association Standards Inspection Scheme Ltd (BASIS). The premises of such distributors are notified to the Fire and Rescue Service and are required to comply with the safety provisions of the scheme, not only in respect of the storage of these chemicals, but also whilst they are in their care in transit.

Although it is generally distributors who provide the products to the farming industry, third party warehousing (an intermediate tier of distribution) can also be encountered. Such premises are subject to the same standards as those of BASIS and are notifiable to the Fire and Rescue Service.

Pesticides and herbicides may be found as solids in the form of granules, grains or powders and as liquids.

They are normally stored, distributed and used in comparatively small containers typically from 1 litre up to 25 litre capacity in the case of drums, or in bags or sacks up to 25kg. Pesticides and herbicides may also form bulk loads either by road or rail haulage. Containers are marked with the name of the chemical and other information. It should be noted some containers may be marked by four digit identification numbers. These markings do not indicate any form of action code, but only the approvals identification number used with the HAZCHEM scheme.

Reference	Author	Status	Date	Page
OPS14PT4S2	K Holder	New	05/07	1 of 7

In storage or in use, pesticides and herbicides can be considered in the same light as all other potentially dangerous chemicals. The risk to firefighters when dealing with incidents involving pesticides and herbicides is no greater just because they are pesticides and herbicides. **The risk, however, is generally very much greater to the environment.**

A voluntary scheme for marking of buildings containing pesticides is in operation although many farmers do not follow this guidance.

The warning sign will be a yellow triangle displaying a black exclamation mark.

In addition to farm stores, provision is also made for the marking scheme to be used at warehouses or manufacturing plants. In these cases specialist emergency action codes (HAZCHEM) may be added to the sign after local consultation with the Fire Service.

## **Pesticides**

Pesticides are used to eliminate pests and parasites; if heated they will give off toxic fumes but are not normally explosive. They are extremely toxic to the environment.

### **Organo-Phosphorous (OP) pesticides**

Now the most common pesticide, these are normally mixed with water and applied as a spray but may also be applied in granular form. Although less harmful to the environment, high or repeated exposure can be harmful to humans attacking the nervous system. The most common routes of absorption are through the skin, respiratory tract and eyes.

Signs and symptoms include:

- headaches, giddiness, nausea, diarrhoea
- tremors or impaired co-ordination
- miosis (pin point pupils), blurred vision, excessive salivation, sweating
- urinary incontinence, abdominal pain, vomiting.

### **Carbamates**

These are similar to OP pesticides and exposure to both groups of chemicals produces similar symptoms. Recovery from carbamates is generally faster and there is no cumulative action.

## Operational procedures

All pesticides represent a significant toxic hazard to personnel and to the environment, they must therefore be treated as a hazardous materials incident; full PPE and breathing apparatus must be worn. Any splashes on the skin must be washed off immediately and the affected person sent for medical treatment. All personnel must be decontaminated and clothing removed and cleaned.

Where water used for firefighting or decontamination cannot be contained, allow the fire to burn out whilst protecting nearby structures.

Ventilate the building as soon as possible to prevent the build up of toxic gases.

Removal of any pesticides to a safe place may be undertaken providing they are not involved in fire and the packaging is intact.

## CYMAG

CYMAG pesticides were banned for use, storage or supply as from 31 December 2004 and may now only be disposed of by a waste contractor licensed by the Environment Agency. It has been suggested that there could be an increase in illegal dumping of these pesticides and individuals may try to dispose of or leave them at police and fire stations.

### Identification and characteristics of CYMAG

CYMAG may also be known as sodium cyanide. It will usually be in the form of white granules or powder and will have a slightly bitter-almond odour when moist.

CYMAG is very toxic by ingestion, inhalation and on contact with the skin. In contact with water or moisture it will release small amounts of highly toxic hydrogen cyanide gas. It is this release of hydrogen cyanide in contact with moisture that has enabled CYMAG to be used as an effective pesticide. In contact with acids it will produce large quantities of hydrogen cyanide gas and is likely to be lethal to anyone near to the release not wearing appropriate PPE and RPE (chemical protective clothing with positive pressure breathing apparatus). It should also be noted that, although CYMAG is non-flammable, however any hydrogen cyanide gas liberated as a result of its reaction with water or acids is highly flammable.

### If CYMAG is brought to fire stations

It is possible that individuals may attempt to leave CYMAG products with fire and rescue service personnel at fire stations. These individuals should be advised to contact their local Environment Agency Office who can advise on safe disposal options.

Reference	Author	Status	Date	Page
OPS14PT4S2	K Holder	New	05/07	3 of 7

Acceptance of these products is likely to involve significant costs to the fire and rescue service and may put personnel at risk.

### **Dealing with illegally dumped CYMAG**

If fire and rescue service personnel are called to incidents involving containers of CYMAG, they should take the following actions.

If it can be observed from a safe distance that the containers do not appear to be reacting or are not involved in a fire situation, they should not be approached and the area cordoned off. The Environment Agency should be called to arrange for legal disposal. Personal contact with the containers must be avoided. If no lives are at risk and there is no immediate danger to the environment, personnel should stay upwind of the containers and adopt a non-intervention policy.

If the containers are reacting or are involved in a fire, intervention personnel should don, as minimum, liquid-tight chemical protective clothing with breathing apparatus. The use of aqueous fire fighting media is likely to produce small amounts of highly toxic hydrogen cyanide gas and therefore a dry agent such as sand is preferable. A water spray should only be used by personnel wearing chemical protective clothing with positive pressure breathing apparatus and where there is also a danger to life. Water must not be sprayed directly into the containers. **Carbon dioxide extinguishers must not be used.** If possible containers should be placed in sealed gas tight chemical drums, available from the Environment Unit

CYMAG has a high potential to affect aquatic organisms and terrestrial plants and should therefore be contained. If the substance has been released into the environment in the form of a solution, it should be washed away with copious amounts of water as it will biodegrade if sufficiently diluted. The Environment Agency must be informed

## **Herbicides**

Herbicides are used as weed killers; they are colourless crystalline solids and soluble in water. They decompose if involved in fire liberating oxygen and giving off toxic fumes including phosgene, a very deadly odourless gas. At high temperatures the phosgene is destroyed but may be produced with gentle heating and continue after the fire has been extinguished. Personnel involved in activities such as 'turning over and damping down' will still be at risk.

Herbicides are some of the most toxic substances to be found on farms. Therefore great care must be exercised to protect personnel

## Operational procedure

The nature of this risk requires special attention to be paid before incidents. Knowledge of such a risk is essential if the Fire and Rescue Service is to deal effectively with any incident. Operational hazard risk inspection visits are essential in order to obtain information and for contingency planning for emergencies.

Although in large quantity pesticides and herbicides do provide a fire risk, this is not the major hazard during fire fighting operations. Every effort should be made to contain any pesticides which may spill or be leaking, and any water used for fire fighting. The importance of this containment cannot be overstressed.

The implications of any pollution can be very far-reaching, potentially involving risk to human, animal, fish and botanical life, and can involve expenditure of enormous resources to combat the hazard produced after containment has failed.

At all times fire crews should, therefore, concentrate their efforts on containing the chemicals and any water necessary for fire fighting. Water fog or spray should be used in order to minimum the volume of water required.

The Environment Agency must be informed at the earliest stages and any advice given by them should be very carefully considered.

Where effective control of an incident is not possible without the use of large volumes of water, and where containment may be at risk, consideration should be given to allowing the chemicals and the storage building to burn under control, whilst protecting surrounding risks.

In many cases, this course of action may be extremely difficult to follow, particularly where large clouds of products of combustion may be seen as a serious risk. However, experience to date has indicated that in the conditions of a fire only limited risk exists from such a cloud, although it is appreciated that it may be extremely difficult, faced with such a circumstance, to take the desirable action of insuring containment as a high priority.

In making any decision, advice from both the user of the premises and the Environment Agency will be invaluable. Even where the decision is taken to allow a storage building to burn out, due consideration would need to be given to the containment of water used to protect adjacent property.

To enable containment large earth moving equipment may be needed to create dams around burn areas from which water can be re-circulated to fight the fire.

Firefighters will be adequately protected provided chemical protection suits and breathing apparatus are worn. No higher level of personal protection is generally necessary for pesticides.

Once the immediate emergency of an incident is concluded, it is important that containment and control of the fire ground is maintained. The Fire and Rescue Service should normally remain on site until overall control can be properly handed over to the water and local authorities and it is important that this hand-over is carried out formally by a Fire and Rescue Service officer.

The debris and spillage left after the incident still presents a major hazard to the environment and loss of control and containment would nullify the previous efforts of the Fire Service. Similarly, the need for standard decontamination procedures should be considered if contamination of firefighters has occurred

### **Actions on arrival**

- approach the incident from an upwind direction where possible
- send a 'Hazardous Substances Involved' message to Fire Control
- carry out a Dynamic Risk Assessment
- liaise with occupier/responsible person if possible
- make sure all crew members are wearing the correct level of PPE
- consult SIP Chemical Incidents/Pesticides
- inform Environmental Agency
- cordon off the area. Keep number of people operating in the affected area to a minimum.

### **Operational considerations**

- request attendance of Hazmat officer/specialist
- when fighting fires use fog/spray in preference to jets
- protect adjoining risks
- set up Staging Area for oncoming appliances
- set up Decontamination Zone (contain water run off)
- with unknown chemicals consider gas tight suits
- working durations will be reduced when crews are dressed in gas-tight suits, therefore consider early reliefs.

### **First aid measures**

If eyes or skin have been in contact with CYMAG they should be flushed with water for at least 15 minutes. Contaminated clothing should be removed and bagged for disposal.

In the event of ingestion, seek immediate medical aid and do not induce vomiting unless directed by medical personnel.

If inhaled, seek immediate medical aid and remove from exposure into fresh air. If breathing is difficult give oxygen therapy. Artificial respiration must only be carried out using a mask with a one-way valve.

### **Points of reference**

Specific Incident Procedure (SIP)

PESTICIDES  
CHEMICAL INCIDENTS

Standard Operating Procedure (SOP)

DECONTAMINATION

Technical Bulletin 1/97

BREATHING APPARATUS  
COMMAND AND CONTROL  
PROCEDURES

Guide to Operational Risk Assessment