

Section III

Recommended Precautions to Avoid Harm to People, Livestock and Wildlife

Part 1. People

39. Although the Regulations described in Sections I and II apply only to certain substances, this does not mean that other pesticides may be treated carelessly. On the contrary, any pesticide should be cleanly and carefully handled at all stages from the time it is bought until the empty containers have been disposed of safely. Splashing on the skin and the breathing of dust, mist and vapour should always be avoided.

ALWAYS READ THE LABEL

40. Whether or not the product contains a specified substance (paragraph 10) and is being used on a scheduled operation (Appendix A), read and follow carefully the instructions and advice given on the manufacturer's label. Avoid over-estimating the amount of spray mixture needed for the job in hand, in accordance with the advice contained in the 'Code of Practice for the Disposal of Unwanted Pesticide and Containers on Farms and Holdings' obtainable from the local MAF Division Office or DAFS, Chesser House, Edinburgh EH11 3AW. Never apply chemicals at more than the rate recommended—a higher rate of application is unlikely to be more effective and may damage crops, contaminate the soil or adversely affect following crops.

Risks to Consumers

41. It is most important to ensure that harvested crops do not contain a pesticide residue harmful to the human beings or animals who eat them. This is yet another reason to follow closely the label instructions, and particularly the advice given about the minimum interval between the last application of a pesticide and harvesting the crop. If you have any doubt about a particular pesticide please consult the General Agricultural Advisory Officer of the Agricultural Development and

Advisory Service or the Area Safety Inspector, or in Scotland the local Wages and Safety Inspector.

ENSURE WORKING CONDITIONS ARE RIGHT

42. The nearer an operator is to the source from which a pesticide is being dispersed, whether this is in the form of droplets, dust, granules, smoke or vapour, the greater the risk of his absorbing poison. Take special care when using hand lances, knapsack sprayers or other appliances which bring the operator near to the released spray. Never spray in windy weather because of the danger of spray drift.

The Unaccompanied Operator

43. An operator working alone is particularly vulnerable and should be most careful to observe all safety precautions. Not only is he likely to be working more continuously with pesticides than as a member of a team, but there is no one immediately available to summon help should an accident occur.

Granules

44. Operators who are required to wear an overall or a mackintosh while performing certain scheduled operations (Appendix A) with granules containing specified substances (paragraph 10) must have the external pockets covered and must wear the sleeves over the cuffs of gauntlet gloves. They are encouraged to wear trousers without turn-ups (where granules can lodge) and to wear the trousers over the tops of boots.

Cleaning Precautions

45. Swill down the outside of spraying machines and soil-application machines after filling; this makes cleaning after operations are complete so much easier, quicker and safer.

Warnings to Third Parties

46. Place warning notices on gates of fields that are being sprayed and warn other workers in the spraying area or in adjoining fields to keep out of spray drift unless they are adequately protected. Where there is any likelihood that crops could be eaten by passers-by or trespassers before any minimum harvesting period has elapsed, it is advisable to post warning notices accordingly. Take particular care when spraying land near public roads and footpaths or private homes, gardens and buildings and inform occupiers of nearby homes of the possibility of drift so that they may remove from danger anything that might be soiled or injured e.g., washing or poultry. Warnings to beekeepers are dealt with separately in paragraph 79.

USE THE PROTECTIVE EQUIPMENT AND KEEP IT IN GOOD CONDITION

47. Pesticides may present a respiratory hazard in the form either of a cloud of dust or liquid droplets or a cloud of vapour. Respirators and dust-masks are made which protect against any or all of these hazards and it is important to use the right type to protect the operator against the hazard involved. The type of protection prescribed in the Regulations is based on the volatility of the substance used and is either a respirator or a dust-mask. An approved respirator is required for most operations with Part I substances (see paragraphs 8-10) and for aerosol work in greenhouses and other enclosed buildings with any specified substance (paragraph 10). It must give protection against dust and liquid droplets and against vapour, and should therefore be a type fitted with a canister as detailed below. A dust-mask which need only keep out dust and liquid droplets, is prescribed (with the alternative of a face-shield) for ground crop spraying with the less volatile Part II substances (see paragraphs 8-10).

48. The following types of respirators and dust-masks have been approved for the purposes of the Regulations:

RESPIRATORS

- 'Puratha' (when fitted with type CC canister);
- 'Gapro' (when fitted with a T or CC canister)
—made by Messrs Siebe Gorman & Co Ltd, Neptune Works, Davis Road, Chessington, Surrey KT9 1TW
- 'Vitalair' Industrial Gas Mask (when fitted with a CC canister)
—made by the Leyland & Birmingham Rubber Co. Ltd, Leyland, Lancs PR5 1UB

DUST MASKS

- 'Vitalair' Dust Respirator Mk V (fitted with a single encapsulated resin wool filter);
- 'Pneuseal' Dust Respirator (fitted with a single encapsulated resin wool filter);
- 'Euflex' Dust Respirator (fitted with a single encapsulated resin wool filter)
—made by the Leyland & Birmingham Rubber Co. Ltd, Leyland, Lancs PR5 1UB
- 'Duralair' R610110 Dust Respirator (when fitted with a single encapsulated filter No. 110);
- 'Safeguard' R660110 Dust Respirator (when fitted with twin encapsulated filters No 110)
—made by Safety International, a Division of British American Optical Co. Ltd, Radlett Road, Watford, Herts.
- Martindale' Types, T, U, W and Y Dust Respirators (fitted with Type A and B filters) and Type X Dust Respirator (fitted with Type B filter)

- made by Martindale Protection Ltd, Neasden Lane, London NW10 1RN
- 'Dustfoe 66' (fitted with a single encapsulated resin wool filter)
—made by Mine Safety Appliances Co. Ltd, Queenslie Industrial Estate, Glasgow G33 HBT
- 'Filta-Safe' Dust Respirator (when fitted with FC1 (single) or FC2 (double) cartridges);
- 'Filta-Safe' Gas Cartridge Type (when fitted with FC6 (single or double) cartridges);
- 'Vistarama' Gas Cartridge Type (when fitted with FC6 (single or double) cartridges)
—made by Messrs Siebe Gorman & Co. Ltd, Neptune Works, Davis Road, Chessington, Surrey KT9 1TW
- 'Protector' Dust Respirators as follows:—

RQ 100	Respirator (medium or large) (with RC 54 filter)
R 100	RC 54
RQ 200	RC 54
R 200	RC 54
RQ 200	RC 74
R 200	RC 74
RQ 1000	RC 54
R 1000	RC 54
RQ 2000	RC 54
R 2000	RC 54
RQ 2000	RC 74
R 2000	RC 74

—made by Protector Safety Products (UK) Ltd, Protector House, 719 Banbury Avenue, Slough, Bucks SL1 4LL

- 'Safirmatic' High Efficiency Dust Respirator (fitted with a single yellow dust cartridge)
—made by Chapman & Smith Ltd, Safir Works, East Hoathly, Nr. Lewes, Sussex
- 'RP 1610' Single Cartridge Respirator (fitted with standard RP3 or 4 dust cartridge);
- 'RP 1620' Twin Cartridge Respirator (fitted with standard RP3 or 4 dust cartridge);
- 'RP 1660' Single Cartridge Respirator (with single exhalation valve) (fitted with standard RP3 or 4 dust cartridge)
—made by James North & Sons Ltd, PO Box 3, Hyde, Cheshire SK14 1RL.

Note.

Firms seeking approval of respirators and dust-masks should write to the Ministry of Agriculture, Fisheries and Food, Environmental Pollution, Pesticides and

Infestation Control Division, Great Westminster House, Horseferry Road, London SW1P 3QU. They should enclose a certificate from the British Standards Institute showing that the particular piece of equipment meets their current standard 2091 and bears the Kite Mark.

Life of Respirators and Dust-Masks

49. The protection a respirator or dust-mask gives against dust and liquid droplets can be reduced through damage, or by saturation with liquid or blocking up with filtered material. The latter effects result in difficulty in breathing; damage can be observed by visual examination of the respirator or dust-mask. When any of these effects are noticed the filter or canister should be changed. The vapour protection of a respirator will last only for a limited time depending on the amount of vapour in the air being breathed and on the rate of breathing. This will vary and therefore precise times of exhaustion of protection of a canister cannot be quoted.

50. As a general guide, however, canisters should be changed if the wearer detects a chemical smell (after correct fitting of a respirator has been checked) or after the canister has been used:

- (a) for 30 hours—Puretha or Vit-air type CC
for 10 hours—Gaspro type CC or type T
in greenhouses with formulations based on organic solvents bought ready for use as aerosols;
- (b) for 100 hours—Puretha or Vit-air type CC
for 30 hours—Gaspro type CC or type T
in greenhouses with formulations which have been diluted with water;
- (c) for 1000 hours—Puretha or Vit-air type CC
for 300 hours—Gaspro type CC or type T
in mixing the concentrates or spraying in the open with formulations diluted with water.

CONTINUE PRECAUTIONS AFTER APPLICATION OF THE CHEMICAL

Cleaning and Maintenance of Respirators and Dust-Masks

51. The face-pieces of respirators and dust-masks must be thoroughly cleaned after use. Cleaning should be by thorough sponging with soapy water followed by sponging with clean water. The inlet passages and outlet valve of full-face respirators may be cleaned by pouring plenty of water into the face-piece and allowing it to run out of the outlet valve. In doing this, **GREAT CARE MUST BE TAKEN NOT TO ALLOW WATER TO RUN INTO THE CONNECTING TUBE OR CANISTER.** After cleaning, the face-piece should be wiped dry and allowed to air before being put away in the appropriate carrier. A respirator or dust-mask should never be hung up by its harness.

Other Protective Clothing

52. It is recommended that gloves worn by operators using DNOC or dinoseb should be fitted with separate cotton liners as advised in paragraph 29 for aerosol operators and should be cleaned in the same way.

53. If a vehicle used for applying pesticides carries lockers for clothing there should be separate accommodation for personal clothing and protective clothing. It is inadvisable to take protective clothing home and it should be cleaned before it is put away.

Disposal of Contaminated Washings and Used Containers

54. Dispose of contaminated washings and used containers in accordance with the advice contained in the Code of Practice referred to in paragraph 40.

Repair of Machines

55. Before machines are sent for repair the spray tank or hopper should be emptied, the machine carefully washed and the contaminated washings disposed of as in paragraph 54. Deposits of pesticides are a danger to mechanics, particularly welders; and mechanics who work indoors on a machine that actually contains a specified substance (paragraph 10) may be in danger from a source such as a leak through which a volatile poison is escaping.

Storage of Chemicals

56. All chemicals which are not in immediate use should be stored in their original containers, tightly closed, in a secure place well away from children, animals, water supplies and other materials, especially food and feedingstuffs. Before putting containers away, make sure that they do not leak and that they are clearly and indelibly marked to show what they contain. **IT IS EXTREMELY DANGEROUS TO TRANSFER CHEMICALS INTO OTHER STORAGE CONTAINERS, ESPECIALLY DRINK BOTTLES.**

WATCH FOR SYMPTOMS OF POISONING

57. The earliest possible medical attention is necessary in cases of poisoning. Employers should watch constantly for symptoms. For the dinitro compounds, these symptoms include headache, fatigue, excessive sweating, thirst and loss of weight, and for the organophosphorous compounds, headache, nausea (particularly after food or smoking), giddiness and weakness.

58. Victims of endrin poisoning feel dizzy and weak. They also have nausea and abdominal discomfort. Confusion of thought and a feeling of madness may develop. With larger amounts they may fall suddenly unconscious and have a fit.

59. The effects of organo-mercury poisoning are insidious and symptoms may not appear for some time after exposure. The central nervous system is affected, causing a lack of muscle co-ordination, so that the victim may be unsteady on his feet or unable to talk clearly or carry out simple, normal movements such as doing up buttons or writing.

First Aid Measures

60. If a person who has been using poisonous pesticides becomes ill, first aid should be given and a doctor called **AT ONCE**. If a doctor cannot come immediately, the patient should be taken as quickly as possible to a hospital for medical attention. **REMEMBER** both the doctor and the hospital should be told at least the name of the chemical the patient has been using and shown any available leaflet or label about the chemical; or given a note with the name copied from the container.

- * Stop the patient working and take him away from the spraying area—if possible, into shelter.
- * Keep the patient at rest.
- * Remove all protective clothing and any other clothing which may be wet with chemical, taking care not to contaminate your own skin. Wash all the contaminated skin thoroughly with soap and water. Then cover the patient with uncontaminated blankets, rugs or coats etc.
- * If breathing ceases or weakens: start artificial respiration immediately.
- * If the patient's eye is contaminated with chemical: make him blink his eye under water, or flush the eye (holding it open if necessary) with water, repeating this procedure for at least 15 minutes. Then cover his eye with a pad of sterilized cotton wool kept in position by a shade or bandage applied lightly.
- * In transporting the patient to hospital: make sure breathing is maintained; make sure that breathing passages are clear and prevent the inhalation of vomit.

Additional Special Measures

61. *Organochlorine (Chlorinated Hydrocarbon) Poisoning*: If the patient is in a convulsion, loosen all clothing and put something strong between the teeth to prevent biting of the tongue.

62. *Dinitro Poisoning*: It is particularly important to keep the patient lying flat and at absolute rest. On no account permit him to walk or to undertake any other

physical exercise. Do all you can to keep him cool. See that he is in the shade and in a free current of air, produced if necessary by fanning him. Remove all unnecessary clothing and sponge the face and body with cold water freely and frequently. If he is able to swallow, induce him to drink as much water (or sweet tea) as possible.

63. *Organophosphorus or Carbamate Poisoning*: Watch the patient's breathing most carefully as it may stop suddenly in this type of poisoning. Remove false teeth and make sure the breathing passages are clear. Start artificial respiration at the first sign of failure and continue for as long as necessary.

Medical Supervision of Workers

64. Experience has shown the value of standing arrangements for the medical supervision of operators using poisonous substances. Employers are strongly recommended to arrange for their workers to be medically supervised, particularly when they are using the poisonous substances regularly or extensively and the self-employed are encouraged to make similar arrangements for themselves. Details of arrangements recommended can be obtained from the Ministry of Agriculture, Fisheries and Food, Environmental Pollution, Pesticides and Infestation Control Division, Great Westminster House, Horseferry Road, London SW1P 2AE or the Department of Agriculture and Fisheries for Scotland, Chesser House, Gorgie Road, Edinburgh EH11 3AW. Medical notes which have been sent to all general practitioners include details of the arrangements for blood-testing—the most, if not the only, reliable method of diagnosis or of checking that workers are not being poisoned by dinitro or organophosphorus compounds.

Cumulative Effect of Poisons

65. The repeated use of pesticides, even in small quantities, can have cumulative effects which may not be noticed until a dangerous amount has been absorbed. This applies particularly to chemicals in the organophosphorus group. Some of these—like diazinon, fenchlorphos, malathion and dimethoate—are not dangerous enough under normal conditions to be specified in the Regulations, but if absorbed by an operator who has worked with specified organophosphorus substances they could increase the accumulation of poison in his body—perhaps to a most serious degree. It is particularly important, therefore, that the precautions recommended by manufacturers are carefully followed when one of the organophosphorus compounds, not named in the Regulations, is used by a person who has worked with an organophosphorus compound which is so named.

66. An operator known to have been poisoned by a pesticide, and who has been advised not to work with it until he recovers, should not work with any pesticides in the same group whether it is specified in the Regulations or not.

X 67. Although each group of pesticides acts in the body in different ways, it is undesirable on general grounds for an operator who has been removed from contact with a chemical in a particular group on medical grounds to be transferred to work with another pesticide in a different group, e.g., an operator removed from contact with a dinitro compound should not be transferred to work with an organophosphorus compound or vice versa.

68. Any operator who falls ill after using a poisonous substance, whether or not he appears to be poisoned, should see that his employer (if appropriate) and his doctor know at once. The doctor must, of course, be told which poison or poisons has or have been used.

Part 2. Livestock and Wildlife

GENERAL

69. The prevention of spray drift, either by the use of boom covers or by not spraying in wind, will do much to prevent harm to livestock and wildlife.

Livestock

70. The advice given by manufacturers about not allowing animals and poultry to have access to fields, orchards, etc., which have been sprayed should be carefully followed. Depending on the pesticides used, the danger may exist for many weeks after spraying.

71. Food and water for domestic animals or birds housed near spraying operations should be protected from drifting spray.

Wildlife and Game

72. Where there is a choice of pesticides choose one least likely to affect wildlife.

73. The pesticide should be used at as low a concentration as will kill the weed or pest concerned. In general, spraying under conditions which will allow the spray on the plant to dry quickly will give the best results, and at the same time reduce the risks.

74. When dinitro weed-killers are used on cereals they should be sprayed as early in the season as possible, before wildlife starts using the crop cover, and artificial water points away from the corn should be provided for game.

Y 75. Organophosphorus insecticide sprays are frequently used to control aphids on brassicae later in the season and also for the control of cabbage root fly. Spraying should be undertaken at the earliest stage consistent with obtaining good control of pests and this in itself will reduce wildlife risk as most game and other birds will still be living elsewhere, e.g., in standing corn. Cereal and other seed treated with chemical dressings can cause the deaths of seed-eating birds. Dressed seed should not be left on the surface of the soil.

76. When spraying is carried out adjacent to open water it should be confined, if possible, to times when the wind is blowing towards the spray area and away from the water. Consideration should also be given to the possibility of hand spraying or even overhead spraying in the immediate vicinity of natural waters.

Bees and other Beneficial Insects

77. Pesticides can harm bees and other beneficial pollinating and predatory insects. Many of the commonly used pest control chemicals are highly toxic to bees, but much depends on the formulation and method of use—sprays are preferable to dusts, and granular formulations of systemic insecticides have been shown to be much less harmful to bees than sprays.

78. Since bees and other pollinating insects are likely to be most abundant where there is open blossom, avoid applying dusts and sprays to such blossom. This applies not only to the crop sprayed but to any other flowers in the vicinity, including weed and hedge-row blossom, on which the spray or dust may settle. Where plants are in flower under orchard cover, the land should be cultivated or mown before spraying or dusting the orchard. When possible, spray in the late evening—honey bees are not so active at this time. It is important to note that bees may overfly non-attractive crops that require pesticide treatment, so care is always needed.

79. In some areas a voluntary pesticide warning scheme is operated during the season. Contractors and farmers notify details of proposed operations to Divisional Offices of MAFF or liaison officers specially appointed by beekeeping associations. This information is passed on to beekeepers known to have colonies in the area to be treated. In all areas, farmers and contractors should try to give beekeepers adequate advance warning of spraying or dusting operations.

80. Parasitic and predacious insects, such as ladybirds—which feed on insect pests—should be preserved as much as possible. The hedgerows are reservoirs of such beneficial insects and care should be taken to protect them from drifting spray or dust; spray programmes recommended by MAFF for top fruit are usually designed to preserve beneficial insects as far as possible.

81. Applications of herbicides or insecticides to farm roadside verges and margins of fields should be avoided, as apart from direct risk to beneficial insects the destruction of flowering plants could have serious effects on pollinating insects.

82. Although routine application may be necessary for some crops, pesticides should be applied only when there is reason to believe that they will prevent economic damage to the crops. The harm done to beneficial predatory and parasitic species by unnecessary pesticide applications may make subsequent pest attack more severe and more frequent. Agricultural Development and Advisory Service entomologists may be consulted for an assessment of the need for pesticide treatments.

Appendix A

THE SCHEDULED OPERATIONS

Jobs for which protective clothing must be worn	Chemicals (See lists in paragraph 10)	Clothing, etc., to be worn
1. Opening a container, or diluting, mixing or transferring from one container to another, adjusting apparatus after filling, washing out containers, but see 2, 3 and 4 below. (Does not apply when the chemical is in capsule form).	PART	Rubber gloves, rubber boots, respirator, and either (a) an overall and rubber apron or (b) a mackintosh.
	1	
	2	Rubber gloves, rubber boots, face-shield, and either (a) an overall and rubber apron or (b) a mackintosh.
	3	Overall, rubber gloves and face-shield.
2. Operations as in 1, when the chemicals in the next column are used as insecticides (but see note (i) in paragraph 10).	DNOC or dinoseb	Overall, rubber gloves and either a face-shield or eye-shield.