Planning and preparation

This part of the code provides guidance on what you need to consider before using a pesticide to make sure that you apply it in a way that is safe and effective and meets the relevant laws.

3.1 Making the risk of using pesticides as low as possible

3.1.1 Considering whether to use a pesticide

It is government policy to keep pesticide use to the lowest possible level while making sure that pests, diseases and weeds are effectively controlled in a way which protects the health of people, plants or creatures you don't intend to treat and the environment. Always consider whether you need to use a pesticide, including pesticide-treated seed, at all. In many situations you may be able to prevent or limit pest, disease and weed problems by following good practices. For example, you may use appropriate crop rotations, different varieties of crop, cultivation methods, fertilisers and so on.

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It is important to tackle a problem as soon as you identify it but before you use a pesticide you should consider whether you could tackle the problem better in other ways (for example, by using cultural or biological control methods or a combination of these methods with pesticides, in line with the principles of 'integrated crop management' and 'integrated pest management').

The Defra booklet 'Pesticides and integrated farm management' gives more guidance on integrated crop management and integrated pest management. You can also get more information from Linking Environment and Farming (contact details in annex B).

An appropriate computer-based system may help you to consider all of the relevant factors before you use a pesticide. You may also find it helpful to use one of the laboratory tests or in-field test kits available to identify a range of crop diseases, or a trap to help monitor insect pests. These methods may help you to decide whether you need to use a pesticide, which one to use, and the best time to use it.

Using pesticides when you don't need to is not just a waste of money, it can also contribute to pests building up a resistance to products which then become less effective in the future. You should always:

- use a pesticide in a carefully planned way;
- know the principles of using pesticides over the long term; and
- consider the long-term implications whenever you use a pesticide.

3.1.2 What to do if you decide that you need to use a pesticide

If, after considering all the alternatives, you decide that you need to use a pesticide, there are still a number of ways in which you can keep any unwanted effects of a pesticide as low as possible.

- For the pesticide to be as effective as possible it is essential that you use the correct product at the right time and in the right way.
- Always use a product in line with its approved conditions of use. Always consider if you can use a dose which is lower than the maximum dose allowed by the product label. You should think carefully about whether lowering the dose might have an effect on managing pesticide resistance. You may need to get professional advice to decide on the appropriate dose for your situation.

In some situations, you may be able to apply the lowest possible amount of pesticide by better targeting. For example, by:

- applying the product as a spot, patch or varied-dose treatment, possibly using GPS (global positioning satellite) mapping techniques or optical sensing (see glossary 1 in annex C) of weeds on hard surfaces; or
- using 'weed wipers' to apply some herbicides in grassland and similar situations, if the approved conditions of use allow this, to treat only the relevant vegetation.

In all situations, consider the effects the product could have on people's health and the environment. The COSHH assessment and assessment of risks to the environment may confirm that the pesticide you have chosen is the most appropriate. However, if you find that using another suitable pesticide may involve less risk to people's health or the environment, or is likely to lead to a lower risk of resistance, you will need to consider your choice again.

A range of pests, weeds and diseases have built up resistance to certain pesticides which were once effective. It is important that pesticides are used in a way which reduces the build-up of resistance so the pesticides that are currently available remain effective. To do this you should:

- use all pesticides as part of a strategy of managing resistance;
- include non-chemical methods of pest, weed and disease control;
- consider, where appropriate, future crop rotation, and not just the current crop; and
- monitor the effectiveness of pesticide treatments and note any potential resistance problems.

You can get information on pesticide resistance and the work of the various resistance action groups (RAGs) dealing with fungicides (FRAG), weeds (WRAG), insecticides (IRAG) and rodenticides (RRAG) on the PSD website (www.pesticides.gov.uk/committees/Resistance). You can also get advice on resistance management from some product labels and from advisers and pesticide manufacturers.

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3.1.3 Choosing the right pesticide

It is essential that you choose the right product in each situation. You may find it helpful to use a computer-based system to help you find the right product. If you are not qualified to choose the most appropriate pesticide, you should consult a suitably qualified adviser who will also be able to tell you when and how to use the pesticide and what dose to apply.

When discussing your pesticide needs with a supplier, distributor or adviser, check whether the product:

- is currently approved for the intended use and situation;
- can be safely prepared and applied using the intended equipment;
- can be used in line with any harvest interval, access restriction for workers or livestock, or application restriction (for instance, a buffer zone) shown on the product label;
- presents the least risk to the health of people (you and people entering or living near treated areas) in comparison to other suitable pesticides;
- presents the least overall risk to livestock, the environment (including surface water and groundwater) and other creatures (including other biological control agents); and
- fits in with your strategy for managing resistance.

3.2 The product label

3.2.1 The main source of information that helps you to use a pesticide safely and effectively is the product label. This must come with the product container at the time you are supplied with the product. The label is normally permanently fixed to the container but, for some products, detachable or separate leaflets will be supplied.

3.2.2 Other information

Other relevant information may come from your supplier and can include the following:

- Material safety data sheets (MSDS). These have important information on what to do in an emergency though this information often also appears on the product label for many products;
- For many amenity products, information cards that can be given to members of the public who ask about the product; and
- Environmental information sheets (EIS) are available for many products to add to the information on the product label about the risks to the environment and how to control them.

You may want to check the Voluntary Initiative website (www.voluntaryinitiative.org.uk) to see what information you can find.

3.2.3 Checking the approval

You cannot assume that a product you have used before is still approved as a suitable product or for a particular use. This is because product approvals are frequently changed. You must especially check approvals for commodity substances (see glossary 1 in annex C), off-label uses or imported pesticides identical to products already approved in the UK. These approvals are the best information available on using the product.

If you are not sure, up-to-date information on approval status is available on the PSD website (www.pesticides.gov.uk).

You should check for the UK approval status of any foreign pesticide before you buy it. Unless the product is approved in the UK you will be committing an offence if you store and use a foreign product, even if an English label is supplied with it.

3.2.4 The label

All labels have the phrase 'Read all safety precautions and directions for use before use'. It is essential that you read and understand all the information contained in the label (and any leaflets supplied with the product). Only by doing so will you be able to use the pesticide safely and effectively, taking account of the specific proposed treatment and the circumstances and environmental conditions. By law you must take 'all reasonable precautions' when using pesticides. To do this you must consider the label as a whole and make a judgement about the equipment and how you intend to use the product.

When reading a product label, the most important parts to consider are protecting you, protecting the environment, protecting consumers, storage and disposal, and medical advice. Some of these factors on the label will apply to more than one of these groups.

a. Protecting you and others around you – check whether the label says anything about:

- the need to carry out a COSHH assessment, as appropriate;
- the need to use engineering controls (for example, closed cabs when making air-assisted applications);
- the need to use specific personal protective equipment (PPE);
- any medical conditions which may be made worse (for example, when intending to use a product containing an organophosphate or a carbamate with anticholinesterase effects – see glossary 1 in annex C);

- the need for treated areas to be ventilated after treatment before re-entry and/or entry to be prevented for set periods of time; and
- other safety measures such as:
  - cleaning the PPE;
  - what to do if someone is contaminated;
  - the need for any specialised training;
  - good hygiene practice; and
  - using refillable containers.

b. Protecting the environment – check whether the label says anything about:

- not using the product outside;
- the need for keeping the areas out of bounds after treatment to protect livestock;
- removing or burying spillages;
- the need for buffer zones to protect water, and whether they can be reduced by LERAP assessments;
- the need for buffer zones to protect insects and other creatures you don't intend to treat;
- the need to remove pets and livestock before use or to keep animals and birds out of the treatment area; and
- protecting bees by not treating flowering plants.

c. Protecting consumers – check whether the label says anything about:

- not using the product on food crops, in food storage or preparation areas or in occupied buildings;
- the maximum dose or maximum concentration for some products applied as high-volume sprays;
- the maximum number of treatments or maximum total dose;
- the latest time that the product can be used depending on the crop-growth stage or harvest interval; and
- other specific restrictions (for example, the maximum concentration of the product in the spray solution or the minimum water volume, the minimum interval between applications or restrictions on using certain types of equipment to apply the product).

d. Storage and disposal – check whether the label says anything about:

- storing the product away from food, drink, animal feed and where children cannot see or reach it;
- keeping products locked away;
- storing products that are supplied in water soluble sachets; and
- rinsing, emptying, disposing of, returning or reusing the container type (as appropriate).

e. Medical advice – check whether the label says anything about:
   - what to do if someone is contaminated or suffers health problems after using pesticides;
   - contacting the National Poisons Information Service (NPIS); and
   - other types of first aid.

3.2.5 Off-label approvals

You (or organisations representing pesticide users) may apply for a 'specific off-label approval' (SOLA) for a product which is already approved for other uses. Off-label approval details are not given in the information provided by pesticide manufacturers (for example, the product label or leaflets). You must use a pesticide product in line with its SOLA, the product label and leaflet and any extra guidance on off-label approvals. This means you must read, understand and follow the Notice of Approval. You can find these notices on the PSD website (www.pesticides.gov.uk).

If you choose to use a pesticide in line with a SOLA, you are responsible for the risk to your business.

3.2.6 Treated seeds, cuttings and so on

The labelling of treated seed and treated plant propagating material (seedlings, cuttings and so on) is not covered by pesticide laws. However, voluntary labelling guidelines have been agreed to make sure that appropriate safety information is provided with these types of material.

3.2.7 Applying a pre-prepared pesticide

If you are applying a pesticide which has been mixed by another person (for example, a spray solution or prepared bait), you must have read and understood the product label and should have a copy available.

For more information on the labelling of pesticide products, see 'The Labelling Handbook' available on the PSD website (www.pesticides.gov.uk).

3.3 Storing pesticides

3.3.1 You can get detailed guidance on how you can store pesticides safely and legally from the Health and Safety Executive (HSE). The HSE's agriculture information sheet number 16 sets out the appropriate standards for fixed and mobile stores. It explains the extra precautions which you need to take when storing particularly dangerous pesticides (such as gassing compounds and

oxidising agents). You should read this information sheet before building a new store, moving a store, converting an existing building or structure, using a storage cabinet or using a mobile store. You can download a copy of this from the HSE website (www.hse.gov.uk/pubns/ais16.pdf).

3.3.2 How should I store pesticides?

You must only store approved pesticides in the original container with the approved product label. The procedure for dealing with leaking containers is described in the emergency procedures clauses at the beginning of this book.

When you have mixed a pesticide with another substance (such as a diluent, carrier, marker or adjuvant), you are strongly recommended to use the mixture as soon as possible and not to store it for a long period. You should only have enough mixture to use in a day. If, due to unforeseen circumstances, you need to store a mixture for longer than this, you will need to make sure that it is labelled properly and stored safely and securely.

If you are storing professional pesticides which you sell or supply to others, further storage conditions are likely to apply. Also, if you are storing over 200 kilograms or 200 litres of professional pesticides which you will sell or supply to others, you will need storekeeper training and certificates. These obligations are explained in the Defra 'Code of practice for suppliers of pesticides to agriculture, horticulture and forestry' (the yellow code).

Make sure that your store has suitable equipment for dealing with contamination, spills and small fires, and that you know how to use the equipment. You should also have a list of appropriate emergency phone numbers clearly displayed.

Practise good store management by making sure that you:

- do not have unapproved or unwanted pesticides in your store;
- remove waste packaging and dispose of it safely and legally;
- use the oldest stock first;
- deal with damaged or deteriorating containers; and
- have an up-to-date stock record easily available and, in case of emergency, keep a copy away from the store for safekeeping.

3.3.3 What extra conditions apply to mobile stores?

You should make sure that all pesticides are safely transported to where they will be applied and stay safely stored at the site.

When you store pesticides in vehicles, in bowsers (storage tanks, sometimes moveable) or on equipment used to apply the pesticide, these mobile stores should be:

- stocked from a fixed store; and
- used temporarily (normally for less than 24 hours).

If you need to use mobile storage for longer than 24 hours (for example, if you are a contractor routinely involved in large tasks away from your base), you should make sure that your store meets the higher standards set for fixed stores.

You should never carry pesticides in the cab of a tractor, self-propelled equipment or other vehicle. Use either:

- a vehicle with a bulkhead between the cab and the load compartment (check that the load-carrying area has nothing which might damage containers);
- a secure enclosed chemical container; or
- a secure cabinet mounted on the outside of the vehicle or on a trailer.

Gassing compounds should be stored in a separate vapour-proof container which is secured within the load compartment.

You should park your mobile store away from places where a spill would be likely to cause water pollution. Make sure that you lock the vehicle or cabinet whenever you are not around.

If you transport pesticides marked ‘Toxic’, ‘Flammable’, or ‘Corrosive’, you may have extra legal responsibilities, particularly if you are transporting more than 200 litres or 200 kilograms. These extra responsibilities may also apply to smaller quantities of very dangerous substances such as gassing compounds.

You can find detailed information on how to act in line with the law when transporting pesticides in a mobile store in 'The carriage of agrochemicals by road: Guidance for the agrochemicals industry' available from BASIS (Registration) Ltd.

3.3.4 Moving pesticides into and out of the store

You should move containers in and out of the store carefully, particularly if you think that they may have deteriorated or been damaged. Before you move containers, check that they are not leaking, that they are securely closed and that the label (including associated information) is intact and can be read.

Deal with any spillage immediately and dispose of all contaminated material safely and legally.

3.3.5 Do not leave pesticide containers unattended

When pesticides are not in a secure store, you must not leave them unattended or where the person in charge of them can't see them. Stolen pesticides may be misused, causing harm to people and the environment. Unattended pesticides are a risk to people (especially children), pets, working animals, livestock and wildlife. For example, a dog can eat through the unopened packaging of slug pellets. A fully trained person should be present when pesticides are being moved or transported, and all deliveries should be supervised to make sure that stocks are stored safely and securely.

3.4 The COSHH assessment

The Health and Safety Executive (HSE) publishes free information and guidance on how to carry out a COSHH assessment, such as 'A step by step guide to COSHH assessment'. You can get this from your local HSE office or from the HSE website (www.hse.gov.uk/cosh/index.htm). You can also get further information through the HSE Info line (phone: 0845 345 0055, fax: 02920 859260, e-mail: hseinformationservices@natbrit.com).

3.4.1 When do COSHH regulations apply?

Many pesticides are dangerous to health. In these regulations, the danger is explained in terms of the 'hazard' and the 'risk'. A substance is hazardous if it could harm people, plants and creatures not being treated, or the environment. The risk from a substance is the chance of it causing harm, given the way in which it is, or will be, used.

The COSHH regulations (see annex A) apply to a pesticide product if it:

- is classified as 'very toxic', 'toxic', 'harmful', 'irritant' or 'corrosive';
- includes a substance which has a 'workplace exposure limit' (WEL) under the COSHH regulations (see Health and Safety Executive (HSE) guidance note EH40);
- includes a micro-organism which may be a danger to health;
- includes dust which may be present in a 'substantial concentration' in the air (as explained in the Health and Safety Commission 'General approved code of practice on the COSHH Regulations', COP 29) when the pesticide is used; or
- includes any substance not mentioned above which creates a similar danger to health.

Such products will have the following phrase on the container label: 'The Control of Substances Hazardous to Health (COSHH) Regulations may apply to the use of this product at work'.

Under the COSHH regulations, before a pesticide is used an employer or self-employed person must carry out a suitable and sufficient assessment of the likely risks to health. This will help you to identify the measures that you need to take to protect the health of any person who could be harmed.

3.4.2 When is an assessment suitable and sufficient?

A COSHH assessment will be suitable and sufficient if you use a well-thought-out approach to identifying risks by:

- considering the dangers posed by the pesticide you intend to use;
- deciding who could be harmed and how;
- identifying what action you need to take to prevent or control exposure;
- recording the results of the assessment; and
- revising the assessment when necessary.

The level of detail needed in the COSHH assessment will depend on the activities you are carrying out and the level of risk involved in your work.

3.4.3 Finding out about the dangers

The danger a product poses depends on the nature and concentration of the product's active ingredients and the other ingredients (co-fomulants), and its form (for example, whether it is a liquid, granule, powder, gas or other type of product).

Most information on the dangers associated with a pesticide is on the product label, which will show:

- the hazard classification (for example, 'Irritant');
- the risk and safety phrases (for example, 'Irritating to eyes' and 'Wear eye protection...');
- any restrictions relating to who should use the product (for example, certain people may have been advised not to work with anticholinesterase compounds – see glossary 1 in annex C); and
- other safety-related restrictions and conditions.

Other information on dangers is given in:

- information provided by the pesticide's manufacturer or supplier (for example, the material safety data sheet (MSDS), also known as the product hazard data sheet or material hazard data sheet (MHDS));
- the schedules to the COSHH regulations (see the HSC 'General approved code of practice on the COSHH Regulations', COP 29 for more information) and HSE's publication EH 40: 'Occupational exposure limits' (this sets out the acceptable levels for exposure by breathing which apply to some active ingredients used in pesticides);
- other relevant guidance material on using pesticides published by HSC, HSE, Defra, PSD and other authorities; and
- technical, scientific or legal information in relevant trade and professional publications.

Use any of your own previous experience of work with the pesticides.

3.4.4 Assessing the risks, who might be harmed and how?

Employers or self-employed people need to consider whether any person might be at risk from being exposed to pesticides. In doing so, they need to bear in mind how and where the product will be applied, how long it will be used for, how containers will be handled, and the possibility of an accident. Talking with workers' safety representatives, if your business has them, will help you to identify risks from particular working practices.

Remember to consider:

- your employees (even those not using the pesticide);
- other people on the premises;
- anyone else in, or near, the area where the pesticide is used; and
- anyone likely to enter treated areas or be in contact with treated materials after the pesticide has been applied.

Assessing how employees and other people might be affected will mean using the information printed on the product label and applying it to the circumstances of the work to be carried out. In particular you should consider the following.

- Who could be exposed and how (through the skin or by breathing in or swallowing the pesticide):
  - Absorption through the skin from handling the concentrate or contaminated equipment, and from exposure to spray drift, is likely to be the main route of exposure for most pesticides.
  - Breathing in a pesticide, especially with active ingredients that are volatile (that is, evaporate quickly at normal temperatures) and from approved indoor uses.
  - Swallowing a pesticide (possibly from hand-to-mouth or object-to-mouth).
- Whether the types of contamination listed above may also affect people entering treated areas or handling treated material.
- The extent of the exposure and what could happen if the control measures fail.
- What harmful effects the pesticide can have through the most likely routes into the body.

3.4.5 Deciding what needs to be done to control exposure

The next stage in the assessment is to identify which control measures are needed, and decide how to put these into practice, and then properly maintain them. As an employer or self-employed person, you will need to consider whether you and your employees:

- are suitably and sufficiently trained in using pesticides safely and using engineering control systems and PPE (see table 2) correctly;
- manage the risks associated with the hazards;
- understand the information on the product label and on any relevant data sheets;
- have suitable equipment to handle, mix, load and apply the pesticides safely;
- have systems or equipment (including PPE) which will prevent or, where this is not reasonably practical, adequately control, exposure;
- can take effective action if equipment fails or breaks down; and
- know the sort of ill-health effects that could be linked to being exposed to pesticides and what signs or symptoms to look out for.

The COSHH assessment will also need to take account of any risks to people who enter treated areas or handle treated materials. This will include, for example:

- nursery workers entering treated glasshouses after fogging or misting operations;
- members of the public using treated pavements or using treated land (such as sports turf and parks) for recreational purposes;
- forestry and nursery workers handling treated seeds, seedlings, cuttings and so on;
- farmers and growers handling and drilling treated seed, tubers, bulbs, onion sets and so on;
- people handling treated crops when harvesting, pruning or packing them;
- workers handling treated compost, soil and so on; and
- people handling freshly treated material during dipping or drenching operations.

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It is good practice to give appropriate details of pesticide treatments to people who would otherwise not know about them (like members of the public and, in some cases, workers handling treated crops). Nevertheless, your COSHH assessment should assume these people will not know that a pesticide has been used and so will not know about any precautions they need to take.

Remember that you should give people enough information for them to do their work properly and be safe.

When you have completed your COSHH assessment, you will need to consider the best way to protect anyone who might be exposed to pesticides by preventing the exposure or adequately controlling it.

3.4.6 Recording the assessment

You must record assessments except where the results can be explained easily and at any time. You should tell employees (or their representatives) the results of the assessment, especially the parts relating to any work they have to do.

3.4.7 Reviewing the assessment

Under the COSHH regulations, you must review the assessment regularly. The COSHH assessment should state when you will review it. The period between reviews will depend on the risk, the type of work and the likelihood of anything changing. In any case, you should review the assessment at least every five years.

You must carry out a review straight away if you think that the assessment is no longer valid or if there has been a significant change in the work the assessment relates to. For example, what the pesticide is used for or how it is applied may change. This may arise from discussions with safety representatives or workers. An assessment may also stop being valid because of, for example, changes in the conditions of the product approval or the results of health monitoring.

Get advice from PSD (contact details are in annex B) your supplier or the manufacturer if you think the conditions of a pesticide approval may have changed.

3.5 Preventing people being exposed to pesticides at work

3.5.1 Under the COSHH regulations, if anyone (including members of the public) could be affected by a work activity involving dangerous substances, you must prevent them from being exposed to the substance or, if this is not reasonably possible, adequately control the exposure.

3.5.2 How can exposure be prevented or adequately controlled?

Preventing or adequately controlling exposure involves a combination of measures. In order of priority, these are:

- preventing exposure (for example, by using a different product);
- technical, engineering or operational controls; and
- personal protective equipment (PPE).

The HSE publication 'COSHH Essentials' gives guidance on control measures for processes such as transferring, weighing and mixing chemicals. You can get more information from the COSHH website (www.coshh-essentials.org.uk).

Under the COSHH regulations, it is better to use engineering or other control measures rather than PPE. The main concern is to create a safe working environment rather than to protect a person working in contaminated conditions. However, in the case of pesticides, people will usually need PPE as well as engineering or other controls in order to adequately control exposure. Even if the COSHH regulations do not apply, employers may still have duties under other laws, such as those relating to using protective equipment at work (see annex A).

The HSE publishes guidance on how to act in line with 'The Personal Protective Equipment at Work Regulations 1992'.

When considering how to prevent or control exposure to people entering treated areas or handling treated materials, remember that, in many situations, these people will not know what pesticides have been used or what precautions they need to take. You should use appropriate controls in these situations.

3.5.3 Measures for preventing exposure to pesticides

You can prevent exposure to pesticides in the following ways:

- By using another method of pest control;
- By using a pesticide that is less dangerous, or using a less dangerous form of the same pesticide. For example, you could use a product supplied in water-soluble bags to avoid handling and measuring the product;
- By organising the work to keep non-essential people away from the areas that are being treated. For example, you could use remote-controlled equipment to apply pesticides in glasshouses.

3.5.4 Measures for controlling exposure to pesticides

To control exposure when you are preparing a pesticide (for example, when opening containers and transferring, diluting, mixing or loading the product), you should do the following:

- Buy pesticides in a pack size to suit the area you can treat at one time or to suit the volume of spray solution being prepared. In this way you can avoid having to weigh or measure the correct dose for each load;
- Use products supplied in water-soluble bags;
- Use closed-transfer systems (equipment designed and manufactured to be used to move agricultural chemicals from their original container into a sprayer tank, and to accurately measure the volume of chemical being transferred) with compatible packaging;
- Use pressure-rinsing devices to avoid rinsing containers by hand;
- Follow the good practice described in this code.

To control exposure to pesticides when you are using them, handling equipment, dealing with spillages or disposing of any pesticide wastes, you should do the following:

- Reduce the dose of the product whenever this is appropriate;
- Choose the right equipment for the job, such as using automatic or remote-controlled equipment for treating crops in glasshouses. If the application method you plan to use is likely to increase the risks to users, consider using another method of applying the product or controlling the pest;
- Wherever possible, use a closed cab on a tractor, other vehicle or application equipment. This is especially important for application methods involving a high risk to users of contamination, such as when using air-assisted equipment;
- You should consider having your sprayer tested in line with best practice;

The National Sprayer Testing Scheme (NSTS), run by the Agricultural Engineers Association (AEA), is an independent voluntary inspection and testing scheme for a variety of equipment used to apply pesticides. A valid test certificate provides evidence to customers, assurance schemes and the general public that application equipment is working correctly. You can find more information on the NSTS website at www.nsts.org.uk.

- Make sure new equipment meets appropriate standards and is designed to keep the risk of contamination during use or maintenance as low as possible. (This may include using equipment with in-cab controls for major functions, self-flushing filters, hydraulically-operated boom folding and built-in tank-washing systems and so on;
- Consider fitting remote controls to equipment. Don’t put them in places where they could be contaminated. They may be put in the cab where appropriate, but you should avoid routing hoses through the cab;
- Make sure nozzles are in good condition and do not drip when the sprayer is switched off. Check valves and associated pressure-relief systems and so on;

- Where possible, cover nozzles, other atomisers and powder dispensers, especially for hand-held equipment and equipment used near workers;
- Keep equipment that applies pesticides clean, both inside and out, using appropriate cleaning methods. When cleaning dusty or dry deposits, do not use air lines or dry brushing as these methods can lead to contamination getting into the air;
- Keep all equipment well maintained and do not use faulty equipment;

The Defra booklet 'Is your sprayer fit for work?' provides guidance on maintaining and checking field crop sprayers (see annex B).

- Calibrate (check the accuracy of the dose rate) in spraying equipment without using a pesticide. For products applied as granules, use the manufacturer's dummy formulations or other materials available.
- Follow the good practice described in this code.

To make sure that your equipment is working as it should be and is accurate, read the manufacturer's instructions. You can find further useful information in the BCPC publications 'Boom and Fruit Sprayers Handbook' and 'Hand-Held and Amenity Sprayers Handbook' (see annex B).

3.5.5 Using personal protective equipment (PPE)

You must wear PPE if other controls are not reasonably practical, or may not give the necessary level of protection.

The product label will state the type of PPE and any specific engineering controls which you must use when handling or applying the pesticide.

If you are using a pesticide under the terms of a specific off-label approval (SOLA), you must follow the guidance on PPE and engineering controls given on the notice of approval.

Similarly, if you are using a commodity substance (see the definition in annex C) as a pesticide under the terms of a 'commodity substance approval', you must follow the guidance on PPE and engineering controls given on the notice of approval.

In some situations, a COSHH assessment may show that any PPE or engineering controls stated on the product label or on the relevant notice of approval need to be increased. This may be necessary if you intend to do any of the following:

- Apply the pesticide in a mixture with another pesticide or an adjuvant (a substance that is not a pesticide but that increases the effect of the pesticide);
- Use the pesticide in a confined space or other difficult situation it is not normally used in;
- Work with a pesticide for more than eight hours during any day;
- Apply the pesticide as a reduced-volume spray (applying a pesticide in a lower volume of water than the minimum volume recommended on the label for that dose);
- Apply the pesticide in a way not recommended on the label or on the relevant notices of approval. (For example, if you are using hand-held equipment in situations where vehicle-mounted or equipment on a trailer would normally be used.);
- Perform tasks not mentioned on the label or on the relevant notice of approval. (For example, when you are entering a newly treated area or checking, repairing or cleaning contaminated equipment.).

When your COSHH assessment shows that the PPE specified on the product label or the relevant notices of approval needs to be increased, you should refer to the general guidance on appropriate PPE in annex F.

In all situations, even when the product label or relevant notice of approval does not refer to PPE, it is good practice to wear basic PPE (such as coveralls, suitable protective gloves and boots) at all times when handling and applying pesticides.

You should also consider using PPE if you are a professional gardener who uses products for hobby gardening (amateur pesticides from local shops, garden centres, DIY stores and so on). This is especially the case if you are using a product in large quantities, more often or for a longer period of time than would be the case for a typical hobby gardener.

The HSE publishes practical advice and guidance on choosing, using and maintaining respiratory protective equipment (RPE) (covered in the HSE booklet HSG53) and other types of personal protective equipment (PPE).

3.5.6 Suitable personal protection equipment

Your PPE must keep to any relevant conditions of approval for the pesticide (as shown on the product label and any notice of approval). All PPE must be made to an appropriate standard. Equipment that meets European standards will carry the CE mark. You should make sure that your PPE (including RPE) is CE marked. Look out for this when you use new PPE.

Remember that general workwear (cotton, poly-cotton or nylon overalls or two-piece suits) is not likely to meet the appropriate standards for protective clothing when working with pesticides. Also, when you choose and use a disposable mask over your nose and mouth, you should remember that:

- 'nuisance dust masks', which are commonly used by farmers when carrying out dusty tasks, are not suitable when using pesticides; and
- you should dispose of the mask (safely and legally) at the end of each working day, or more often if it is significantly contaminated.

Any PPE must be suitable for the purpose, including being correctly matched to the job and to you. Your employer (if you have one), should consult you or your safety representative about choosing PPE to make sure it fits and is suitable for you. Your employer should pay particular attention to the following:

- The nature of the pesticide and the level of exposure;
- The PPE's protection, taking account of:
  - the environment the equipment will be worn in (for example, snag-free clothing will be needed because of the environment);
  - the nature of the work being carried out;
  - how long the equipment has to be worn for;
  - whether it is compatible with other clothing conditions such as high-visibility clothing and protective head gear; and
  - comfort and fit when working in hot and humid conditions.
- Whether the pesticide can pass through the material the equipment is made of;
- Any limits on the PPE's performance, as stated in any relevant approved standard or by the manufacturer;
- The face-fit (seal) of respiratory protective equipment (RPE) which has to be close-fitting (most types other than air-fed visors and helmets).

You can get information on testing the face-fit of RPE from the HSE website (www.hse.gov.uk).

The PPE you use will only be effective if you wear it correctly all the time you need it. In some situations, using PPE carelessly or using unsuitable PPE may result in a higher, rather than a lower, risk of operator contamination.

3.5.7 Maintaining control measures

Engineering controls and PPE will only be effective and meet the COSHH regulations if they are maintained properly.

Keeping control measures in good repair usually means:

- carrying out regular checks and more detailed inspections;
- checking any equipment that detects faults; and
- carrying out preventive servicing and repair work to put right any fault that could reduce the level of protection. Any faults reported must be put right quickly. Never use equipment that is faulty.

Your employer should make sure that engineering control measures, such as closed-transfer systems or specialised pesticide dispensing systems are:

- checked at the beginning of the treatment season and before each use; and
- examined in detail and tested at suitable intervals.

Working procedures to prevent or control exposure must be reviewed to make sure they are still effective.

You should check your PPE (including RPE), before, during and after each day's use and report any problems to your employer (if you have one). Damaged items must be replaced before you carry out further work with pesticides.

The BCPC booklet 'Safety Equipment Handbook' gives guidance on how to choose, use and maintain PPE and RPE (see annex B).

You and your employer (if you have one) must also make sure that RPE is thoroughly examined for signs of deterioration and, where appropriate, tested at least once a month. This testing should be carried out more often if conditions are particularly severe. You or your employer must keep records of these examinations and tests, and correct any faults before the RPE is used.

It is important to:

- remove any contaminated PPE as soon as possible to avoid an increased risk of exposure;
- thoroughly wash your protective gloves inside and out at the end of each day's use, taking care not to contaminate yourself or the environment, especially water;
- dispose of your protective gloves safely and legally after use if the product label tells you to do this or if the gloves are not in a good condition;
- dispose of other contaminated PPE safely and legally or, where appropriate, clean it in line with the manufacturer's instructions and in a way which is safe for people and the environment;

- take appropriate precautions if you need to handle contaminated PPE or other contaminated items; and
- make sure that contaminated protective clothing is never washed with domestic or personal items.

PPE should be kept in suitable storage facilities to keep it clean, dry, well ventilated and secure. Separate storage will be needed for personal clothing, such as coats and other items you remove while you are working with pesticides.

3.5.8 Welfare facilities

If you have any staff, (full or part time, casual or permanent) you must provide permanent, convenient and accessible washing facilities, in a place where they do not become contaminated. These facilities will be extra to the washing and decontamination equipment carried on the application equipment or available where the pesticide is being used.

3.5.9 What you need to do

You must:

- work in a safe way and use all the appropriate engineering control measures available;
- wear suitable PPE and make sure it fits properly;
- report any problems with engineering controls or your PPE and not use damaged or faulty protective equipment;
- remove contaminated PPE, wash affected skin and put on clean PPE before continuing to work;
- keep PPE in the storage provided when you are not using it and after carrying out appropriate cleaning and maintenance;
- before eating, drinking, smoking or using the toilet, take off any PPE which could contaminate food, drink or cigarettes; and
- maintain a high standard of personal hygiene by making full and proper use of the washing facilities provided.

3.6 Monitoring exposure and health surveillance

You can find advice on monitoring methods in HSE Guidance Note HS (G) 173 'Monitoring Strategies for Toxic Substances'

3.6.1 When is it necessary to monitor exposure to pesticides?

Monitoring exposure can include:

- wearing personal sampling equipment to measure your exposure to a substance, when carrying out your normal work;
- using fixed sampling equipment to measure the levels of a substance in the workplace air; and
- measuring and assessing the level of a substance or its metabolites (substances the body changes the chemical into) in your breath, urine or blood. This biological monitoring may look into the concentration of the pesticide or metabolite, or look for the effects of the exposure.

Employers do not usually need to monitor their employees' exposure to a pesticide if:

- the pesticide is used in line with the conditions of the product approval and the manufacturer's recommendations; and
- the necessary control measures are properly used and maintained.

However, under the COSHH regulations, there are circumstances where employers must make sure that their employees' exposure to dangerous substances is monitored by competent people. These circumstances include:

- when the failure of the control measures could result in a serious health problem, because of the pesticide itself or the length of exposure;
- when measurements need to be taken to make sure a Workplace Exposure Limit (WEL) is not exceeded; or
- when necessary as an extra check on the effectiveness of control measures. For example, to check the level of contamination affecting respiratory protective equipment.

If the substance being used has been given an exposure limit, testing samples of the workplace atmosphere, usually in the worker's breathing zone, will find out whether the necessary standards are being met.

You can find information on those chemicals which have a WEL in the latest version of the HSE publication EH40.

3.6.2 What is health surveillance?

The purpose of monitoring health (known as health surveillance) is to protect workers' health by detecting, at an early stage, any harm which may be caused by being exposed to dangerous substances. It also helps employers to judge the effectiveness of their control measures and their COSHH assessment. The COSHH assessment should identify the need to check the health of employees who could be exposed to dangerous substances.

Health surveillance covers a wide range of activities including:

- keeping health records;
- trained supervisors checking for signs of disease;
- examinations by qualified nurses or doctors; and
- monitoring sick leave.

Health surveillance (other than medical examinations) can be carried out by suitably trained people who do not need to be medically qualified.

3.6.3 When is health surveillance necessary?

You can find more advice on health surveillance procedures in the HSE 'Approved code of practice on the COSHH Regulations' (L5) and in the HSE booklet 'Health surveillance at work' (HSG61).

Under the COSHH regulations, employers must make sure that their employees are placed under suitable health surveillance if:

- an identifiable disease or health problem may be related to them being exposed to pesticide;
- there is a reasonable chance that the disease or problem may be caused by the particular conditions of work; and
- there are valid techniques for detecting the disease or problem.

Employers should consult workers or their safety representatives when considering possible health problems. In practice, the pesticides most likely to cause problems are those that can cause skin disorders or can affect nerve cells. These products, usually organophosphates, will be labelled with the warning:

'This product is an anticholinesterase organophosphorus (or carbamate or similar) compound. Do not use if under medical advice not to work with such compounds'.

Employers can find advice about biological monitoring for staff working with anticholinesterase products in HSE Guidance Note MS 17 'Biological monitoring of workers exposed to organophosphorus pesticides'.

If it is reasonably likely that health could be harmed, health surveillance should include biological monitoring (testing the breath, urine and blood) of employees to detect the level of exposure or to look for signs of unwanted effects. This monitoring should be carried out under the supervision of a registered medical practitioner.

Any registered medical practitioner supervising the biological monitoring should be familiar with the risks associated with the substances being investigated and the general principles of health surveillance.

3.6.4 What else do employers need to do?

Employers may need to reconsider their COSHH assessments in the light of the results of health surveillance.

Under the COSHH regulations, employers must keep a health record for each employee who undergoes health surveillance.

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3.6.5 What about sudden illness?

If you, or people you are working with or near, feel unwell as a result of being exposed to pesticides, think about getting immediate medical attention (depending on the nature and severity of the symptoms).

Employers should make sure that any employee who is taken ill while or after working with pesticides sees a doctor (GP or hospital accident and emergency department), where necessary. Send information on the pesticide involved, labels, safety data sheets and possible causes of contamination with the patient.

Employers should not allow any employee affected by being exposed to a pesticide to continue to work with pesticides until the doctor says that it is safe to do so.

Employers and self-employed people must report these incidents under the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR) 1995. If you are not sure whether an incident needs to be reported, contact your nearest HSE office to check (the address and phone number will be in The Phone Book under 'Health and Safety Executive'). For emergencies, outside office hours, phone 0151 922 9235.

You can get a guide to the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR) 1995 from the HSE. You can get further details from HSE Information Services by phoning 08701 545500 (see annex E).

3.7 Protecting the public

3.7.1 Neighbouring property

You must make sure that the pesticides you apply are targeted at the land, crop, structure, material or area you want to treat. Pesticide drifting off target can cause problems between pesticide users and their neighbours. It can also harm wildlife and damage gardens. You must remember that pesticides which are dust or fine granules can drift. Make sure you apply them in the appropriate weather conditions and with the correct equipment that is properly adjusted for the product you are using.

You should consider how exposure might affect members of the public. You should also consider whether you are applying pesticides near to homes, schools, nursing homes, hospitals, environmentally sensitive areas, organic farms and so on. It is good management to consider if you need to take any extra measures when applying pesticides near these premises. This may include spraying when people are out at work or when schools are closed, or leaving an untreated area next to the neighbouring property or area. If you need to make a COSHH assessment for the pesticide product you are using, you should include this factor within it.

Telling people before you apply a pesticide gives those people who might be affected information about the pesticide, but this is not an alternative to measures to control exposure. It is good practice for you to give information about the pesticide and the reason for using it to anyone who has concerns about pesticides. People often do not know that there is a positive approvals process and that precautions are taken to keep negative effects outside the target area as low as possible.

If you are a farmer or grower and you get a Single Payment from the Rural Payments Agency, you must meet a basic standard for agriculture, contributing to better protection of the environment and human and animal health. The Common Agricultural Policy Single Payment and Support Schemes (Cross Compliance) (England) Regulations 2004 (SI No 3196) make this the law. Even if you are not getting a Single Payment, when you are using pesticides you must make sure you use an approved product and follow the instructions on the label, taking account of recommended best practice. The environmental stewardship scheme gives all farmers opportunities to make the environment on their own farms better, and rewards them for it. You can have entry-level stewardship, organic-level stewardship or higher-level stewardship. Stewardship at entry level may involve you setting up field margins and carrying out other environmental management ideas to encourage biodiversity. Higher-level stewardship includes lots of ways to protect and make the countryside and the historic environment better as well as you giving the public new access to your land.

To find more information on the cross compliance schemes you should look at the Defra website (http://defraweb/farm/capreform/pubs/index.htm). If you want details of the environmental stewardship schemes, go to http://defraweb/erdp/schemes/es/default.htm.

3.7.2 When must notice be given?

There may be people, authorities or organisations you need to contact before you can use the pesticide you have chosen. You should always read the label first to find out. For example:

- If you apply pesticides from a helicopter or fixed-wing aircraft, by law you must give the public notice about the spraying (see annex I);
- The conditions of approval for certain pesticides may contain detailed conditions for giving people notice and displaying warning notices. You must follow these conditions;
- Before you use any product approved for use in or near water (this is usually a herbicide used to remove plants in or around water) first contact the Environment Agency. You may also have to let water abstractors know;
- You must also contact appropriate organisations, like English Nature or the Countryside Council for Wales, if you intend to use a pesticide in a specially designated area;
- You might need to tell beekeepers or the local beekeepers' spray liaison officer. This is explained fully in paragraph 3.8.5.

If you are using sulphuric acid as an agricultural desiccant (drying agent), or using another commodity substance for an approved pesticidal use, you must act in line with all the conditions of use set out in the appropriate commodity substance approval. You can get this approval from PSD or look at their website (www.pesticides.gov.uk/approvals.asp?id=311).

Guidance on using sulphuric acid as an agricultural desiccant in a safe and legal way is given in the 'Code of best practice: safe use of sulphuric acid as an agricultural desiccant' produced by the National Association of Agricultural Contractors (NAAC) (see www.naac.co.uk/Codes/acidcode.asp).

3.7.3 Giving notice to bystanders and occupiers of neighbouring property

At the time of publishing this code, the Government is considering introducing new measures to give notice to neighbouring properties. So you should check whether any new law has been introduced.

By law, you do not have to leave an unsprayed buffer zone between a treated area and neighbouring property. When you spray right up to a neighbour's boundary you increase the risk of the pesticide going onto their property. You must not allow spray to drift onto their property as the law states that any person who uses a pesticide must confine the use of that pesticide to the land, crop, structure, material or other area being treated.

If you apply pesticides as instructed on the label and follow the general advice of this code, they should not pose a significant risk to the health of people outside the area being treated. It is a good idea to think about the following:

- Applying pesticides may attract the attention of members of the public. Some products have information cards to give to interested people. It is usually pesticides used in amenity areas (such as parks) which attract most interest from the public, and it is these products which usually have information cards;
- It is often best to be considerate to neighbours, such as spraying when people are at work, when the school is closed, and so on;
- It is generally good practice to tell the people who occupy land, premises or houses close to the area that you will apply pesticides to. (At the time of writing, there is no legal obligation for you to do so);
- You may want to think about whether a sign would be the easiest way of telling people about the pesticide used and where they can get further information. (Remember to take the signs down afterwards.);
- You should also consider telling neighbours who grow organic or sensitive crops when you are planning to apply a pesticide. If you are a contractor, you may want to check this point with your employer;
- You should take particular care when applying pesticides near hospitals, schools, retirement homes and so on. For instance, children may come to the boundary of their play areas to watch you. In these cases, you should assess if you need to tell the person in charge of the premises that you are going to apply pesticides and, if necessary, agree any extra precautions that you and they should take;
- When you look at any COSHH assessment you have done, or make any other judgement to control risks to people you think are vulnerable, your measures may include leaving an untreated area next to the neighbouring property or changing the time of the application.

Remember, giving notice to neighbours does not remove the need for you to take measures to control exposure.

3.7.4 Public access

People may have a right by law or with the landowner's permission (called 'permissive access') to go into areas to be treated with pesticides such as:

- public rights of way (footpaths, bridleways and so on);
- areas with a statutory right of public access under the Countryside and Rights of Way Act 2000 (CRoW). This might be, for instance, mountain, moor, heath and down, registered common land or Forestry Commission woodland;
- other public places, such as public parks (country or urban), parkland, farmland and woods open to the public, where people can roam freely;
- where the landowner gives permission, such as permissive paths and routes, and areas covered by access agreements, such as agri-environment schemes; or
- verges alongside roads.

You must make sure you understand when applying pesticides

- if people have a right of access to the land or land next to it; and
- under what law, provision or agreement they are given this right.

It might make a difference to what you are allowed to do. For instance, you must keep public rights of way open but under 'permissive access' you may be able to close the area to the public as long as the terms of the 'permission' let you do so.

If you want to know about public access or public rights of way, get in touch with the Defra Helpline by phone on 08459 33 55 77 or email helpline@defra.gsi.gov.uk for England or the Welsh Assembly Government by phone on 029 2082 3048 or email countrysideaccess@wales.gsi.gov.uk.

When applying pesticides:

- in areas where the public are allowed to go, you must make sure that people are not put at risk;
- to crops or other areas to be treated, you must not let your pesticide drift onto areas or routes where the public have access, whether people are using them at the time or not.

To make sure people are not put at risk you should:

- Find out the public access provision on or near to areas you are treating.
- Stop for a while if there is a risk to health, for instance from the machinery you are using or from spray, if there are people using the land or right of way while you are applying pesticides.
- Not put anyone at risk as you apply the pesticide if a public right of way or other public access crosses or runs alongside a field or other area you are going to treat. Consider

using notices to tell people that pesticides are being applied and asking them to keep themselves, children and pets to the path or access area. Remember, you must not put up a notice that might stop people going onto the right of way or into any area they have a right to use. You should contact the highway authority (usually your local authority such as county or unitary authority) and get their advice (you need their permission if you are putting a notice on the right of way). You may want to tell people what the pesticide is and what it does without using technical jargon they may not understand. You can put such notices on the grounds rather than on the public right of way, but everyone should be able to see them from where they are allowed to go.

- Put up suitable warning notices at the main access points to the area when you are applying pesticides in areas where people are allowed to go over a wide area, such as moorland or forests. These access points may be where the public leave the tarred road or car park and should be a considerable distance from the application site. In the notices you may want to suggest an alternative route.
- Take account of any remaining risks, such as to children and pets straying into freshly treated areas. Some pesticide labels tell you to keep unprotected people and livestock out of the treated area for a specific period. Do not use these pesticides if you cannot restrict access to the site until the area is safe.

Always remember to take warning notices down when they are no longer needed.

If you decide that you need to apply a pesticide directly onto an area with public access or a public right of way (for example, for weed control on a pavement, or bracken spraying on a moorland) you should strictly follow the pesticide's instructions or the detailed advice of a properly trained adviser (BASIS qualified, for instance) to avoid putting people at risk. You should make sure you understand any detailed conditions about public access. Remember you must not put up a notice that might stop people going onto the right of way or into any area they have a right to use.

If you use a pesticide on a public right of way, you must make sure:

- You do not use one that needs you to keep people or animals away from the area for **any** period of time;
- You follow the conditions or detailed instructions for public rights of way in the approval or on the label..
- It does not put people using the right of way at risk. Remember that people or animals may be at risk until the spray has dried. Make sure you avoid such risks.
- You get the permission of the local highway authority if you think you should put a notice on the public right of way itself.

In the future when section 135A of the Highways Act 1980 comes into force, you may be allowed to divert public rights of way for a time for some 'dangerous works'. Defra and the Welsh Assembly Government have not decided what 'dangerous works' are yet. They can tell you about the law in this area. Their contact details are above.

If you need to use a pesticide where people have access but it is not a public right of way, you should make sure you know what the terms of the public access are and whether you can control people's access to the area or route.

- If the access arrangement does not allow you to divert or stop people using the area being treated, then you should follow the points in this paragraph about public rights of way.
- If you can close an area or route for a while then you can consider this when you do your risk assessment to lessen the risk to people.

You will need to take particular care when applying pesticides to any land which has CRoW rights of public access (for instance, open country where people can walk without having to keep to footpaths or other rights of way). You may need to stop working when people are using the land near you.

To find out more please contact the open access contact centre on 0845 100 3298 in England or the Countryside Council for Wales on 08451 306 229 in Wales. You should contact the relevant National Park if you live in Wales and your land is in a National Park area.

You should follow the guidance given in this section about the safety of people and animals when you treat public rights of way with pesticides, including to control weeds in amenity areas. You should talk to and, if necessary, get the permission of the local authority (such as county or unitary authority) or owner of the land crossed by the public right of way before you carry out any pesticide work. You may need to think about whether it is safe and legal to apply a pesticide with equipment mounted on or pulled by a vehicle on a public right of way.

3.7.5 Who should I tell if there is an incident involving pesticides?

You should report any incident involving people and pesticides to your nearest HSE office (the address and phone number will be in The Phone Book under 'Health and Safety Executive'). The HSE Information Line number is 0845 345 0055 (they should be able to tell you the number of the local office). For emergencies outside office hours you should ring 0151 922 9235. You can get further details from HSE Information Services (see annex D).

Certain incidents need to be reported under the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR) 1995. You can get a guide to these regulations from HSE. If you are not sure whether an incident needs to be reported, phone the HSE to check.

You can find out the role of the Pesticide Incident Appraisal Panel at www.hse.gov.uk or from the address given in annex D.

3.7.6 Further information

More information on public rights of way is available in the Open Spaces Society, and Ramblers' Association guide, 'Rights of Way, a guide to law and practice' (£20). The Ramblers' Association website is at www.ramblers.org.uk or you can contact them at the address in annex D.

You can also look at the Open Spaces Society website at www.oss.org.uk or contact them at the address given in Annex D.

You can look at the Institute of Public Rights of Way Officers website at www.iprow.co.uk or contact them at the address given in annex D.

3.8 Protecting wildlife and the environment

The Pesticides Forum booklet 'Pesticide use – the environmental issues' provides background information on the major environmental issues associated with using pesticides. See the PSD website (www.pesticides.gov.uk).

3.8.1 Assessing possible negative effects

When you are planning to use a pesticide you should assess the possible environmental effects to identify which precautions you should take to protect wildlife and the environment.

The information on the product label will provide the basis for your environmental risk assessment.

Further information, in the form of an environmental information sheet (EIS), is available for some products.

You can download all available environmental information sheets from the Voluntary Initiative website (www.voluntaryinitiative.org.uk).

Drawing up a plan to protect crops, such as a LEAF audit (a way of reviewing and improving your farming practices, perhaps to help you take up integrated farm management, improve efficiency and reduce costs) or crop protection management plan (CPMP) will help you to make sure that you are taking a planned approach to reducing the environmental effect of using pesticides on your farm or holding. Details are available on the Voluntary Initiative website (www.voluntaryinitiative.org.uk).

3.8.2 How can wildlife and plants be protected?

Remember the importance of habitats for wildlife and wild plants when planning to use pesticides, especially where there are sensitive areas such as:

- hedges;
- ditches, ponds and so on;
- wetlands and water margins;
- rough grazing and grassland rich in different plants and creatures; and
- scrub woodlands.

These areas are usually relatively insignificant as sources of pests or diseases. You should avoid contaminating them with pesticides, either directly or from drift, to protect beneficial or harmless insects and other wildlife. Similarly, contamination by herbicides could kill a wide range of wild plants and may encourage aggressive weed species to become established. It is important that you recognise these sensitive features in the area to be treated, assess the risks to them and protect them appropriately, possibly by keeping untreated buffer zones.

By law, you must not kill or damage any wild animal or plant species specified under the Wildlife and Countryside Act 1981 or appearing on the list of European protected species (like bats). You may need to get a licence from the Department for Environment, Food and Rural Affairs (Defra) in England or the National Assembly for Wales Agriculture Department (NAWAD) in Wales if you need to apply a pesticide in a situation which might affect any of these species. Further information is available on the Defra website (www.defra.gov.uk/wildlife-countryside).

If you are not familiar with the layout of the area you intend to treat, or the location of sensitive features, conservation headlands and buffer zones (this might be the case if you are a contractor), you could accidentally damage these areas. In this situation, it is important that the owner or occupier of the land briefs you fully before you use a pesticide.

Under the terms of the Common Agricultural Policy (CAP) Single Payment Scheme, a two-metre protection zone must be left around established hedgerows, ditches and watercourses in all fields of two hectares or more. However, you may need to leave a larger buffer zone when you are using certain pesticides (this will be shown on the product label to protect plants and creatures you are not treating, including fish and water).

For field crops, you may be able to set up a permanent grass margin to prevent weeds moving into the crop, while providing a habitat for wildlife (including beneficial insects) and protecting hedgerows and watercourses.

In some situations, you may be able to set up a ‘conservation headland’ usually the outermost six metres, to allow grasses and broad-leaved plants to grow and to encourage the insects that live on them. These insects are food for farmland wildlife and birds. Where there are conservation headlands, you should follow agreed management principles to avoid any risk to other plants and animals. The labels of some pesticides will have specific restrictions which you must keep to.

You should take special care when using pesticides on, or near, any land covered by an agri-environment agreement.

You can get more information on protecting field margins and conservation headlands from The Game Conservancy Trust, the Farm and Wildlife Advisory Group (FWAG), Linking Environment and Farming (LEAF) and the Royal Society for the Protection of Birds (RSPB).

3.8.3 Specially designated areas

Some areas have a special status in law, for example:

- local nature reserves (LNR);
- marine nature reserves (MNR);
- national nature reserves (NNR);
- sites of special scientific interest (SSSI);
- special areas of conservation (SAC); and
- special protection areas (SPA).

Some of these areas (SPAs and SACs) are recognised as important European habitats ('Natura 2000 sites') and some are recognised as wetlands of international importance ('Ramsar sites'). All these sites must be protected from any possible harmful effects resulting from using pesticides in or near them.

If you are uncertain about the measures you should take to protect SSSIs, SACs, SPAs and Ramsar sites, consult the appropriate nature conservation agency (English Nature for sites in England and the Countryside Council for Wales for Welsh sites) before you apply pesticides. In some situations, it may be illegal to use pesticides without permission from the relevant agency. If you intend to apply pesticides from an aircraft near these areas, you must follow specific rules (see annex I).

Normally, the owner or occupier of the area to be treated is responsible for giving notice to the appropriate conservation agency and getting any permission needed before pesticides are applied. However, if the treatment will be carried out by a person or company applying pesticides as a commercial service, the person applying the pesticide should:

- discuss with the owner or occupier of the area to be treated whether the area or its surroundings need special consideration; and
- ask if the necessary notice has been given and any necessary permission received.

Detailed treatment records are particularly important if pesticide is being used on, or near, these sites.

3.8.4 How can wild birds and mammals be protected?

Wild birds and mammals, including pets, are at particular risk from treated seed and from pesticides in granule, pellet or bait form. Make sure you follow all precautions and advice on product labels to protect birds and mammals. In some situations you will need to take special care, such as if water voles are at risk of poisoning from vertebrate control agents.

You must make sure that all treated seed is properly covered by soil, and that soil-incorporated granules and pellets are not left on the soil surface. Also, you must not leave any spilt granules, pellets or treated seeds lying around. When you are test-baiting using pesticides, make sure that you protect the baits to prevent poisoning of species you are not targeting.

3.8.5 How can bees be protected?

The British Beekeepers' Association (BBKA) will be able to give you details of the beekeepers' spray liaison officer for areas in England (see their website at www.bbka.org.uk). For Welsh areas you should phone the Welsh Beekeepers' Association (WBA) on 01974 298336.

Products that may harm bees will be labelled as 'harmful', 'dangerous', 'extremely dangerous' or 'high risk' to bees. You should tell the beekeepers identified in your environmental risk assessment, or the local beekeepers' spray liaison officer, 48 hours before you plan to use a pesticide at the times of the year when bees are at risk or whenever you intend to use a pesticide that specifically harms bees. This will allow beekeepers to take the necessary precautions. You should also tell beekeepers if you change your plans.

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After you choose the most appropriate pesticide you should also consider the measures for protecting bees set out in table 3 below.

Table 3: Measures for protecting bees

Do	Do not
• check for bees visiting plants and remember that the honeydew produced by aphids is attractive to bees	• spray unless you have to
• follow closely the environmental protection instructions on the label and the guidance in this code	• use pesticides labelled 'harmful', 'dangerous', 'extremely dangerous' or 'high risk' to bees if crops or weeds are in open flower or part bloom, unless this is allowed by the product label
• spray in the evening when bees have stopped flying, as this allows several hours for the pesticide to dry before bees become active again, (but remember that bumblebees might be around to look for food later into the evening than honeybees)	• let pesticide drift into bee hives or into hedgerows or fields where bees, including bumblebees, may be looking for food
• choose a cool cloudy day, or the early morning (if you have to spray during the day)	

3.8.6 Other beneficial species

Your assessment of the environmental risks needs to take account of the effect pesticides have on other beneficial insects (like ladybirds and lacewings) and other species in general. The product label may state that you must not apply pesticide to a margin around the treated area. Also, the product label may specify or recommend other spraying restrictions to protect these species (such as spraying before a certain date).

3.8.7 Livestock

Any period of time when animals need to be kept away from the treated area will be specified on the product label. Make sure you follow this instruction.

Some poisonous weeds, such as ragwort, can become more attractive to grazing animals after they have been treated with herbicides. It is good practice to keep livestock (including horses) out of treated areas until the weeds have died and completely disappeared whether or not the product label of the herbicide used says that livestock have to be kept off the land for a set period.

3.8.8 Fish and other aquatic life

Fish and other aquatic life (plants and creatures living in water) can be at risk from being exposed to pesticides.

You must leave an untreated buffer zone between the treated area and the top of the bank of a neighbouring watercourse or dry ditch to reduce the amount of pesticide reaching the watercourse.

In some circumstances, you can reduce the size of a buffer zone to protect aquatic life if a local environmental risk assessment for pesticides (LERAP) justifies this. The continuing approval of some products may depend on you fully keeping to the LERAP schemes.

Some situations in amenity and forestry situations do not come under the scope of the LERAP schemes.

The product label will state whether a pesticide needs a buffer zone to protect aquatic life and whether this buffer zone may be reduced after a LERAP.

You can find detailed guidance on how to carry out and record a LERAP when applying pesticides in the Defra booklets 'Local environmental risk assessment for pesticides: horizontal boom sprayers' and 'Local environmental risk assessment for pesticides: broadcast air-assisted sprayers'. You can download these booklets from the PSD website (www.pesticides.gov.uk/farmers/leraps.htm) where you will also find lists of accredited low-drift spraying equipment and pesticide products eligible under the LERAP schemes. You can also get a free copy of these booklets from:
Defra publications
Admail 6000
London
SW1A 2XX
Phone: 08459 556000

When you use accredited low-drift spraying equipment (both nozzles and complete spraying systems) under the LERAP schemes, you must use the equipment exactly as explained on the PSD website.

By law you must record the reasons for LERAP decisions, even if you have chosen not to reduce the buffer zone shown on the product label to reflect local conditions.

You must keep all records for three years from the date you use the product.

The LERAP schemes for protecting watercourses and dry ditches do not apply to kerbside gullies, French drains, swales or similar structures often present in amenity and industrial areas. In these situations, you should take all the necessary precautions to avoid contaminating surface water and groundwater and you should follow the guidance for applying pesticides on hard surfaces.

Similarly, the LERAP schemes do not apply in situations where temporary ditches which do not run into watercourses are created, such as in some forestry operations.

3.8.9 Wildlife incident investigation scheme (WIIS)

Incidents involving pesticides are put into one of three groups:

- Approved use: where the product has been used in line with the law;
- Abuse: deliberately trying to poison animals with pesticides not approved for that purpose;
- Misuse: carelessly or accidentally not following correct practice.

Very occasionally, using an approved pesticide correctly may result in animals, birds or other wildlife being accidentally poisoned. However, most poisoning caused by pesticides is the result of the product being misused or deliberately abused with the intention of killing an animal or a bird. This happens in town areas as well as the countryside. This poisoning is against the law and may result in you being prosecuted.

If you find wild animals, birds, livestock, domestic animals, honeybees or beneficial insects which you suspect have been affected by pesticides, or if you find spilt pesticide or baits, phone the WIIS on 0800 321 600. For incidents involving fish, phone the Environment Agency on 0800 807060. If appropriate, an officer will investigate the situation to see if it is caused by a pesticide or some other chemical. Appropriate action can then be taken.

Avoid contact with dead animal carcasses, spilt baits, pesticides or containers and never try to unblock a badger sett or fox earth which may have been gassed.

3.8.10 Preventing pesticides from contaminating surface water and groundwater

Very small amounts of a pesticide concentrate can have a significant effect on water. A spillage of only 1 gram of active ingredient – which could be the residue on a single foil seal from a container – will need to be diluted by 10 million litres of water to meet the European maximum limit for a pesticide in drinking water. This is the amount of water needed to fill a stream 1 metre wide and 0.3 metres deep for 35 kilometres (22 miles).

Water can be contaminated, either directly or indirectly, with pesticides. This could have serious consequences for the environment. A small number of pesticides are specifically approved for being used in or near water, and only those products must be used.

When applying pesticides near watercourses you should:

- take appropriate precautions to reduce spray drift;
- follow any buffer zone and LERAP conditions for protecting fish and other aquatic life; and

- where appropriate (such as when using a pesticide in or directly on the banks of a water course), spray upstream.

Watercourses can also be contaminated by pesticides reaching field drainage systems through the soil. You should take care to avoid applying pesticides when the risk of them getting into drainage systems is high. Schemes to reduce this problem have been agreed with pesticide manufacturers and users of specific pesticides.

You can get more information on the Crop Protection Association website (www.cropprotection.org.uk) and on the Voluntary Initiative website (www.voluntaryinitiative.org.uk).

Groundwater (the law describes this as 'all water which is below the surface of the ground and in direct contact with the ground or soil') can be contaminated by pesticides. There are some circumstances when using an approved pesticide correctly may present a risk to groundwater. For example, if a water table is near the surface, or there is thin soil, very sandy soil or cracked limestone bedrock, pesticides may move rapidly through the ground and enter groundwater.

This type of contamination may be of particular concern when the groundwater is feeding a drinking water supply.

- In general, you should not use long-lasting pesticides and pesticides that can spread within any area designated as a 'source protection zone' (SPZ) I or within 50 metres of a spring, well or borehole.
- In SPZ I areas, you should carefully consider using any pesticide, especially on quick-draining surfaces such as gravel, hardstandings and similar areas.
- You should also take special care to protect groundwater when using pesticides in areas further away from springs, wells and boreholes but still within their 'catchment areas' (these areas are designated SPZ II and SPZ III).
- If there is a public water supply nearby, you may need to restrict your pesticide use over a larger area.

You can get details of source protection zones from the Environment Agency website (www.environment-agency.gov.uk). For further advice you should contact your local Environment Agency office.).

Take particular care to protect surface water and groundwater when you:

- are preparing a pesticide;
- are transporting a pesticide to the area being treated; and
- clean equipment and dispose of pesticide waste and containers.

Whatever type of pesticide you are using, whether it is a spray, granule, pellet, dust or any other form, you should carry out all mixing, filling or loading operations well away from watercourses, ditches and drains.

- On farms and holdings you should have a specific area for filling sprayers. However, when applying pesticides in other forms (such as granules or pellets), you usually need to load the application equipment in the relevant field.
- Similarly, in many amenity and forestry areas, where work is carried out at several separate locations, you will need to mix and load pesticides where they are being applied.

When you can use a dedicated mixing and loading area, this should be designed to prevent pollution of surface water and groundwater. It should:

- be where it will not be affected by flooding or by cross-contamination (such as from vehicle movements);
- have an impermeable surface (one that does not let liquid pass through it), ideally under cover, which spills can be cleaned up from; and either
- allow all drainage and run-off to be collected and disposed of using a lined biobed (see glossary 1 in annex C), as described in table 4 over the page;
- allow all drainage and run-off to be collected and disposed of using an area of soil or grass or an unlined biobed, as described in table 4 over the page; or
- allow all drainage and run-off to be collected and disposed of using a licensed waste-disposal contractor.

Table 4: Options for dealing with drainage and run-off from dedicated mixing and loading areas

You can:	If you:
dispose of the drainage and run-off from your mixing and loading area to a lined biobed (either directly using a drive-over biobed or using an indirect biobed fed by the drainage from a hard surface)	• (or the operator of the lined biobed) have an appropriate waste management licence (or have registered an exemption) under the Waste Management Licensing Regulations (see annex A); and • collect the water outflow from the base of the lined biobed and reuse it as irrigation water or for preparing spray solutions.
dispose of the drainage and run-off from your mixing and loading area on to soil, grass or an unlined biobed (agricultural pesticides only)	• are authorised under the Groundwater Regulations (see annex A) issued by the Environment Agency; and • do not use one site in this way more frequently than once a year to work in line with the Landfill Regulations (see annex A).
collect the drainage and run-off from your mixing and loading area	• dispose of it through a licensed waste disposal contractor.

If you need to mix and load the pesticide at the area being treated, you will need to make sure that the site you have chosen is suitable and know about any risks associated with handling pesticides on uneven surfaces.

In all situations you should take care to prevent spills when filling equipment by:

- making sure your equipment is well maintained and does not leak or drip; and
- following the detailed guidance on filling given in the table 5 in section 4.5.

If you spill any pesticide or spray solution, make sure you contain the spillage to keep any contamination as low as possible.

- Do not allow pesticides to get into any yard or field drain, ditch or other watercourse.
- Never hose down a spill.
- Use an inert absorbent material (that is, one that does not react chemically, such as cat litter or dry sand) to soak it up. Dispose of the material safely and legally.

Portable drip trays of various types and sizes are available. They are designed to catch spilt pesticides during mixing and loading operations and to allow any spills to be returned to the equipment. Using a drip tray will help you to prevent contamination of your dedicated filling area or, if you need to fill your equipment at the area to be treated, prevent environmental contamination.

You can get more guidance on preventing water pollution from the Defra booklet 'Keeping pesticides out of water', available from the Voluntary Initiative website (www.voluntaryinitiative.org.uk).

When you are driving or transporting equipment to and from the area you are treating, make sure it is not overfilled and cannot leak or drip. Do not go through fords at any time and, if you have an alternative route, it is the best option to avoid crossing watercourses at all, including going over bridges.

To protect groundwater, you must not dispose of pesticide waste onto land in England and Wales without an authorisation (under the Groundwater Regulations) issued by the Environment Agency. However, when you use a pesticide in line with the product approval, you do not need a groundwater authorisation.

Whenever possible, you should decontaminate equipment, inside and out, within the area you have treated and avoid using a single dedicated cleaning area. However, you must make sure that, when you apply your washings or unused pesticide within the treated area, you do not go over the maximum application rate for the pesticide product. Generally, repeated flushing of spraying equipment with low volumes of water will be as effective as a single rinse using a large volume of water, and will create less rinse water. If spraying equipment is fitted with a low-volume-tank washing device, use this as recommended by the manufacturer.

You can also wash down sprayers and dispose of surplus spray solution using a lined biobed.

You can get the latest advice on biobeds and restrictions on their use from the Environment Agency.

In some circumstances you can wash sprayers or dispose of surplus spray solution on areas of soil or grass, or drain hard surfaces used for these purposes to areas of soil or grass (if you have an authorisation for this under the Groundwater Regulations and you do not do this at a single site more frequently than once a year).

You should always store sprayers and other cleaned equipment under cover to avoid contaminated rainwater run-off, which may contaminate groundwater and surface water. For the same reasons, you should store empty pesticide containers, rinsed where appropriate, under cover in a secure area.

When re-stocking forests and woodland or carrying out similar activities involving treated propagating material, keep pesticide-treated plants away from ditches and other surface water. Managers should make sure that planters know about this and do not try to 'freshen up' treated material in this way.

3.8.11 Controlling weeds in or near water

You can get more guidance on using pesticides in or near water in the Defra booklet 'Guidelines for the use of herbicides on weeds in or near watercourses and lakes' and in the Environment Agency book 'Use of herbicides in or near water' and associated guidance notes.

There may be times when you need to use a pesticide to control weeds in or near water. Aquatic and bank-side plants are an important part of the ecosystem, so you should consider other methods of control before deciding to use a pesticide. If you decide that you need to use a pesticide in or near any water, not just rivers and streams, you must only use one approved specifically for use in or near water. This will be shown on the product label. Before you use any product approved for use in or near water you should first contact the Environment Agency. You may also have to let water abstractors know.

As a general principle, when spraying on or near a watercourse with a significant flow you should spray in the opposite direction to the main water flow (that is, always spray 'upstream'). This will reduce the maximum concentration of pesticide that could be present at any one point in the watercourse and so reduces the risk to aquatic life.

3.8.12 Applying pesticides from an aircraft

Only certain pesticides are approved for being applied from the air. The specific legal obligations you must meet before, during and after applying a pesticide from the air, as well as details of the consultation process needed to keep the risk to the environment as low as possible, are set out in annex I. You can get guidance notes on spraying pesticides from aircraft from the Environment Agency.

3.8.13 Invasive weeds

You should consult organisations such as the Cornwall Knotweed Forum (see their website at www.ex.ac.uk/knotweed), the Centre for Aquatic Plant Management (CAPM) (see their website at www.rothamsted.bbsrc.ac.uk/pie/JonathanGrp/JonathanIndex.html), the Environment Agency or your local council to make sure that you are using appropriate control methods.

Invasive and non-native weeds (that is, weeds not natural to the area), which can quickly take over native species, can cause major problems. Before you try to control weeds such as Japanese Knotweed or aquatic plants such as *Crassula helmsii* (commonly known as New Zealand Pigmy weed or Australian Swamp Stonecrop), find out about any national programmes which are in place to tackle the problem.

When you are planning to control established invasive weeds, also consider the need to prevent further problems (such as soil being worn away) which may result after the weeds have been controlled. You can get general guidance on the issues associated with controlling invasive weeds from organisations such as English Nature, the Countryside Council for Wales and the Environment Agency.