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Review: March 2025 or sooner if required

## Developing & Using Environmental Areas in School Grounds

(Health, safety and insurance)

### Assessing risks and taking precautions

The principles of risk assessment are now well established and the procedures in use for ensuring health and safety in classrooms and laboratories should simply be extended to the school grounds. It is not just a matter of 'spot the hazards' in the environmental area or the activities that will be carried out in it. The likelihood of harm occurring and the seriousness of the consequences if an accident happens must also be taken into consideration before deciding what, if any, action is needed.

General factors that are important in a risk assessment will include the **age** and **maturity** of pupils, the quality of their **behaviour** and the level of **supervision** they will receive. What might be a quite appropriate outdoor activity for a small group of well-disciplined year 11 pupils could be foolhardy with a whole class of excited year 5 children controlled by an inexperienced teacher! The assessment should consider what is an appropriate teacher : pupil ratio for work in the school grounds; this will be influenced by the nature of the activity and the age of the pupils. There may be LEA instructions on supervision; these should be checked.

In schools and colleges, it is the duty of an employer (ie, LEA or governing body) to provide risk assessments for its employees and to ensure the health and safety of visitors (including pupils). In practice, this has meant that, for science activities, educational establishments use model (general) risk assessments that they then 'customise' to match their particular circumstances. For primary science & technology, schools have normally been instructed to use *Be safe! Some aspects of safety in school science and technology for key stages 1 and 2* (ISBN 086357081X) from the Association for Science Education. In secondary schools and FE colleges, most will be using CLEAPSS materials including *Hazcards* and the *Laboratory Handbook*. Sections of the relevant model risk assessments relate to science activities outdoors. Where the model risk assessments for science work do not cover an intended activity, schools can contact CLEAPSS for a *special risk assessment*. For work in other curriculum areas, the employer should have issued specific risk assessments (but may not have!). Further CLEAPSS guidance on risk assessments in science is provided for secondary schools and FE colleges in guide L196, *Managing Risk Assessment in Science*. CLEAPSS guidance for primary schools is included in the publication L224, *A Model Health & Safety Policy in Science for Primary Schools*. The British Trust for Conservation Volunteers has produced guidance on health & safety for activities involved in the development of wildlife areas. Most useful is a short booklet *Health & Safety Overview for Practical Conservation Projects*.

Where an employer has issued health & safety instructions, you **must** obey them (though if they seem unreasonable, they should be challenged!).

Guidance on specific hazards and suitable precautions is given below.

### **Designing, developing and using a wildlife area: health & safety issues**

When drawing up plans for an environmental area, try to anticipate what might go wrong and attempt to reduce risks by avoiding problems, eg, see the advice on pond safety and poisonous plants below. If you plan to provide access and facilities for children with special needs, particular attention must be paid to ensuring their safety. When work commences on creating the environmental area, and particularly if pupils are involved in the actual development of a site, great care needs to be taken (eg, in the use of tools, see below). Finally, consider the precautions to be taken when pupils are investigating in the completed wildlife area. The outcome of such risk assessments should be written into schemes of work, or the department should consider developing a detailed policy for work carried out in the school grounds.

#### **Animals**

Animals are unlikely to pose significant risks. Washing hands is recommended after coming into contact with any species. There is the possibility of stings from bees and wasps but these, although painful, are not a major problem unless a pupil is already known to have an allergic reaction to such stings. If honeybee hives or bumblebee nest sites will be features of the wildlife area, their location should be carefully considered so that the flight paths of the bees are directed away from where most pupils will be. Hives should be sited so that they cannot be vandalised. Caterpillars that are hairy may provoke an allergic reaction if handled. Injured birds and mammals that pupils find and pick up may carry disease or parasites but normal hygiene (see below) should be an adequate response.

#### **Chemicals**

These are most likely to be encountered in the form of fertilisers and pesticides although schools should avoid the use of such chemicals entirely by adopting organic gardening methods. If chemicals are used, then this should be under close teacher supervision (and **by teachers only**), eye protection should be worn as appropriate, and the instructions on the labels of pesticides followed exactly. Pesticides that have been formulated for *agricultural* purposes must not be used by untrained personnel.

#### **Hygiene**

This is an important, but often ignored, requirement after working in a wildlife area. It is needed whenever animals, plants, soil, compost, water and chemicals have been handled. Although *risks are low*, there are a number of diseases that might be transmitted via contaminated and unwashed hands. These include:

- Weil's disease (Leptospirosis) from water or pond-side plants contaminated with the urine of infected rodents;
- Toxoplasmosis and Toxocariasis from plants contaminated by cat or dog faeces;
- Tetanus from cuts or wounds contaminated with soil.

When working in the wildlife area, ensure that all wounds on exposed skin are suitably covered. Adequate provision for hand washing needs to be **readily available**; if teachers and pupils have to walk some distance to reach suitable facilities, they will often forget or not bother to wash their hands. Think also about the likelihood of pupils eating snacks etc while working in the wildlife area and do your best to dissuade them.

#### **Personal protective equipment (PPE)**

This is most likely to be needed during construction and maintenance work on the site and will include, as necessary, suitable gloves, goggles and helmets (eg, when tree felling). Footwear should be appropriate for the work being done; steel toe-capped boots may be needed if the risk assessment warrants them. Cuts and grazes on exposed skin must always be suitably covered. When carrying out investigations in the completed wildlife area, PPE is less likely to be needed but suitable gardening (or other) gloves may be appropriate when digging, for handling

thorny plants (when eye protection might also be required) or handling injured animals. Some authorities recommend waterproof gloves for any pond activities but pupils can always immerse their arms so that the gloves fill with water and they can touch their eyes, lips etc with a wet glove just as easily as with an unprotected hand (see discussion on Weil's disease in 'Pond safety' below).

### Plants and fungi

There are several hundred **poisonous flowering plants**, as well as mushrooms and toadstools, that may be found in Britain. A substantial number of these are common species which can often be encountered in parks and gardens or when purchased as plants or seeds to create a wildlife area. For many poisonous species, all parts of the plant are toxic. In others, the poison is concentrated only in specific organs such as bulbs, fruits or leaves. It is not always appreciated that some very familiar species used for food, such as rhubarb, potato and tomato, are also poisonous. In these cases, only the parts eaten are safe. Some species are not so much poisonous as irritant or allergenic when their leaves are handled or sap is smeared onto the skin. In some cases, eg, giant hogweed and parsnip, such contact requires exposure to ultra-violet light before a reaction is produced (photosensitisation).

Handling the bulbs of several species may cause dermatitis. A selected list of poisonous or allergenic plants is given in Table 1. For fungi that are found growing in a wildlife area, it is best to assume that they are poisonous. (For a reference book and CDROM to identify hazardous species: contact CLEAPSS.)

**Table 1 The more common poisonous and allergenic plants** Common name Botanical name

#### Poisonous/allergenic parts Garden or hedgerow flowers and plants

Black nightshade	- <i>Solanum nigrum</i>	- All, especially unripe berries
Bluebell	- <i>Endymion nonscriptus</i>	- All; sap may cause dermatitis
Bracken	- <i>Pteridium aquilinum</i>	- All
Buttercup	- <i>Ranunculus</i> species	- All
Christmas rose	- <i>Helleborus niger</i>	- All
Cuckoo pint (Lords and ladies)	- <i>Arum maculatum</i>	- All
Daffodil	- <i>Narcissus pseudonarcissus</i>	- All, particularly bulbs
Deadly nightshade	- <i>Atropa bella-donna</i>	- All
Foxglove	- <i>Digitalis purpurea</i>	- All
Giant Hogweed	- <i>Heracleum mantegazzianum</i>	- Sap causes dermatitis in sunlight
Hemlock	- <i>Conium maculatum</i>	- All
Hemlock water dropwort	- <i>Oenanthe crocata</i>	- All
Hyacinth	- <i>Hyacinthus orientalis</i>	- All; bulb/sap may cause dermatitis
Iris (eg Yellow and blue flag)	- <i>Iris</i> species	- All, particularly rhizomes
Ivy	- <i>Hedera helix</i>	- Berries
Larkspur	- <i>Delphinium</i> species	- Leaves and seeds
Lily of the Valley	- <i>Convallaria majalis</i>	- All
Lupin	- <i>Lupinus</i> species	- All
Mistletoe	- <i>Viscum album</i>	- Leaves and berries
Monkshood (Aconite)	- <i>Aconitum napellus</i>	- All
Ragwort	- <i>Senecio jacobaea</i>	- All
Snowdrop	- <i>Galanthus nivalis</i>	- All, particularly bulbs
Tulip	- <i>Tulipa</i> species	- Bulbs
Woody nightshade	- <i>Solanum dulcamara</i>	- All, especially berries

#### Trees and shrubs

Broom - *Sarothamnus scoparius* - Seeds

Cherry laurel - *Prunus laurocerasus* - Leaves and fruits  
Holly - *Ilex aquifolium* - Berries  
Horse chestnut - *Aesculus hippocastanum* - Leaves, flowers, 'conkers'  
Laburnum (Golden rain) - *Laburnum anagyroides* - All, but especially seeds  
Privet - *Ligustrum species* - All, especially berries  
Rhododendron - *Rhododendron ponticum* - Leaves and flowers  
Snowberry - *Symphoricarpos rivularis* - Fruits  
Yew - *Taxus baccata* - All, especially seeds

#### **Vegetables and fruit**

Beans (French, Red kidney) - *Phaseolus vulgaris* - Raw or under-cooked seeds  
Parsnip - *Pastinaca sativa* - Leaves/sap: dermatitis in sunlight  
Potato - *Solanum tuberosum* - All green parts, including tubers  
Rhubarb - *Rheum rhabarbarum* - Leaves  
Tomato - *Lycopersicon lycopersicum* - Leaves

**Blue-green algae** (more correctly now called cyanobacteria) in lakes and ponds may produce toxins during the summer months. This is normally only a problem on *large* bodies of water where the 'bloom' of the microorganisms forms a thick layer of scum on the surface, often blown by the wind so that it collects at one end. (It should not be confused with blooms of blanket weed or other algae which may form throughout the pond.) It is *most unlikely* that any problems will be experienced in a relatively small school pond but, if they are encountered, they will be small-scale. The scum should be skimmed from the water surface but **avoid any skin contact**.

Having discovered that a plant is poisonous, should it be avoided in any wild flower garden etc? This may seriously limit the species that you can grow or seed mixes that you can purchase. It is more important to consider whether there is any significant risk. For a poisonous plant, there is only a problem if it is eaten; is this likely? Younger children may be more at risk than older pupils but if their investigations in the wildlife area are properly supervised, will they have the chance to nibble on seeds and leaves? Also how much of a plant that must be eaten to cause harm varies considerably; in many cases eating a small amount will not be serious. For plants that are irritant, they can always be handled wearing gloves. Plants in a hedgerow at the edge of an environmental area might, however, pose more of a risk because they overhang places to which school children or the public have unsupervised access. Thus the action to be taken will be determined by your risk assessment. It is important, however, to check for any LEA rules which restrict the planting of poisonous species.

#### **Pond safety**

For a discussion of the important issues to consider in designing and constructing a pond: 'Ponds'. However, matters relating to safety are explored here and will inevitably have an influence on the final outcome. Before constructing a pond, it is essential for LEA schools to check whether there are any instructions they must follow to ensure safety.

#### **DEPTH OF WATER**

As discussed, a useful pond does not need to have a maximum depth greater than 1 m and, in some designs, this is often reduced to 75- 80 cm. Some authorities suggest that depth should relate to the age of pupils in the school. Thus for a nursery school, a very shallow pond is most appropriate; for an infant school: 60 cm; junior/middle school: 75 cm; secondary school: 100 cm. The aim is to enable a child to stand up in the deepest region but remember, it is possible to drown in a few centimetres of water. Also a young (and therefore short) child may trespass out

of school hours in the grounds of a secondary school. There is no such thing as a 100%-safe pond, unless perhaps covered by a secure grille; 'Security'.

Also important is the *position* of the deepest regions within the pond. One view is that a pond should be designed so that where it is most likely that children will fall in, the water is shallow. The deeper zone is therefore positioned away from the edges and perhaps towards one side of a pond where access is difficult (eg, because of adjacent long grass, shrubs, a hedge or a wall). However, to maximise 'dipping potential', some designs provide ready access to deeper water using bridges or jetties. Avoid large submerged stones in the areas of a pond most 'at risk' in case a child hits his or her head when falling in and is knocked unconscious.

**LOCATION** If possible, the pond should be near the classrooms, not tucked away in a corner of the school grounds. During school hours, someone who has an accident is therefore more likely to be seen or heard. Consider the likelihood of trespassers during the evening and school holidays or if the school grounds will be used as a 'short cut' to another place. A pond at the edge of a school's boundary, especially adjacent to public access, is more open to vandalism and children falling in. It may also raise the fears of parents.

**POND MARGINS, BOARDWALKS & BRIDGES** To help guard against children simply wandering at night into a pond surrounded by a grass lawn because the edges are not clearly visible, it is sensible to mark the pond's boundary in some way. Often, this will have been done anyway when paving slabs are laid around the perimeter. Ensure that they do not overhang the pond too far or there is a danger that a slab might work loose and tip into the pond if a child stands right on its edge. Paving is usually not slippery when wet; if other surfaces are used to form a pond's edges, make sure that they will be safe in this respect. If boardwalks or dipping platforms are built, they should have a raised edge or 'toe board'. If children in wheel chairs will have access, the edges of *all* types of pond boundary should be slightly raised. For the construction of bridges or jetties allowing access to deeper regions of a pond, careful thought should be given to their design with the inclusion of guard rails to make them as safe as possible.

A **raised pond** surrounded by a wall or old railway sleepers is sometimes suggested as a means of providing a safer method of studying pond life. However, a wall is an open invitation to children to jump up and walk or balance on it and may therefore increase the risk of an accident. Where relatively deep water troughs are used as 'mini-ponds' ('Raised beds and ponds'), it is not impossible for a children to over-balance and fall in head first.

**SECURITY & THE NEED FOR FENCING** In order to stop children falling into a pond, some authorities recommend that a pond should be surrounded by a **high fence or wall**, with access provided via a lockable gate. However, it is *not* essential to do this and there are several *disadvantages*. A determined intruder will be able to climb over the barrier, indeed it may even act as a challenge! Once inside the fence or wall, the child may be more at risk because he or she cannot easily be seen or may have difficulty escaping. The weak link in the defences is often the gate and if this is relatively easily breached, the value of the rest of the obstacle is in doubt. Building fences is expensive (walls even more so), so the temptation is to limit costs by reducing the overall length of barrier required. This means that there is often little free space around the pond when pupils are using it legitimately, seriously impairing its educational value. A wall or fence too close to the pond may mean that children are more likely to fall into the water when they jump down. A wall or fence may cause shading problems or restrict the movement of wildlife in and out of the pond. Finally, a secure stockade around the pond will hardly enhance the appearance of the environmental area. All that is needed therefore is a **low barrier** to prevent, say, an infant wandering inadvertently into a pond. This is best provided by, eg, a hedge or a rough wall which will blend into the environmental area, also offering additional habitats for wildlife. The barrier need not surround the pond area if access to the water on one or more sides is restricted by other habitats such as tall grass or marshland. In the past, some authorities have argued that a pond should be protected by a **metal grille**. This would certainly

ensure safety but at what cost, apart from the expense? It is likely to be a feasible option only if a pond is relatively small and uniform in shape, thus restricting the usefulness of the pond. The grille must be easily removed when the pond is being studied but at other times securely locked down (or children could lift it and become trapped underneath). The means of achieving this could conflict with other aspects of a good pond design. The grille may interfere with normal plant growth and the metal it is made of could also pollute the pond water. And, as with a high fence, it will be an eyesore. All in all, the use of a grille does not seem a sensible precaution. You might also wish to consider **illuminating** the pond area, perhaps where the school is used in the evening.

**WEIL'S DISEASE** Although very unlikely, there is a chance that a pond may be contaminated by the urine of rodents carrying Weil's disease (Leptospirosis). The bacteria responsible can enter the body through cuts in the skin or any mucous membrane (eyes, lips, nose) although infection is more likely after falling into the pond and swallowing some water. Beware of the development of 'flu-like symptoms after an incident. Good hygiene after pond-dipping work is vital. ('Personal Protective Equipment' above for comments on the advisability of wearing gloves.) **BLUE-GREEN ALGAE** \_ 6.2 'Plants and fungi' above for comments.

#### **Safety with tools and equipment**

Tools will be used in an environmental area, particularly during its construction. In addition, various loads, eg, bags of soil, rolls of pond lining etc, will be carried. For each tool used and load carried, risks should be assessed for each person - child or adult. Their capability of handling the tool or lifting the load safely must take into account the age and maturity of the individual, his or her fitness and the working environment (eg, slippery mud). It should not be assumed that people know how to lift loads or use a tool safely; simple training may be needed. In some cases, equipment to carry heavy loads safely may be required or several people will be needed. Powered tools and machinery must *not* be used by anyone who is insufficiently trained and knowledgeable to handle them safely. Tools and equipment must be suitable for their intended use. Thus a tool designed for use by an adult may be quite inappropriate for a child to handle. Items purchased for simple domestic d-i-y tasks or worn tools brought in from home may not be able to cope with the strains of heavy use in constructing a wildlife area. The correct tool must always be chosen for a particular task; improvisation can lead to accidents. *Health & Safety Overview for Practical Conservation Projects* contains useful advice on the safe use of hand tools. (for suppliers of good-quality tools and information from the Disability Information Trust on tools and equipment to make gardening easier.)

The usual principles of risk assessment must also apply when gardening tools and other equipment are used for investigations within the completed environmental area. For example, is a spade or trowel the correct size for the child about to use it? Will it be safe to use glass containers or should plastic alternatives always be chosen? Is a pond net too short or too heavy to be used safely, considering the height of the child, the depth of the water and the nature of the dipping area? If pooters are to be shared between pupils, how will the mouthpieces be disinfected between use? (In this case, it is better to have disposable or replaceable lengths of tubing attached as mouthpieces.)

#### **Sunburn**

Pupils and adults working in the school grounds for more than 30 minutes during a summer heat wave need to be protected from sunburn and the associated long-term risk of skin cancer. In designing an environmental area, consider if shade can be provided by trees, a pergola or other structures, particularly in places where it is anticipated that pupils will be sitting, observing or recording. Precautions will include the mandatory use of sun creams and

encouraging the wearing of long-sleeve shirts and caps. Beware of the temptation of stripping to the waist during strenuous construction activities! If arduous work is carried out for any length of time in the sun, beware also of heat exhaustion. Ensure there is a sufficient supply of drinking water. **Insurance**

For work on the development of the environmental area, when teachers, governors, parents, children and other volunteers may be involved, the school will need to have at least public liability insurance and should also consider the advisability of insuring against other losses such as theft or damage. LEA schools should check with the appropriate department of their Authority to ascertain what may be required of them and what insurance may already be in place. Other establishments need to check with the insurance company or broker normally used and discuss the level of cover that may be needed. Schools should note that the British Trust for Conservation Volunteers also offers an insurance package to affiliated members, currently for £30, if cover is not already available.

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