Managing health and safety in zoos

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This guidance contains practical advice for those responsible for the operation of zoos, such as zoo operators, safety representatives and managers.

It applies to establishments of any size where wild animals are kept for exhibition to the public including aquariums, sanctuaries, bird gardens and safari parks.

Specific hazards and risks associated with zoos are covered, as well as common issues such as slips and trips, manual handling and vehicle movements.

The guidance contains recommendations on how to ensure effective arrangements for the safety, health and welfare of employees and others who might be affected by zoo work activities (eg volunteers, veterinary surgeons, contractors, the general public etc).

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Foreword

This Guidance has been produced to replace the Approved Code of Practice: *Zoos - Safety, Health and Welfare Standards for Employers and Persons at Work 1985.* While this guidance covers a large number of topics of importance at zoos, each zoo is different, and so the operator and zoo staff are best placed to say which are the most important topics that need attention. Clearly, at all zoos, the health and safety of people when they work with animals is a key area to consider. However, it is important to remember that most of the accidents at zoos result from slips and trips, manual handling and vehicle movements, and a third of these accidents are to visiting members of the public. Therefore, when thinking about health and safety at zoos, its important that these common issues are considered, as well as those directly related to working with animals.

Introduction

Use of this guidance document

1 This document is intended to provide practical guidance to those responsible for the operation of zoos. It contains recommendations of best practice for zoo operators, safety representatives and managers about ensuring effective arrangements for the safety, health and welfare of their employees and others who might be affected by zoo work activities (eg volunteers, veterinary surgeons, contractors, the general public etc). It should also be useful to health and safety enforcement officers when carrying out inspections.

2 This guidance refers to potential hazards and risks associated with the operation of a zoo. Safe operations involve compliance with many pieces of health and safety legislation, and these are listed in Appendix 1 along with their general requirements.

3 The guidance also refers to supplementary activities, such as educational visits, fairgrounds and adventure play areas, which may contribute to the zoo operation. Detailed guidance on these activities is not given in this document, as it is available through other industry-specific documents.

4 Zoo operators should read this guidance in conjunction with the *Secretary of State's Standard of Modern Zoo Practice*.[1] This standard, which must be fully complied with, gives advice on matters relating to public safety at zoos.

What is a zoo?

5 A zoo is defined as a permanent establishment where living, wild animals are kept for exhibition to the public for seven or more days a year, with or without charge for admission. This will include:

- aquaria;
- sanctuaries;
- bird gardens (including birds of prey);
- safari parks; and
- any collections of living species on display to the public.

6 This definition also applies to exhibitions yet to be licensed or which may be exempt from licensing control. It does not include pet shops or circuses.

7 The zoo itself may be a subsidiary part of a premises, eg a display of exotic animals on a farm. It is important that zoo operators consider fully any interaction between the zoo and any other business activities associated with the premises. Guidance as to what constitutes a zoo can be obtained from your local authority or DEFRA/SERAD/DEPC (see Appendix 2).

Supplementary activities in zoos

8 The currently accepted role of the modern zoo is the conservation of biodiversity and its display for education purposes to members of the public. Many zoos supplement this by providing hospitality and entertainment activities. Typical examples include:

- indoor and outdoor play areas;
- rides involving tractor trailers, boats, and railways;
- venture trails;
- children's activities;
- restaurants and bars;
- entertainment such as fairgrounds and 'adrenalin' rides; and
- fishing lakes.

9 Although these activities are not included in this guidance, zoo operators must consider any associated health and safety risks when drawing up their risk assessment, and thereafter ensure suitable controls are in place.[2]

Health and safety in zoos

10 The key piece of legislation is the Health and Safety at Work etc Act 1974[3] (the HSW Act). This Act, together with a large number of associated regulations, forms the basis of your health and safety responsibilities (see Appendix 1, paragraphs 1-7).

Zoo inspections

Identifying the enforcing authority

11 Local authority health and safety enforcement officers are normally responsible for inspections carried out under the HSW Act and associated regulations, unless the zoo operator is the local authority. Where a local authority operates the zoo, the Health and Safety Executive (HSE) will inspect for compliance with the HSW Act. HSE may also be responsible for the enforcement of health and safety with respect to any fairground ride operating within the zoo.

Health and safety inspections

12 The purpose of a HSW Act inspection is to enable the enforcing authority to satisfy itself that hazards have been identified, and risks suitably and sufficiently controlled. Such an inspection will cover the health and safety of both employees and non-employees, including the visiting public. There are many approaches to an inspection but they will commonly consist of a physical inspection of the zoo or parts of it, and an audit of some or all the zoo's health and safety procedures and control measures.

13 The risks associated with the zoo operation along with the control measures in place will determine the frequency of health and safety inspections. Using national guidelines, the enforcement officer undertaking an inspection will assign a risk rating to the zoo at the conclusion of the inspection.

14 Inspections to determine compliance with the HSW Act differ from inspections under the Zoo Licensing Act 1981 (as amended). The local authority is responsible for carrying out inspections and enforcement of the Zoo Licensing Act 1981 (as amended) (see Appendix 1).

Zoo licensing inspections

15 The Zoo Licensing Act 1981 (as amended) is intended to regulate the conduct of zoos by the issue of a ZLA licence following inspection. It has regard to the *Secretary of State's Standard of Modern Zoo Practice*[1] and aims to ensure that where animals are kept in enclosures, they are provided with a suitable environment so as to express their most normal behaviour (see Appendix 1, paragraph 8).

16 The Act covers the zoo definition examples given in paragraphs 5-7, but also has the power to exclude as appropriate.

17 The ZLA inspection should not be confused with a HSW Act inspection, although where possible both will be carried out at the same time to reduce the inconvenience to the zoo operator. In the absence of a health and safety officer, the ZLA inspection team will bring matters of evident concern, eg dangerous electrical equipment, unsafe procedures, or serious disrepair of animal enclosures that might compromise human health or safety, to the attention of the zoo operator, and will also notify the appropriate enforcing authority. The granting of a zoo licence does not signify compliance with the HSW Act. For further guidance on zoo licensing inspections, see DEFRA Circular 02/2003 (available at www.defra.gov.uk).

Health and safety management

18 The management (or control) of health and safety at the zoo is an important factor in ensuring the health and safety of your employees, and others who may be affected by the zoo's activities. Organisations are now expected to control health and safety as they would other core activities. Preventing harm to employees and preserving human resources is viewed as being cost effective and vital to reduce financial losses and liabilities.

Health and safety policy

19 It is a legal requirement that employers have a health and safety policy.[4] Zoos with five or more employees must also have a written statement that includes safe operating procedures and an action plan to deal with emergencies, eg fire or the escape of animals. Its length and complexity will vary according to the circumstances of the particular zoo.

20 The zoo safety policy statement will need to be revised regularly and specifically when there is a change to the zoo or its operation, eg enclosure alterations, new equipment, animals or staff. The revised statement must be brought to the attention of your employees.

Risk assessment

21 The Management of Health and Safety at Work Regulations 1999 (the Management Regulations) require employers to carry out an assessment of the risks to employees, volunteers and other groups of people who could be affected as a result of the work activities in the zoo. These risks must then be controlled. Where possible the risks should be eliminated altogether, or alternatively by introducing appropriate control measures, reduced to a safe level.[5] There are other regulations that require an assessment of specific risks, eg the The Control of Substances Hazardous to Health Regulations 2002 (as amended) (COSHH), and the Manual Handling Operations Regulations 1992 (as amended) (see Appendix 1). Where a specific regulation, eg COSHH, requires a specific assessment then, provided this assessment remains valid, there is no need to repeat this under the Management Regulations.

Employee capability and training

22 The Management Regulations also require employers to ensure that employees are not given work that is beyond their capability or which may be hazardous to themselves or to others. In assessing capability, it is necessary to look at their knowledge, training, experience and learning capability.[6] Vulnerable groups, eg expectant mothers, must also be considered.[7] When assessing the competency of zoo managers for example, their knowledge of relevant law and their competence to manage health and safety must be taken into account.

23 The provision of relevant information, instruction and training in health and safety is essential. It should be given at recruitment stage, and again when employees are exposed to increased or new risks, for example:

- on transfer to another job;
- when given additional responsibilities;

- if working with new or altered equipment, technology or systems of work; or
- where risk assessment, or the review of a risk assessment, identifies new risks or training needs (see Appendix 9 of the *Secretary of State's Standard of Modern Zoo Practice*[1]).

24 Information, instruction and training given at the recruitment stage must be comprehensive, covering topics such as:

- the organisation arrangements for health and safety;
- reporting procedures;
- basic skills required;
- task-specific training and the significant findings of your risk assessments;
- workplace familiarisation with an emphasis on potential risks;
- animal-related risks and the controls required;
- working with new species/animals;
- aggression and changes in animal behaviour;
- safe use of work equipment;
- first aid; and
- fire and emergency procedures, including means of communication.

25 It is essential that health and safety training is repeated at intervals as necessary. This is particularly important with training related to skills or practices used infrequently. For example you may have a member of staff who has to occasionally act as supervisor for a section. You should ensure that an effective method of training is given to people whose first language is not English.

26 You may wish to encourage staff to achieve National (or Scottish) Vocational Qualifications. Many of the schemes incorporate relevant health and safety modules. To find out more, see the useful contacts list in Appendix 2.

Five steps to health and safety

27 HSE has produced guidance which will be useful in helping you to manage health and safety effectively.[8,9] This involves the consideration of these five steps:

1 Policy

2 Organising

3 Planning and implementing

4 Measuring performance

5 Auditing and reviewing performance

Employee consultation

28 It is a legal requirement to consult, not just inform, employees about those health and safety issues in the workplace that affect them.[10,11]

Accidents and work-related ill health

29 The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995 (RIDDOR)[11] require employers, and other people who are in control of work

premises, to report and keep records of:

- work-related deaths of people at work and members of the public;
- serious injuries to workers and visitors to your zoo;
- cases of diagnosed occupational disease amongst your workforce; and
- certain 'dangerous occurrences' (near-miss accidents).

30 More information about what you must report can be found in Appendix 1, paragraphs 34 and 35 or go to www.hse.gov.uk/riddor/what-must-i-report.htm.

How to report

Online

31 Go to www.hse.gov.uk/riddor and complete the appropriate online report form. The form will then be submitted directly to the RIDDOR database. You will receive a copy for your records.

Telephone

32 All incidents can be reported online but a telephone service remains for reporting fatal and major injuries only. Call the Incident Contact Centre on 0845 300 9923 (opening hours Monday to Friday 8.30 am to 5 pm).

Working practices in zoos

General principles

33 These general principles should be followed:

- set out clear safety limits for each task;
- allocate tasks to competent people who have been appropriately trained;
- supervise work where necessary;
- provide suitable, safe and well-maintained equipment;
- ensure work areas are suitably designed, constructed and maintained;
- adhere to your safety policy and its arrangements;
- remember to protect the public and others not employed by you;
- make special provisions for vulnerable and lone workers;
- concentrate on the most significant hazards and where the greatest number of people are at risk.

Safety issues

Slips and trips

34 Slips and trips[12] are currently the main cause of accidents in the workplace. Both zoo employees and the visiting public are potential victims. Regulations require measures to be taken to avoid risks from slips and trips as well as to provide safe means of entry and exit for the public (see Appendix 1, paragraph 13).

35 **Slips** can be caused by, or by a combination of:

- incorrect selection of floor, path or walkway surfaces;
- worn out or badly maintained surfaces;
- the presence of water, grease or other substances which reduce friction;
- inappropriate footwear (something you have little control over with members of the public).

36 **Trips** may be caused, or contributed to, by:

- uneven floors, paths or walkways;
- obstructed work areas or accesses, including areas where debris has accumulated;
- low fences or walls;
- poor, including badly designed, lighting;
- badly sited distractions, eg a sign above an uneven surface or low wall.

Falls from height

37 An accident involving a fall from height[13] could result in death or major injury. This hazard may be more significant in zoos with outdoor displays where people/animal separation is achieved by moats or ditches, or where walkways are provided over enclosures. Appropriate fencing, walls or other barriers must be provided to prevent the risk of falls. Such barriers should be designed to discourage people from climbing and have appropriate signage. Where steps or stairs are provided, they must comply with the relevant legislation and, if necessary, be fitted with a secure handrail (see Appendix 1, paragraph 13).

38 Zoo employees involved in the following activities may be at particular risk of falling from height:

- arboriculture (tree work);
- construction or maintenance of cages, aviaries, fences or glasshouses;
- construction or maintenance of features within the enclosures such as play equipment;
- handlers feeding from high platforms etc;
- roof work.

39 A risk assessment on fall from height activities should consider why the work is being done at height in the first place. If work at height is unavoidable, the following should be considered:

- how the work is to be planned and organised (including rescue);
- the competence of those involved;
- defined systems of work;
- safe access routes;
- selection, use and inspection of work equipment;
- barriers or harness rails for areas that are accessed regularly.

40 Work from ladders is particularly hazardous, especially in areas to which animals have access, in restricted spaces, or where the ground is uneven. Ladders should generally be used only for short duration (15-30 minutes), light work. Ladders must be of an appropriate design and suitable for work conditions. They must be examined before each use, and properly maintained. Staff must be trained in their use.[14]

Vehicle safety

41 As an employer you are required to manage vehicle activities to ensure the safety of your staff and people who visit your zoo.[15] Accidents resulting from the use of vehicles in workplaces include:

- vehicles colliding with staff or visitors;
- vehicles reversing into staff or visitors;
- vehicles colliding with buildings or animals, especially large ones;
- vehicles overturning.

42 Vehicles used in a zoo include:

- tractors, with or without trailers;
- lift trucks and other types of mechanical plant;
- delivery, patrol or other utility vehicles; and
- cars and coaches in visitor car parks.

Vehicle operators

43 For the safety of vehicle operators:

- ensure vehicles used are suitable for the tasks and terrain;
- ensure vehicles are properly maintained;
- fit warning devices and roll over protection where necessary;
- ensure vehicles have appropriate visibility;
- consider staff training needs and action as required.

Procedures

44 Establishing procedures will enhance safety:

- ensure that staff only drive vehicles for which they are authorised;
- provide adequate supervision, particularly when the public are present;
- provide supervision and suitable warnings during reversing operations;
- ensure vehicles are parked safely;
- remove keys to prevent unauthorised use;
- exclude the public and unnecessary staff from areas where difficult operations cause unacceptable risks;
- provide warning and advisory signs where appropriate to reduce danger.

Traffic routes

45 Since traffic routes in zoos can sometimes be very narrow, and may also involve steep inclines and tight bends, it can often be difficult to keep vehicles and pedestrians segregated. A suitable risk assessment will identify what you need to do to prevent workplace transport accidents and should consider:

- the establishment of separate vehicle and pedestrian routes;
- the removal of obstacles where possible, including vegetation, which can cause a reduction in visibility;
- the provision of mirrors on tight bends and at difficult junctions;
- the suitability of the roadway surface;
- the provision of adequate lighting to deal with poor weather and darkness;
- the installation of barriers;
- clearly visible crossings where pedestrians can safely cross traffic routes;
- the layout of traffic routes to minimise the need for vehicles to reverse.

Movement of animals

46 Moving animals, whether within the zoo or to a destination outside the zoo, is a hazardous operation. Even with experienced staff, it will be necessary to identify hazards specific to the particular operation. Hazards will vary depending on whether or not the animal is in a conscious condition when moved. While animal handlers will be concerned for the welfare of the animal, it is important to ensure the safety of staff. Factors to consider include:

- the condition, size and type of animal, and its potential behaviour if conscious;
- its potential behaviour if it becomes conscious during handling;
- site conditions at the point from which the animal is to be moved, and the location it is being moved to;
- how it is to be moved;
- the route along which the animal is to be moved;
- the number of competent and appropriately trained staff required to do the job safely;
- the availability of appropriate and properly maintained equipment, including capture equipment, nets, firearms, lifting/handling aids etc;
- whether or not the operation should take place while the public is present.

47 Where practicable, manual handling should be avoided. If manual handling cannot be avoided, it should be kept to a minimum by staff that are appropriately trained and supervised, with the emphasis on planned teamwork and use of handling aids.

48 Equipment that should be readily available for such work includes:

- suitable lifting equipment;[16–17]
- suitable crates or transit cages;
- suitably adapted vehicles.

49 Transport must comply with the Welfare of Animals (Transport) Order 1997 which governs the transport of all vertebrate animals (see Appendix 1, paragraph 63). Capture techniques must take into account the likely behaviour of the animal in order to minimise the risk of injury to either animals or handlers. Animals likely to cause danger must be kept secure at all times.

50 Immediately before the move, the transit route and the destination should be cleared of obstructions and checked for safety. Where necessary, other personnel and the public should be cleared from the area.

Violence at work

51 HSE defines violence to employees at work as: ‘any incident in which a person is abused, threatened or assaulted in circumstances relating to their work’.[18]

52 It is important to recognise that the above definition covers verbal threats and abuse as well as physical assault, whether it is by members of the public, pressure groups or someone at work (adult/adult or adult/child). Every reported incident should be treated seriously as even minor incidents may escalate if something is left unaddressed.

53 Some incidents may occur outside a zoo’s perimeter but will still be work related. For example, staff may face adverse public reaction when taking animals to

an outside event. It is important that managers are aware of all possible instances where work-related violence might take place. Managers with employees in high-risk positions could consider seeking advice from the crime prevention officer at their local police station.

54 You should carry out a proper assessment to see if anyone could be at risk. Include all staff but particularly:

- staff who handle money;
- keepers;
- delivery staff;
- security staff;
- car park attendants; and
- new employees.

55 Ask staff, through managers or supervisors, if they ever feel, or have been, threatened. Use a questionnaire if that helps, or consult safety representatives. Try to discover incidents that have not come to your attention and endeavour to keep your staff informed of such incidents.

56 Have a clear and defined policy statement detailing actions to reduce the potential for violence at work. A successful policy will need the support and co-operation of all employees and should include:

- recognition that prevention of violence at work is important;
- measures for dealing with violence;
- arrangements for consultation and communication with employees;
- formal reporting arrangements (including reporting to authorities where necessary), classifying (eg injury, distress, emotional shock, work absence) and recording all incidents;
- assurance of full support for any employees suffering violence at work and arrangements for aftercare;
- an investigation procedure;
- training for employees on violence at work issues, eg recognising it, diffusing aggression, dealing with the potential impact;
- training for managers and supervisors;
- arrangements for assessing job design and the work environment; and
- arrangements for monitoring and review.

Building works, repairs and maintenance

57 Whenever building works, eg building or renovating enclosures, are to be carried out or when existing parts of the zoo are undergoing maintenance, new hazards will be created.[19] These may have a bearing on the safety of the animals, the visitors and particularly, zoo employees (see Appendix 1, paragraphs 19-21). In addition, building work might create an aid to animal escape. For example, hazards may be associated with the following:

- interface between tradesmen and animals;
- vehicle movement;
- public access to building works;
- plant and equipment stored and in use;
- materials and substances being used;
- movement and placing of construction materials; and
- site conditions.

58 When examining site conditions, special attention should be paid to identifying pre-existing hazards such as asbestos, old paintwork containing lead, and buried services in walls and underground. Your risk assessment will identify if health surveillance is required (see paragraphs 146-147). There are specific requirements for the safe removal and disposal of asbestos which, in most cases, must only be carried out by licensed contractors.[20–21] There is also a specific duty to manage the risk from dermatitis.[22]

59 Accidents associated with site conditions frequently result from lack of knowledge, inexperience and failure to co-operate. Everyone working at the zoo should co-operate fully with contractors, so that all hazards can be identified. Proper planning of the work can ensure that risks are minimised. You have a responsibility to make the contractors aware of zoo-related hazards, clearly identify safe practices, and ensure that they are followed. It is good practice to appoint a suitable person to act as the link with contractors on health and safety matters.

60 In some situations, zoo employees may carry out elements of the work or may be used to supplement, or work alongside, the contractor's workforce. Only properly trained and appropriately skilled employees should be used, and the limits of their work should be clearly set out. Particular attention should be paid to work involving:

- access into animal enclosures;
- the use of equipment, eg hand-held power tools;
- the use of mechanical plant, eg excavators, lift trucks, hoists;
- work with materials, eg adhesives, paints, timber preservatives; and
- electricity[23, 24] or gas.

61 All work equipment ranging from hand-held tools to lift trucks should be maintained so that they are safe to use and, if necessary, inspected at regular intervals by a competent person. Lifting equipment such as hoists should be thoroughly examined before each use by a competent person.[25]

62 For work to be carried out near greater risk species, permits to work systems and procedures may be appropriate for all or part of the works. Consideration should be given to relocating the animals temporarily. The use of permits to work may also be applied to particularly hazardous elements of the work to be carried out in public areas.

Control and use of firearms

63 Firearms and/or dart guns/blowpipes will be needed wherever there are hazardous animals whose escape or uncontrolled movement would represent a high risk to employees or members of the public. If your zoo possesses or requires such equipment, you will need to consult with the police, as all firearms must be licensed. You will also need to keep in touch with the police to ensure your procedures are up to date.

64 It is essential that firearms and ammunition are readily available but, at the same time, kept secure in accordance with police licensing requirements. In drive-through enclosures containing dangerous animals (see dangerous animals categorisation in Appendix 12 of the *Secretary of State's Standard of Modern Zoo Practice*[1]) where they are needed at all times, specifically authorised people should be in charge of them.

65 Firearms and dart guns must be properly maintained, cleaned and tested. It is recommended that external specialists should examine them periodically and that firearm testing and examination is recorded.

66 Staff licensed to use firearms or dart guns must be given proper training and undertake practice exercises in their use. Refresher training and assessment is essential. Particular attention should be paid to employees' ability to make the right decision in the presence of members of the public, and the training should reflect this. The advice of firearms trainers recommended by the police should be sought in this matter. Practice exercises will help to test the efficiency of control measures. You should ensure that sufficient staff are authorised and trained to use firearms, to provide cover for absences or complex situations (see section 8(20) of the *Secretary of State's Standard of Modern Zoo Practice*[1] and British and Irish Association of Zoos and Aquariums (BIAZA) guidelines in Further reading).

Communication systems

67 Communication systems are important in zoos, particularly in larger establishments or those containing dangerous animals where employees may find themselves working alone in remote, confined or difficult situations. Zoo staff must be able to be contacted when there is a need to:

- communicate during an emergency situation, eg fire, animal escape, threats, accident;
- summon assistance, particularly in the case of vulnerable employees or those working alone;
- report a serious maintenance matter requiring urgent attention; or
- stop a work activity, where a serious uncontrolled risk has been identified.

68 Communication by radio in these situations is important and you should assess the need for such a system. The use of public address systems may also form part of the communication system. If so, checks should be made that announcements can be heard throughout the zoo. Mobile phones can be useful for routine communication, but the potential for network restrictions limit their effectiveness in major emergencies. Where a radio system is to be used, the following may be needed and should be incorporated into employee training:

- instructions regarding appropriate and inappropriate use of the communication system;
- daily and ongoing checks to ensure that the equipment is working correctly, including the adoption of a battery-charging regime;
- tests to ensure that the equipment operates in all areas;
- appropriate controls when working close to animals, eg volume control and hands-free capability; and
- the use of coded instructions/information when the message content, if overheard, could potentially cause undue public alarm or panic.

Diving activities

69 Many zoo establishments have large pools, tanks and aquaria. Their maintenance or repair and the cleaning of glazing (viewing panels) may sometimes involve diving in closed artificial environments. Apart from these maintenance activities, you may employ divers for a range of other activities, for example, underwater demonstrations or displays, scientific research, media work etc.

70 You must ensure that the site is safe to use. You must also highlight any known hazards or difficulties that could affect the safety of the diving project[26] such as underwater obstructions, water intakes or discharges, and possible contamination (see Appendix 1, paragraphs 24-26). Diving projects undertaken in zoos would normally fall within the category of 'benign conditions' according to the law. There may be exceptions. Diving in benign conditions is defined in Diving Information Sheet No 8.[27]

71 Routine maintenance, repairs and cleaning may under certain circumstances be carried out by local sub-aqua groups. If the diving is carried out by a person for recreational[28] purposes, while not at work, this would come under the remit of recreational diving and the Diving at Work Regulations 1997 (DWR) would not apply. Instead, section 3 of the HSW Act would apply. You are therefore responsible for ensuring that a suitable risk assessment has been prepared before the start of the dive. Normally, the same duty of care as required by the DWR Regulations would be expected.

Young people and volunteers

72 The Education Act 1996 and the Education (Scotland) Act 1980 place limitations on the type of work that school students can do on a placement. In this section, a **young person** is someone who **has** reached the minimum school leaving age (MSLA) of 16 but is still under 18 years of age.

73 A **child** is someone who **has not** yet reached the MSLA. Your local education authority can give you further details.

74 Zoos can employ young people or offer them work experience as students or volunteers. You do not need to get parental consent to employ a young person.[29] Children under the age of 13 **cannot** be employed in a zoo. Older children (14-15) may be employed to do certain work, but their duties and hours of work are strictly controlled, often through local by-laws. You have to register such employment, normally with your local education authority where you will obtain the advice you need.

75 Children (14-15) may also work with you on work experience placements. This will be under strictly controlled circumstances following a specific risk assessment. Work experience arrangements must not involve children or young people working in ways that are specifically prohibited for young people under the age of 18 years, eg working with dangerous machinery or high-risk lifting equipment.

76 Zoos attract volunteers of all age groups, however it should be noted that the HSW Act provides the same protection for volunteers as it does for employees.

77 Further guidance regarding young people and volunteers can be found on the HSE website at:

- www.hse.gov.uk/voluntary/index.htm
- www.hse.gov.uk/youngpeople/index.htm

78 The Working Time Regulations 1998 (as amended) apply to students on work experience placements. The Department of Trade and Industry's booklet *Your guide to the Working Time Regulations*[30] explains the requirements relating to hours of work, periods of rest and annual leave, and has particular provisions for young people.

Working with animals

79 It is well recognised that there are a number of hazards associated with working with any animals, for example:

- zoonoses (diseases transmitted from animals to humans – see paragraphs 148-149);
- the risk of injury from an animal; and
- failing to observe other hazards that could cause slips, trips or falls.

80 The risk of injury from an animal may result from:

- the size and power of the animal, or the species in general;
- the natural group instincts of the animal and hierarchical behaviour;
- the predatory nature of the animal;
- the reaction of humans and animals to fear; and
- the fact that some animals are equipped to kill/injure.

81 The practice of keepers working in direct contact with animals must have regard to the 'Hazardous Animal Categorisation' set out in Appendix 12 of the *Secretary of State's Standards of Modern Zoo Practice*.[1] This is an important part of the Standards which must be read and fully understood.

82 It should also be noted that individuals and groups of animals may have peculiarities which, dependant on their age and sexual maturity, will be relevant in determining the safety of close-contact working. See also the *Management Guidelines for the Welfare of Zoo Animals* produced by the British and Irish Association of Zoos and Aquariums (BIAZA) (formerly known as The Federation of Zoological Gardens of Great Britain and Ireland) relating to (1) elephants and (2) poisonous or venomous reptiles, amphibians, fish and invertebrates (see Further reading).

83 Categorisation of animals according to likely ferocity and ability to cause harm to people in proportion to risk levels are shown below:

Category 1 **Greater risk:** where contact is likely to result in serious injury or threat to life, eg large carnivores, primates and venomous snakes etc.

Category 2 **Less risk:** where contact may result in injury/illness but would not be life threatening, eg medium-sized mammals/primates and some bird species, including birds of prey.

Category 3 **Least risk:** includes those animals not listed in Appendix 12 of the *Secretary of State's Standards of Modern Zoo Practice*[1] under the above categories, eg smaller mammals, birds and some reptiles.

84 There are, however, many animals where current knowledge/experience in captivity is lacking and therefore the zoo operator should adopt the risk assessment principle prior to their handling. Additionally, there may be animals included in this category that have caused injury, or are likely to cause injury or transmit disease. These should be treated as if they were in Category 1.

85 To ensure that risk of injury to keepers from animal contact is as low as reasonably practicable, general principles should be followed for each category.

86 Zoo operators should adopt a non-contact policy for animals in **Category 1**. Exceptional circumstances might be where:

- there is minimal risk because of the age of the particular animal;

- contact is essential for veterinary reasons;
- the animal has been tranquilized or anaesthetised; or
- the animal has been rendered harmless by some other appropriate means, eg crush cages.

87 Many animal handlers consider that 'training' an animal, in its various forms, can render potentially harmful animals 'harmless'. In the light of current contradictory evidence, zoo operators should reconsider this practice as part of their risk assessment.

88 Specific and valid reasons must exist before contact between a person and an animal with the potential to kill or inflict serious injury is permitted. Matters that must be taken into account before considering such a work method would include:

- the existence of a safer method of work that would result in equal or near equal benefits;
- whether exposure to the risk created by the permitted level of contact is justified by benefit to the animal or to the keepers' work with the animal.

89 Contact may be allowed between **Category 2** and **3** animals and a keeper, so long as:

- there is adequate training and supervision;
- there is full awareness of zoonoses (implications and necessary controls); and
- the peculiarities of individual animals are assessed.

90 With all animals the decision to allow 'hands on' contact must not be left to individuals' own personal preferences, but should be part of a very clear organisational policy, with absolute limitations and controls. This is particularly important for animals in Category 1 as:

- the risk of serious personal injury is high;
- the outcome of the injury is potentially serious, often fatal;
- the effective provision of personal protective equipment is questionable; and
- attempted rescue in an emergency may lead to others being placed at equal or greater risk.

91 Where a zoo has demonstrated a valid reason to adopt a policy encouraging contact with Category 1 animals, a very detailed risk assessment must be carried out. The controls identified must consider the following aspects:

- the suitability of the contact area, looking particularly at space, visibility, obstructions, surface hazards, cover and provision of refuge;
- awareness, training, and general suitability of the relevant employees;
- the age, size, demeanour and character of individual animals at the time any permitted contact commences;
- the potential for hierarchical challenges that could affect the safety of such contact;
- the need to establish and demonstrate an acceptable relationship between the animal and keeper;
- limitations of the keepers and animals to be included in the work system;
- keeper/animal ratios during contact;
- determining and controlling potentially unsafe activities, eg play fighting, cleaning, maintenance etc;
- the provision of personal protective equipment;
- the need for supervision and control, which might include permit-to-work schemes; and
- the use of back-up personnel and warning/rescue systems.

92 These controls must be reviewed regularly to ensure that the risks associated with the contact are adequately supervised. Management must at all times be on the lookout for bad practices which might increase the risks, and be particularly aware of the potential for personality changes in both employees and animals which might make the practice unsafe. In such cases remedial action, which might include prohibiting further contact, must be taken (see BIAZA publications in Further reading).

Permits to work

93 Some work activities, eg entry into certain enclosures of hazardous species or entry into confined spaces, have the potential for serious consequences. In such circumstances the introduction of a permit-to-work scheme can be used to control these activities.

94 Typical examples of work activities where the introduction of a permit-to-work scheme may be appropriate are:

- where a person enters the enclosure of an animal from Category 1, 2 or 3 and/or where unfamiliarity may lead to a significant risk;
- where maintenance work etc has to be carried out on or close to the barrier enclosing a hazardous animal;
- where external contractors or anyone unfamiliar with the animals may inadvertently enter an enclosure containing venomous snakes or large carnivores;
- where work will include the use of firearms, tranquillizer guns or hazardous veterinary products;
- the application of pesticides; and
- the use of certain types of plant and equipment, particularly in public areas.

95 Risk assessments covering greater risk species should specify what control measures are required prior to a keeper entering an enclosure, eg:

- doors, gates or crush facilities used for the isolation of high-risk animals must be of adequate strength and be capable of being operated from outside the enclosure. Also, self-locking gates should be fitted to ensure keepers can make a rapid escape from the enclosure;
- the use of an effective system to check that the animals have been isolated prior to a keeper entering the enclosure. At the end of the work session, similar checks must be made to ensure that all employees have left the area before the animals are released from isolation.

96 Wherever venomous species are kept, you must ensure the availability of 'in-date' anti-venom, either at the zoo or local hospital. This should be audited at least annually using procedures agreed with the local health protection unit of the Health Protection Agency. It is important that sufficient accurate information is prepared and readily available for use by paramedics and the local hospital in the event of a bite or sting to an employee or a visitor to the zoo. Regular liaison should be made with local medical services to ensure that they know which venomous animals are kept at the zoo, and there are procedures in place for dealing with emergencies. It is up to you to check that they have these procedures in place. See also Appendix 8 of the *Secretary of State's Standard of Modern Zoo Practice*[1] and BIAZA guidance on poisonous animals (see Further reading).

Public contact with animals

97 Zoos are increasingly removing animals from the conventional caged environment in an effort to improve animal welfare and the visitor experience. Animals are also moved for promotional purposes or for film work. Closer interaction with animals, however, may present risks of injury and infection to the public and/or cause stress to the animals.

98 The means by which the public view animals is also changing with the introduction of:

- walk-through enclosures;
- drive-through exhibits where animals are displayed in more natural habitats;
- touch pools;
- educational contact sessions; and
- children's animal contact areas.

99 Direct contact between the public and animals, and dangerous animals in particular, must not be permitted unless the zoo operator is satisfied that such animals are not, when under control, likely to cause injury or transmit disease. This should be decided on an individual case basis only after a comprehensive risk assessment has been carried out. There should be controls in place and a set of procedures to ensure that risks to the public are reduced to an absolute minimum. Where hazardous animals are permitted out of their enclosures, or the public allowed in, a sufficient number of authorised and experienced employees must accompany the animals in order to maintain proper control of any foreseeable situation (see Appendices 6 and 12 of the *Secretary of State's Standard of Modern Zoo Practice*[1]).

100 Members of the public who feed animals or handle animals in contact areas may be exposed to zoonotic infections. These range from common infections such as Salmonella found in reptiles and tortoises through to rare viruses like Herpes simiae or Ebola (both found in monkeys). You must ensure that the public is aware of the risks and adequate facilities are provided for them to wash their hands after contact. Where contact between the public and animals is planned you must:

- assess the risks to human health and decide on appropriate control measures;
- inform members of the public of the risks. Consider doing this by a variety of means, eg:
  - on feed bags;
  - in zoo brochures and on information sheets;
  - by notices at admission gates and in contact areas;
  - by prominently displayed signs and pictures; and
  - supervision by zoo employees.

Note: Remember that children are most vulnerable (and some may not be able to read).

- Provide adequate facilities for hand washing, with hot and cold (or controlled warm) water. Soap should be provided for members of the public to wash. Anti-bacterial soap is particularly effective. Anti-bacterial dry gels/sprays may also prove effective where it is not possible to provide proper hand washing facilities. Washing facilities must be provided within areas where food and drink are likely to be consumed and also close to the point of animal contact as this will add a further control should children put their fingers in their mouths.
- Exclude animals from areas where food and drink are consumed.

101 Where pre-arranged groups are catered for, particularly schools and playgroups, it is advisable to send advice to the organisers well before their visit so that they have the opportunity to prepare.[31]

Containment of animals and escape prevention

102 Animals kept at zoos must be effectively contained in order to protect staff, visitors to the zoo and people outside the zoo. Even 'least risk' animals can become a safety hazard should they escape from the zoo.

103 Containment will normally take the form of an outer perimeter boundary enclosing the entire zoo, in addition to:

- cages within the zoo;
- fenced, walled, moated or ditched paddocks (enclosures);
- tanks;
- vivaria; and
- pools.

The zoo perimeter

104 The perimeter boundary of the zoo, including all entry and exit points, should be appropriately designed, constructed and managed to prevent, so far as is reasonably practicable, both the escape of animals and the entry of unauthorised people.

105 Where access points are normally unattended (eg service gates) consideration might be given to providing:

- automatic closure mechanisms;
- CCTV surveillance;
- an alarm system; and
- warning notices to the public.

Animal enclosures

106 The enclosures must be designed, constructed and maintained so animals can be effectively contained to prevent their escape. Where the zoo has free-running animals, this may well be the perimeter fencing of the zoo. At the same time, the enclosure should be constructed to minimise the chance of unauthorised people gaining entry. Where moats are used to prevent escape, rescue equipment should be readily available in order to retrieve anyone falling into the enclosure. Staff must be trained to use any such equipment.

107 The design and construction of enclosures must take full account of the risks associated with the strength, ferocity and other characteristics associated with the particular animal. Specific provisions will need to be made for animals that are capable of jumping, climbing or burrowing, eg:

- a roof of adequate strength over the entire enclosure;
- fencing of appropriate height, which may include internal overhangs for additional security; or
- downward extensions into the ground coupled with horizontal returns, of adequate width, back into the enclosure.

108 Sections of electric fence may be used in certain circumstances where the risks associated with its use can be effectively controlled.

109 Where contact between animals and the public through an enclosure may result in serious injury, then outer stand-off barriers should be provided. These should be:

- at an appropriate distance from the enclosure;
- designed so as to discourage people, especially children, from climbing;
- of adequate strength and securely built; and
- fitted with locked gates at staff entry points.

110 Stand-off barriers may also be appropriate in off show areas so as to prevent close contact by staff or other people such as contractors etc.

111 In selecting materials for the construction of enclosures, particular consideration must be given to:

- the ability to withstand repeated wear and attack by animals;
- durability in all weathers;
- access in order to check for any signs of deterioration, eg rusting and corrosion, especially below ground level;
- access for effective and safe cleaning; and
- the need, for safety reasons, to be able to see clearly into the enclosure.

Gates and doors

112 Gates and doors to enclosures must be effective in containing the animals. Any door or gate to which unauthorised people/personnel may gain access must be securely locked. The design and operation must also permit safe entry and exit by employees, including any tools or equipment they may need to carry. Normally, an internal and external door or gate would be provided to minimise the risk of an animal escaping. The design should allow for any lock, latch or bolt to be easily operated from the inside. The inner door to the enclosure should be kept closed when workers are in the enclosure, and should be hung to make it open inwards into the enclosure to avoid closing it against the weight of an animal.

113 Gates or doors that are mechanically operated need to be well maintained to ensure effective operation.

Routine entry into animal enclosures

114 Zoo employees enter animal enclosures for feeding, cleaning, alterations and maintenance etc. People are also likely to enter areas where animals are under quarantine or isolated in order to carry out health checks. Even species which are not normally aggressive,* may be a risk to keepers because of:

- the bulk of the animal;
- the general health of the animal;
- the speed of its movement;
- the temperament of the animal;
- the infectious agents they may carry;
- numbers of animals in the group/colony; and
- the natural social activities of the species, particularly during feeding, breeding etc.

*Note: See Further reading for BIAZA guidance on elephants.

Features and hazards within enclosures

115 Animal enclosures often feature enriching elements to improve the welfare of the animals. These may take the form of:

- play equipment;
- cover and hides;
- water features, including waterfalls and pools.

116 Animal play features, shelters and planting may result in potential hazards such as:

- increased risk of slips, trips and falls;
- entrapment;
- difficulty in witnessing any accidents;
- the possibility of delay in any accident being discovered;
- difficulty in observing the presence or behaviour of animals.

117 Risk assessment will determine which hazards can be eliminated or reduced by design, and which will require controls in the work systems.

118 Enclosures should be kept free from any vegetation or other structures which could aid the escape of animals.

The use of glass in enclosures

119 Viewing panels used in enclosures must be able to withstand attacks by animals etc. Where glazing is subjected to extreme or repeated force, eg by gorillas, this may require appropriate (eg 25 mm) ballistic glass. The framework supporting the glass must be of sufficient strength and durability. Where glass is used it must be marked or incorporate design features so as to make it clearly visible.[32]

Enclosures for venomous species

120 Venomous species should generally be kept in solid walled and roofed enclosures. Any ventilation or drainage system must be designed to prevent escape.

121 Alternatively, an open-topped enclosure may be used provided that:

- walls are of sufficient height and suitably surfaced to prevent escape;
- the design does not allow people to reach in and make contact with the animals;
- walls and any stand-off barrier prevent people climbing and falling in; and
- sufficient, clear warnings are provided.

122 Access to any enclosure containing venomous species should incorporate an outer chamber fitted with an inner and outer door designed to prevent escape of the species. Both doors should be kept locked. The inner chamber must be clearly visible from all areas in the outer chamber, and vice versa. Care should be taken in the design of the enclosure, outer chamber and service areas to avoid concealment of venomous species.

Large drive-through enclosures

123 A number of zoos have brought the public into closer contact with the animals by providing drive-through enclosures, surrounded by a perimeter fence or similar. Entry and exit is controlled by the provision of gates, which may be manually or mechanically operated. As well as animals being present in the enclosure, there may be teams of employees carrying out maintenance work. Your risk assessment will need to cover the following topics.

Vehicle emergencies

124 You should have arrangements in place for the safe recovery of broken-down vehicles and their occupants or people who have otherwise run into difficulties. These should include instructions on how to summon assistance. Particular consideration must be given to the rescue of people who may need to leave their vehicle, for example in the event of fire. Patrol vehicles will need to be able to accommodate them.

Monitoring visitors and animals

125 You will need adequate vehicle-based patrols, all in radio contact, to monitor the visiting public and to maintain awareness of the location and behaviour of the animals. The patrols' duties might also include preventing animals from gathering around the entry and exit gates. The vehicle should be designed to give adequate protection to the driver and passengers.

Working in large enclosures

126 Routine maintenance and other works in large enclosures require particular attention, especially where there are workers in the team who do not have specialised knowledge of working with animals. A safe system of work must be provided. The team should work from a vehicle which is of adequate size and capable of withstanding animal attack. Workers should remain close to the vehicle at all times. A lookout should remain with the vehicle to watch for any approach of animals that might pose a threat. Where ground features might obstruct the view of the lookout, further lookouts should be provided in order to ensure early warning of danger. The lookout should be provided with the following:

- a means of warning employees of approaching danger, eg an air horn or whistle;
- a means of communication for summoning assistance; and
- where appropriate, firearms.

127 In larger working teams a headcount of employees on completion of the task might be needed to ensure that everyone is accounted for (see Appendix 6 of the *Secretary of State's Standard of Modern Zoo Practice*[1]).

Entry and exit gates

128 The gates controlling entries and exits from large drive-through enclosures should operate safely. In a busy zoo, the operation might be performed mechanically by trained employees who would need:

- a safe, protected workstation from which to operate the remote control of the gates. This should allow good visibility of the area surrounding the gate;
- protection from adverse weather conditions;
- easy access to drinking water and sanitary accommodation;
- a visible waiting area for vehicles, clear of vegetation and obstructions which could potentially assist animals in an attempted escape;
- an appropriate means of communication to report danger and summon assistance;
- a system to ensure that the gates can be operated safely in the event of mechanical or power failure.

Veterinary procedures

129 Veterinary surgeons and employees involved in the preventative and curative care of animals must have regard to the *Secretary of State's Standard of Modern Zoo Practice*,[1] in particular section 2 (3) and Appendix 5 (Veterinary Facilities).

X-rays and radiography

130 The Ionising Radiations Regulations 1999 (see Appendix 1, paragraph 40) apply in zoos where X-rays, accelerators or other radiography is used. These require that exposure is kept as low as reasonably practicable and does not exceed specified dose limits set out in the Regulations. Further advice is found in *Ionising Radiation Regulations 1999. Approved Code of Practice and guidance*.[33]

Storage and use of drugs

131 All drugs, vaccines and other veterinary products should be kept in a locked and secure place. Only authorised people should have access to these items. Where there is a necessity to store chilled or frozen products, a refrigerator or freezer must be dedicated to this purpose and kept locked and secured. You should not use facilities used for animal or human food. You should also make arrangements for the disposal of out of date/unused veterinary products. This should be discussed initially with your veterinary surgeon.

132 The use of veterinary drugs must be under the direction or direct supervision of a veterinary surgeon. Only authorised people should have access to these products and be permitted to administer veterinary prescribed drugs or any other drug or medication.

The use of injected drugs must take into account risks associated with:

- the use of sharp instruments;
- the potential effect of unintentional injection of the drug into the person administering it or their assistant; and
- the availability of antidotes.

133 Agreed procedures should be followed and, preferably, documented. For example, the antidote for a drug should be available for use prior to the priming of a syringe with the drug if there are possible harmful effects on humans. Used syringes and needles must be placed in a suitable, clearly marked ‘sharps box’ container and disposed of appropriately as clinical waste. At no time should they be left in any place where other employees or members of the public could reach them.

134 If syringes, darts or other containers are pre-filled in advance of a procedure, they should be properly labelled showing their contents, concentration and date.

135 Zoo licensing conditions require records of treatment for animals. It is suggested that records include information on relevant health and safety-related matters to assist you in reviewing your risk assessments.

136 Supplies of antidotes for potentially toxic products used at the zoo must be held either at the zoo (where immediate use is essential), or at a local hospital or GP’s/doctor’s surgery. These arrangements should be recorded and reviewed as necessary, particularly when new drugs are introduced. Information sheets to aid treatment should be readily available. Further advice is available from the National Poisons Information Service (see Appendix 2).

137 It is vital that veterinary surgeons and people authorised to assist them are trained and aware of the health and safety implications of their work. Co-operation is essential to ensure that all procedures are carried out with minimum risk to those involved.

Health issues

Occupational health

138 Health problems can develop unnoticed over time, unlike the immediate effects of an injury. Knowledge and awareness of potential hazards can reduce the likelihood of work-related ill health.

139 Occupational ill-health problems in zoos can be caused by any, or a combination, of the following:

- exposure to harmful substances;
- inhalation of harmful particles;
- poor working practices such as excessive or inappropriate manual handling;
- environmental factors, such as noise, poor light or cramped working conditions; and
- diseases transmitted by animals.

140 The relevant legislation is the Control of Substances Hazardous to Health Regulations 2002 (as amended).[34] The key emphasis of the amendment is to implement and maintain effective control measures (including systems of work and training) to reduce exposure to hazardous substances.

141 Occupational ill health can lead to years of pain and suffering, resulting in sickness, prolonged absence from work and, in some cases, early retirement. Yet occupational ill health is preventable and if zoo operators can reduce ill health, they also reduce operating costs. Long-term sickness absence has a devastating effect on the productivity of business as well as the well-being and employment prospects of workers.

142 HSE supports a best practice approach to managing sickness absence and return to work.[35, 36]

143 An effective management system is recommended to ensure sickness absence is recorded and appropriate action taken to help and support employees, both in work and returning to work. This could benefit both employers and employees in the following ways:

- reduced costs;
- maintenance of or improved productivity to meet performance targets;
- reduced need for agency workers;
- reduced recruitment and training costs;
- enhanced organisational reputation;
- compliance with aspects of the Disability Discrimination Act 2005 (DDA) and the HSW Act;
- improved workplace relations;
- managed demands on those at work;
- by safeguarding the livelihood of employees and the community.

144 Effective management of sickness absence and return to work allows managers to identify causes of ill health in their workforce and focus their attention on areas where revision to risk assessments, increased implementation of control etc may be necessary. It can also promote attendance and reduce time lost on individual instances of ill health, as well as supporting employees during their return to work.

145 Occupational health professionals can help employers with the identification and implementation of reasonable adjustments for disabled employees either returning to or remaining in work. This will help employers to comply with the requirements of the DDA.

Health surveillance

146 Your risk assessment will identify circumstances in which health surveillance[37] is required. The relevant regulations under which this may be required are:

- Control of Substances Hazardous to Health Regulations 2002 (as amended) (COSHH);
- Ionising Radiations Regulations 1999;
- Control of Vibration at Work Regulations 2005;
- Control of Noise at Work Regulations 2005.

147 Health surveillance under the COSHH Regulations 2002 (as amended) requires that individual health records must be retained and maintained for at least 40 years. The health record is a legal requirement as described in the Regulations. It is not a 'medical in confidence' record, and should not be confused with medical records that are raised and retained by health professionals.

Zoonoses

148 Animals have the potential to transmit diseases to humans. These diseases are known as zoonoses.[38] Even where the animals appear disease-free, their health status should be established by regular veterinary examination to identify latent infection or carriers, ie infected animals showing no symptoms. In the normal course of their work, zookeepers and other employees are likely to be exposed to a variety of zoonotic infections (see paragraph 164 for examples of common zoonoses).

149 Visitors to zoos can also be exposed to zoonoses, particularly if they feed or handle animals. Children and the elderly are especially vulnerable. Zoo operators need to take special precautions to reduce the risk of visitors being infected. Such precautions should include the isolation of sick or suspect animals.

150 Zoonoses are biological agents.[39, 40] This term is defined in the Control of Substances Hazardous to Health Regulations 2002 (COSHH) (as amended) as 'micro-organisms which may cause infection or otherwise create a hazard to human health'. These Regulations require you to carry out an assessment of the health risks from all hazardous substances, including biological agents, in order to protect your employees and visitors[41] (see also Appendix 2 of *Infection at work: Controlling the risks*[39]).

151 Illnesses contracted at work are normally notifiable under the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995 (RIDDOR). Schedule 3 to these Regulations lists the specific diseases, caused by biological agents, which must be reported. These include:

- anthrax;
- brucellosis;
- avian and ovine chlamydiosis (psittacosis);
- leptospirosis;
- rabies;
- tuberculosis; and

- any infection reliably attributable to work with animals or any potentially infected animal material.

152 Assessments of work with animals should take account of the uncertainties relating to the presence of infectious agents in the animals concerned. Risk of infection may come from animal tissue, faeces, body fluids, bedding etc, and each source must be covered in the assessment. Your assessment should consider:

- the biological agent that may be present;
- what form it takes;
- the diseases it may cause;
- how it is transmitted;
- the likelihood of exposure and consequent disease, including the identification of workers who may be particularly susceptible, eg pregnant women and individuals who are immunocompromised;
- the control measures to be applied;
- the provision of information to employees and the use of medical contact cards (see paragraph 156); and
- the need for monitoring procedures including health surveillance (see paragraphs 146-147).

Controlling exposure to zoonoses

153 If the risk assessment shows that there is a risk of exposure to zoonoses for which effective human vaccines exist, then vaccination should be offered unless your employees can demonstrate that they are already immune, eg the BCG vaccine for bovine tuberculosis. Vaccinations must be offered free of charge and the employees fully advised of the advantages and disadvantages. If an employee refuses a vaccination, the responsibility for their health and safety still remains with the employer. This may have the result of restricting the work activities of that employee if the vaccination was identified as a control measure.

154 Immunisation should only be seen as a useful supplement to reinforce work controls and the use of personal protective equipment. Vaccination should never be seen as the primary or sole protective measure.

155 It is advisable to medically screen new employees as this could identify their immunity status. This may also indicate existing conditions that would make employees more vulnerable to infection.

156 Monitoring the health of employees likely to be at risk will help detect occupational illnesses. This should include investigating sickness absences. Providing information to your employees that includes an explanation of the symptoms of infection will encourage them to monitor their own health. Providing employees with medical contact cards outlining the nature of their work would help their own doctors to make an early diagnosis. Employees' health records require to be kept for 40 years.

157 When an animal has died in a zoo, care should be taken in handling the body. Any post-mortem examination and disposal of remains must follow agreed safe procedures (see paragraphs 166-170). Extreme care is needed when handling dead animals used for feeding other animals due to the risk of cross infection. It should be noted that the feeding of culled stock is subject to the Animal By-Products Regulations 2005. You should contact your local DEFRA office (or SERAD in Scotland) if you intend to carry out this practice.

158 To reduce the risk of zoonotic infections, use good animal husbandry techniques which include:

- maintaining good standards of hygiene in animal enclosures and exercising care in the use of water hoses during cleaning, so as to reduce aerosols;
- avoiding contamination of animal drinking water with faeces; regular animal health checks by a veterinary surgeon including worming, skin treatment programmes and vaccination;
- following established good practice when taking blood samples, eg:
  - use vacutainer devices as appropriate rather than needles and syringes;
  - dispose of used needles into a 'sharps box' which conforms to BS 7320: 1990 and;
  - make arrangements for the proper disposal of sharps and other clinical waste;
- avoiding mouth-to-mouth resuscitation techniques on newborn animals - use traditional husbandry methods instead;
- avoiding handling birth products with bare hands;
- disposing of animal waste correctly;
- providing and monitoring the use of appropriate personal protective equipment (see paragraphs 160-162 on PPE); and
- encouraging and following the highest standards of personal hygiene.

Personal hygiene

159 Inevitably, employees will have contact with animal excreta that may contain infectious organisms. Personal hygiene in the zoo environment is not only good practice, but is also a very important control measure in reducing the risk of acquiring zoonotic infections. Controls should include:

- the provision of adequate washing facilities, including running hot and cold or warm water, soap and paper towels wherever employees work with animals;[32]
- ensuring that cuts and abrasions are washed immediately with soap and running hot water (antiseptics should only be used by a trained first-aider);
- ensuring that any existing cuts, abrasions and open sores are covered with a waterproof dressing before starting work;
- ensuring that employees wash their hands regularly and especially before they eat, drink, smoke or use the toilet;
- ensuring employees eat only in designated clean areas;
- training employees to:
  - avoid, wherever possible, any face-to-face contact with animals;
  - keep hands away from the face, in particular the mouth, nose and eyes; and
  - avoid tasting food intended for animals;
- training employees to recognise zoonotic infection risks as well as the necessary control measures;
- the provision and monitoring of the use of protective clothing;
- ensuring that employees clean or change footwear and overalls before leaving animal areas, disinfect footwear if necessary and wash their hands after handling contaminated clothing.

Personal protective equipment

160 Assessments under the COSHH Regulations 2002 (as amended) should always aim to identify controls that will eliminate or reduce exposure to a safe level. There will, however, be activities where the residual risk must be controlled further by the use of personal protective equipment (PPE).[42] Such activities might include:

- cleaning animal enclosures/shelters and disposing of animal waste;
- helping animals with the birthing process;
- handling the products of birth, eg placenta;
- examining animals mouths or carrying out rectal examinations;
- handling tissue or bodily fluid samples;

- preparing dead animals for feeding purposes; and
- handling dead animals.

161 PPE might include overalls, waterproof aprons, steel-capped boots or wellingtons, gloves, gauntlets or chain mail gloves. Face protection, such as masks or goggles, may be appropriate where there is a risk of body fluids splashing into the face, particularly the eyes. Any employee required to wear RPE (respiratory protective equipment) should undergo a face fit test to ensure that it can be worn correctly.

162 Any PPE must be suitable for the intended use and properly maintained. It must fit properly to be effective and to ensure that other risks are not introduced. All new PPE should be CE marked as this proves conformity with European directives.

Information, instruction and training

163 The zoonotic risks associated with working in contact with animals should be included in the ongoing training of all employees. Sufficient information should be given to enable managers and their employees to effectively contribute to the assessment and control of the risks and thereby prevent infections. This should also cover the practical use of procedures, techniques and safety equipment required to control the risk of infection (see section 2(10) and Appendix 9 of the *Secretary of State's Standards of Modern Zoo Practice*[1]). In addition, all employees should be encouraged to report any suspicious symptoms they may have to assist with early diagnosis and infection controls (see paragraph 156).

Common zoonoses

164 Table 1 overleaf lists a few examples of some of the more common zoonoses that may be encountered. It gives brief notes on the likely source of infection, how it is passed to humans (eg directly or indirectly) and associated symptoms of the disease. Infection can be spread by various means, eg viral, bacterial, protozoal, fungal and parasitic.

Where to get health advice and help

165 If you need further advice and your general practitioner (GP) cannot help, try one of the following:

- contact the Employment Medical Advisory Service. They can be contacted through your local HSE office or your local authority;
- employ an occupational health consultant;
- obtain advice on infections and their control from your local consultant in communicable disease control (consultant in public health medicine in Scotland). You can contact them through your local health protection unit of the Health Protection Agency, or your local authority environmental health department can advise you;
- contact veterinary surgeons, particularly zoo specialists, who will also be able to provide guidance on zoonotic diseases. Contact the Royal College of Veterinary Surgeons for a list of zoo veterinarians (see Appendix 2);
- see the DEFRA website for information on avian flu (see Appendix 2).

Dealing with animal carcasses and the disposal of clinical waste

166 When any animal has died, the body should be safely removed to a suitable, designated post-mortem area. Care should be taken in preventing transmission of zoonotic disease. Where refrigerated storage is necessary, this should be in a clearly marked refrigerator which is not used for storing animal or human food. Where possible, carcasses or parts thereof should be wrapped and sealed so as to prevent leakage.

Table 1 Common zoonoses

Source of infection	Transmission	Symptoms in humans
Psittacosis (Ornithosis)		
Disease widespread in caged, wild and exotic birds. Also found in ducks and other forms of poultry. Imports of exotic birds may be diseased.	Usually through inhalation of dust or droplets in the air (aerosols) contaminated by bird faeces or nasal discharge. The organism can survive many months in dry dust. Person-to-person spread has been reported.	Flu-like illness with fever, headache, joint and muscle pains. Can progress to pneumonia, endocarditis and hepatitis. Early detection and treatment normally results in complete recovery.
Ringworm		
Fungal infection, fairly common in farm animal species, especially cattle but also horses, cats and dogs.	Direct contact with infected animals.	Red scaly patches on the skin, hair loss and thickened or discoloured nail.
Salmonellosis		
Found in a diverse range of mammals, birds, reptiles and fish.	Hand to mouth contact with faeces or contaminated objects. Consumption/handling of a range of foods including most meats and eggs.	Diarrhoea, fever, abdominal pain. Occasionally severe and can be fatal.
VEROCYTOTOXIN		
(Vtec) producing E. coli spp		
E. coli O157 is the best known of this group. Found in ruminants, ie cattle and sheep. Also carried by pets, seagulls and other wild birds.	Hand to mouth contact with faeces or contaminated objects. Very low infectious dose.	Diarrhoea, can lead to serious complications, eg renal failure and can be fatal.
Cryptosporidiosis		
Found in faeces of mammals, birds, reptiles, amphibians and fish.	Hand to mouth contact with faeces or contaminated objects. Contaminated drinking water is a recognised source of infection. Consumption of milk from infected animals. Bottle feeding newborn lambs is associated with a high risk of infection. Not eliminated by water chlorination.	Diarrhoea, abdominal pain and flu-like symptoms for one to three weeks but may persist up to six weeks. Illness is common in children aged 1-5 and complete recovery without specific treatment is the usual outcome. The disease is more severe in immunocompromised people and can be fatal.

Source	Transmission	Symptoms
Campylobacteriosis		
The intestines of chickens and turkeys, but also ground water contaminated by farmyard run off or abattoir effluent.	Hand to mouth contact with faeces or contaminated objects. Consumption of infected foodstuffs, either undercooked or contaminated after cooking.	Blood stained diarrhoea, abdominal pain. Condition may mimic appendicitis.
Leptospirosis		
Most severe form known as Weil's disease. Agent that causes the disease is excreted in infected rat urine so exposure may occur in any situation where there is contact with rats' urine, including feedstuffs or material contaminated by rats' urine in storage areas and contaminated water (mainly static water or slow-flowing rivers).	Enters body through abrasions or cuts in the skin and through the lining of the nose, mouth and eyes. The organism can survive for considerable periods outside the host.	Fever, headache, vomiting and muscle pain. It can lead to jaundice, meningitis and kidney failure. Weil's disease is serious and can be fatal in up to 20% of cases. However, the disease is more readily treatable if diagnosed in the early stages.
Ovine Chlamydiosis (Psittacosis)		
Product of gestation from infected sheep and possibly goats. Infected sheep for example, will shed the bacterium along with their afterbirth.	Not known but likely through inhalation of contaminated aerosols and dusts. Pregnant workers should avoid contact with pregnant animals.	Can be asymptomatic but where symptoms occur they are of a flu- like nature with headache, chills, fever, joint pains and cough. In pregnancy, severe systematic illness with renal and hepatic complications can lead to stillbirth or miscarriage.

167 Veterinary staff and their assistants should identify all clinical waste, ensure that it is appropriately stored away from other waste material, and collect and dispose of it regularly in the correct manner. There are legal controls on disposal of clinical waste and your local waste disposal authority (normally your county council or unitary authority) will advise you.

168 Disposal of carcasses and organs following a post-mortem should be carried out as soon as is practicable, and in accordance with the Animals By-Products Regulations 2005 (see Appendix 1, paragraph 59). It is recommended that disposal procedures are documented. The disposal of animal remains is also likely to be subject to regulatory controls made under the Environmental Protection Act 1990 and the Hazardous Waste (England and Wales) Regulations 2005 (separate regulations in Scotland). Disposal by incineration will require permission from the local authority.

169 Contact with animal carcasses introduces the potential for both safety and health hazards, especially for employees who may have to skin or dismember dead animals intended for future animal consumption. Such hazards may be created by:

- infection from zoonoses;
- manual handling of carcasses;
- the use of knives and other hand tools;
- mechanical cutting plant such as band saws;
- mechanical lifting equipment.

170 Effective control will require training in the use of knives and cutting equipment and may require personal protective equipment (PPE), eg chain mail apron and gloves, safety footwear etc.

Work-related stress

171 Stress is defined as 'the adverse reaction people have to excessive pressures or other types of demand placed on them'. Stress is not an illness in itself, but if it is prolonged or intense, it can affect mental and physical health and well-being. It should not be confused with the beneficial challenge resulting from reasonable levels of pressure.

172 Stress accounts for a large proportion of working days lost each year. It affects many people, even those who are apparently content in their work. If the risks associated with work-related stress are not identified or appropriately controlled, they can lead to reduced work capacity, poor standards of work and prolonged periods of absence from stress-related illness.

173 Employers have a duty to assess the risk from work-related stress[43] in order to ensure the health and safety of their employees. HSE have developed the Stress Management Standards which provide a framework against which to develop an effective risk assessment and a process designed to help organisations measure and improve their performance in tackling stress. The Standards can be found on HSE's website at: www.hse.gov.uk/stress/standards.[44]

Manual handling

174 Manual handling is quite simply moving an object (load) using one's body and includes:

- supporting;
- lifting;
- lowering;
- pushing;
- pulling; and
- throwing.

175 If done incorrectly or inappropriately it can result in one of several disorders of the muscles, joints, bones etc (known as musculoskeletal disorders). Some of these conditions can be short term, while others can result in long-term ill health and, especially if appropriate action is not taken, may even prevent someone from working again.

176 Even very fit people can be affected, and although most injuries are cumulative, serious injury can be caused by just a single event.

177 The Manual Handling Operation Regulations 1992 (as amended)[45, 46] require that work activities involving manual handling should be avoided if it is reasonably practicable to do so. Useful devices found in zoos might include wheelbarrows, sack trucks, hoists or motor vehicles such as dumper trucks.

Vibration

178 Repeated exposure to equipment vibration can lead to long-term health problems. Many items of equipment or plant have the potential to transmit vibration to the operator, either by poor design, poor maintenance or incorrect use. Likely sources are:

- chainsaws[43] used in forestry or fencing work;
- hammer drills;
- strimmers and brush cutters; and
- regular use of tractors or small transport vehicles, particularly off road.

179 See Appendix 1 for more information about the Control of Vibration at Work Regulations 2005.

180 Where workers use powered hand-held tools regularly or for long periods of time, or perform other work which exposes them to vibration through their hands, they are at risk of developing permanently disabling diseases of the hands and arms (hand-arm vibration syndrome, HAVS).[48, 49] The most common and well known of these diseases is vibration white finger, but there are others which affect sensory nerves, muscles, joints and bones in the hands and arms. Long-term exposure to high levels of vibration is known to cause a range of ill-health effects including painful finger blanching, numbness, tingling and loss of dexterity. For example, working in cold or wet conditions could trigger a painful attack of finger blanching in those who have vibration white finger.

181 Workers who operate or drive off-road machinery may be exposed to high levels of whole-body vibration[50] (WBV) and suffer from low back pain. However there are many other factors which may contribute to low back pain and these include:

- poor design and/or adjustment of seating and/or controls, making it difficult to operate the machine or vehicle easily or to see properly without twisting, bending or stretching etc;
- sitting for long periods without being able to change position;
- poor driver posture;
- repeated manual handling of loads;
- shocks and jolts resulting from poor seat adjustment, driving over rough ground or driving too fast;
- repeated climbing into or out of a high cab or one which is difficult to access.

182 It is important that employers assess the risks from all factors likely to contribute to low back pain, and are prepared to take action where exposure to WBV is likely to be high and where other factors such as manual handling or postural strain may represent a significant risk. In some cases, you may need to give higher priority to reducing the risks from the other factors. While there are things you can do to reduce risks, you cannot prevent all back pain, so early reporting of symptoms and suitable rehabilitation is essential.

183 Risks from exposure to vibration, both whole-body and hand-arm, should be assessed under the Control of Vibration at Work Regulations 2005. Employers should implement a programme of controls to reduce exposure levels to as low a level as is reasonably practicable, and these may include:

- the suitable selection of tools and equipment to ensure that, taking account of the work to be done, the lowest possible level of vibration is produced;
- the introduction of alternative work methods to eliminate exposure to vibration ie:
  - introduction of auxiliary equipment;
  - limitations to time of tool use; and
  - appropriate work schedules to reduce individual employee exposures;
- the introduction of maintenance programmes;
- the provision of information, instruction and training on the use and limitations of use of the equipment to ensure that vibration exposures are kept to a minimum;
- the provision of clothing etc to protect employees from the cold and damp.

184 Health surveillance is necessary where hand-arm vibration exposure exceeds the exposure action value specified in the Regulations.

Legionella

185 Legionnaires' disease is a potentially fatal form of pneumonia caused by breathing in small droplets of water contaminated with the legionella bacteria. These may be found in increased numbers in water stored between 20 °C and 60 °C, and where there is a source of nutrients for the bacteria, eg rust, scale.[51, 52] Potential sites/sources include:

- cooling towers for air conditioning;
- hot and cold water tanks and systems;
- tropical houses;
- showers;
- humidifier systems; and
- some sprinkler systems (especially where long runs of pipework are exposed to heating).

186 Water systems used intermittently, as well as redundant parts of systems, are particularly hazardous.

187 Zoo premises are likely to have a number of water systems. It is important to identify and assess each source of risk and take action to prevent risk of infection. Preventive/control measures might include:

- ensuring water is stored above 60 °C or below 20 °C;
- insulating runs of pipework supplying equipment which might produce aerosols;
- dismantling redundant pipework, tanks and fittings;
- exercising particular care when cleaning out pools and moats, particularly when using a pressure hose;
- having a flushing, cleaning and disinfection routine;*
- sampling susceptible areas to monitor for any build up;*
- assigning an authorised and trained person to manage the legionella risks.

* It is advisable to use specialist contractors to do this work for you.

Ultraviolet radiation

188 Zoo workers can potentially be exposed to high levels of ultraviolet (UV) radiation either outside in the sun or inside where UV radiation may be used to heat particular enclosures. Outdoor workers should be particularly careful as excessive exposure of the skin to UV radiation in sunlight can lead to sunburn and, in the longer term, increase the risk of developing skin cancer. Outdoor workers should therefore be advised not to shed clothing while working outdoors,[53] especially in the summer and between the hours of 11 am and 3 pm. Protective clothing, ie a hat and long sleeves, is advisable when weather advice indicates a high risk of sunburn. The use of sunscreen products should be considered.

189 In some parts of zoos (eg aquaria, vivaria or experimental ecology chambers) special environmental conditions may require the provision of solar simulation lamps or germicidal UV lamps. You should refer to the manufacturer's guidance and assess any risks that these special lamps could present to employee safety or health. It should not normally be necessary for employees to work in close proximity to the lamps or enter the area while the lamps are operating.

Ionising radiation

190 In zoos, exposure to ionising radiation is only possible where X-ray equipment is used or certain forms of veterinary medicine are practiced. Some fire alarm systems may also contain components that emit low-level radiation.

191 By law (see Appendix 1, paragraph 40) only appropriately qualified staff may be in control of activities involving sources of radiation, and controls will need to be in place to ensure that staff are aware of these sources so as to prevent inadvertent exposure. Where unqualified people assist in the work, they must be properly trained and supervised.[32]

192 Approved signs[54] (see Appendix 1, paragraph 12) should be prominently displayed to warn of sources of potential radiation. Sources should be kept secure to prevent unauthorised access.

Respiratory sensitisers

193 Respiratory sensitisers are substances which, when inhaled, cause a reaction (sensitisation) or allergy.[55] They are often only harmful to specific individuals, resulting in asthma with symptoms such as:

- coughing and sneezing;
- wheezing and tightness of the chest;
- stuffy nose (rhinitis); and
- sore, prickly eyes (conjunctivitis).

194 Once sensitised, the changes are often irreversible, and the symptoms will often become worse. In many cases the person becomes susceptible to progressively lower levels of exposure and permanent damage can be caused to their nose, throat or lungs.

195 Respiratory sensitisers may be found in many work activities or substances, and include:

- dust, feathers and fur from animals;

- dry faecal material;
- animal feeding stuffs and bedding;
- wood dusts;
- paints and other aerosols; and
- powdered natural latex gloves.[56]

196 The potential for harmful effects from these substances must form part of your risk assessment[34,41] required under the COSHH Regulations 2002 (as amended) (see Appendix 1, paragraph 32-33). Where you suspect that a person has been sensitised by something they are exposed to at work, you should prevent further exposure until you have carried out a further assessment and identified further control measures.

Working with biocides and pesticides

197 Biocides and pesticides[57, 58] are used in zoos for a number of purposes including:

- control of rodents;
- control of weeds;
- environmental control of parasites;
- control of unwanted micro-organisms by disinfection;
- control of algae etc.

198 There are hazards associated with the use of these products in zoos which, if not controlled, can represent a risk to peoples' health. In selecting such products for use, particularly disinfectants and sanitisers that currently do not have to be formally approved, it is important that you select the safest possible product that is still capable of performing adequately. These products may be chemical or microbiological. You should request and evaluate relevant data sheets from the supplier.

199 Approved products (see Appendix 1, paragraph 52) will be labelled as such, and the safeguards to be adopted when using them are set out on the label or in data sheets.

200 Staff using these products should be properly trained, competent and appropriately equipped, and should follow manufacturers' instructions closely.

201 Many zoos, particularly smaller establishments, will choose to allocate much of this type of work to outside contractors. A responsible person from the zoo should liaise with the contractor and their staff for advice on the products used, and on special precautions to be taken during or after the treatment.

Noise

202 Noise in zoos can become a problem for a number of reasons including:

- traffic movement;
- the operation of mechanical plant;
- use of work equipment;
- the animals at the zoo;
- large numbers of visitors;
- music provided in hospitality areas.

203 While there are ways of quantifying noise, as a simple rule, if it is difficult to

hear someone clearly at two metres or less without them shouting, then you may have a situation that needs assessment and controls.

204 Exposure to loud noise can lead to a number of health effects including:

- reduced hearing capacity;
- permanent loss of hearing;
- ringing or buzzing in the ears (tinnitus);
- disturbed sleep patterns;
- reduced efficiency; and
- symptoms of stress.

205 The Control of Noise at Work Regulations 2005 (effective from April 2006) require workers to be protected from loud noise (see Appendix 1, paragraphs 47, 48) and you may need to carry out a full noise assessment.[59, 60] Health surveillance will include hearing tests for employees where there is prolonged exposure to high noise levels. Wherever possible, however, steps should be taken to reduce noise levels and noise exposure. While PPE such as ear defenders may be appropriate in some circumstances, in others, such as working in animal enclosures with animals present, they may introduce other, more serious risks.

Emergency procedures

Safety and emergency procedures

207 The Management of Health and Safety at Work Regulations 1999 (the Management Regulations) require you to have procedures in place to deal with serious and imminent dangers in the workplace. These procedures must make provisions for all employees, voluntary workers, the visiting public and anyone else, eg contractors on site, who may be affected by any emergency at your zoo.

207 Planning to deal with emergency situations should involve consultation and co-operation between zoo senior management and employees. You should also involve as good practice (and as appropriate):

- emergency planning departments (usually within the chief executive's office of your local authority);
- other local emergency services such as the police and fire services;
- specialist services (eg RSPCA);
- your local authority; and
- veterinary surgeons with access to a dart gun (where you do not have facilities on site).

208 You should draw up an emergency procedure plan in agreement with these other parties. It should state:

- what must be done during an emergency situation;
- the chain of responsibility, setting out who has the various responsibilities for controlling the situation, and individual duties;
- the location of safe areas and emergency meeting points, and arrangements for the evacuation of the public and others on site; and
- what procedures are to be adopted to ensure that the plan is followed through until the situation is resolved.

209 The plan should be a written document readily available to management and all employees. Everyone in the zoo should receive training so they understand the plan and their role in it. In addition to the general procedures, more specific instructions for individuals and departments should be included as appropriate.

210 Emergency procedures must take account of the needs of potentially vulnerable groups, eg the elderly, groups of young children, disabled people etc, visiting the zoo (see Chapter 8 of *Secretary of State's Standards of Modern Zoo Practice*[1]).

Employees' responsibilities

211 All employees, including temporary and voluntary workers, need to have a clear understanding of emergency procedures to enable them to co-operate fully and play their part. There should also be a procedure to allow employees who have real concerns about the safety plan to bring this to the attention of their manager or to the zoo's safety officer.

Emergency situations

212 It is impossible to foresee all emergency eventualities. The following are examples of situations that might occur in zoos:

- fire and explosion;
- animal escape;
- violence, including robbery; and
- major incidents.

Fire and explosion

213 Putting safety measures in place at the earliest possible opportunity can significantly reduce the impact on people, premises and any animals situated nearby. The Management Regulations and the Regulatory Reform (Fire Safety) Order 2005 require you to assess the fire risks and identify adequate precautions to reduce and control the risk from fire. Liaison with the local fire authority is important, particularly when there are special risks relating to your site. Your fire emergency plan should provide instructions on:

- the action employees should take if they discover a fire, including how to raise the alarm;
- the procedure for contacting the fire service;
- means of warning people if there is a fire;
- where people should assemble in the event of an alarm and procedures for checking whether the site of the incident has been fully evacuated;
- the identification and maintenance of clear and unobstructed escape routes;
- the arrangements for the safe evacuation of people, with particular procedures for those identified as being especially at risk, such as contractors, those with disabilities, members of the public and visitors;
- shutting down equipment[14] where necessary and securing and isolating the affected area;
- specific arrangements for areas identified as representing a high fire risk;
- the provision, identification and location of firefighting equipment, hydrant points etc (particularly important if the fire services are required);
- which employees have specific responsibilities in the event of a fire, and what those responsibilities are;
- the procedures for liaising with the fire and rescue service on arrival and notifying them of any special risks, eg the location of highly flammable materials;

- employees' training needs and arrangements for ensuring that this training is given;
- how to alleviate stress in the animals and prevent their escape from their enclosures; and
- the stand-down procedure prior to re-occupation of the zoo or of particular buildings.

214 For further guidance see *A short guide to making your premises safe from fire*.[61]

Animal escape

215 The escape or release of even a small **Category 3** (least risk) animal can introduce hazards resulting from stress in the animal or from the reaction of the public. It is vital that you have a plan to deal with these situations. The measures included in the plan will depend on the risks that you have assessed. Depending on the risks associated with the animal, you should strike a balance between ensuring the immediate and continued safety of people in the zoo and the capture or euthanasia of the escaped animal.

216 Emergency procedures in the event of an animal escape, whether classified as dangerous or non-dangerous, should cover:

- nominating a person and deputy to take charge of the situation and make any important decisions;
- raising the alarm and reporting incidents to appropriate personnel as quickly as possible;
- communications with entrances/exits and allocating responsibilities for closure where necessary;
- arrangements for the evacuation or safe confinement of people in the zoo, ensuring that those situated away from buildings receive appropriate assistance as quickly as possible;
- managing crowds safely in an emergency situation[62] and the giving of directions;
- a strategy for recapture appropriate to the various types of animal kept;
- liaison arrangements with senior zoo personnel, vets etc for the recapture plan, which should include the use of radios, equipment, vehicles, firearms, identifying essential employees etc;
- briefing staff as to their roles and responsibilities during a recapture operation, including the recapture of animals escaped beyond the perimeter of the zoo;
- arrangements to locate the escaped animal;
- arrangements to keep the animal under observation while recapture plans are being formulated, and the movement of key personnel to the area once the escaped animal has been located;
- the provision and location of the necessary capture equipment, eg nets and firearms/darting equipment. Torches will be invaluable for night escapes and should be located in a designated area;
- alerting external emergency services, eg police, where necessary;
- stand-down arrangements on the completion of the recapture operation, including notifying all relevant personnel and external organisations involved.

217 Where an animal has to be killed in sight of the public or other employees, the firearms team should not be expected to assist in the clean up operations.

218 See the *Secretary of State's Standards of Modern Zoo Practice*[1] for further information, ie the requirement to notify certain authorities in the event of an escape.

Violent occurrences

219 An outbreak of violence has the potential to develop into an emergency situation which you can plan for. Sometimes the situation cannot be readily defused and increasing numbers may become at risk. Your plan needs to address the following areas:

- identifying key personnel to whom all incidents will immediately be notified;
- allocating suitable, trained staff to deal with the situation;
- procedures for reducing the number of people at risk, ie by clearing them from the area;
- containing the situation;
- a decision process for involving security staff or outside emergency services; and
- availability of first-aid personnel if required.

220 The subject of violence at work is dealt with more fully in paragraphs 51-56.

Major incidents

221 Major incidents, should they occur, require a well-planned response and will require substantial resources involving the emergency services, the local authority emergency team and other outside organisations. Examples of such situations might be:

- multiple escape or release of dangerous animals;
- bomb incidents;
- catastrophic failure of aquaria; and
- accidents resulting in multiple casualties.

222 The action plans suggested for fire and animal escapes could form the basis of a major incident plan. You may find, in the circumstances, that the emergency services will assume control, but you will also need to address the following:

- appointing a senior manager and a deputy to take control of the situation;
- nominating a dedicated communications officer as a contact;
- ensuring that the communications officer keeps a record of contact, as directed, with other essential personnel and emergency services;
- identifying an area, with essential facilities and services, which can serve as a central control point;
- identifying and communicating information on routes which would be unsuitable for emergency access and areas which are particularly difficult to reach;
- making arrangements for dealing with casualties;
- providing a temporary mortuary and catering facilities as necessary.

General procedures

223 Where emergency announcements are made for informing staff only, consider coding these in order to avoid undue panic.

224 Rehearse emergency procedures periodically, ensuring that all relevant personnel are involved. Zoo licensing conditions require this. Shortcomings will be identified and written records will help you monitor improvements, thus reducing risks.

225 Fire and major incidents and the casualties that might result are likely to require reporting under RIDDOR[11] (see Appendix 1, paragraphs 34-39).

Appendix 1 Relevant legislation

This first part of this appendix introduces the legislation covering the various hazards and work activities found within zoos. The numbered paragraphs in the second part give a brief outline of the duties imposed.

Health and Safety at Work etc Act 1974

- Duties of employers to employees.
- Duties of self-employed people.
- Duties of employers to people not employed by them.
- Duties of employees.
- Duties of people in control of premises or equipment.

Zoo Licensing Act 1981 (as amended)

Management of Health and Safety at Work Regulations 1999 SI 1999/3242

Health and Safety (Enforcing Authority) Regulations 1998 SI 1998/494

Health and Safety (Consultation with Employees) Regulations 1996 SI 1996/1513

Safety Representative and Safety Committee Regulations 1977

Health and Safety (Safety Signs and Signals) Regulations 1996 SI 1996/341

Workplace (Health, Safety and Welfare) Regulations 1992 SI 1992/3004

Provision and Use of Work Equipment Regulations 1998 SI 1998/2306

Lifting Operations and Lifting Equipment Regulations 1998 SI 1998/2307

Manual Handling Operations Regulations 1992 (as amended) SI 1992/2793

Construction (Design and Management) Regulations 2007 SI 2007/320

Electricity at Work Regulations 1989 SI 1989/635

Diving at Work Regulations 1997 SI 1997/2776

Health and Safety (First Aid) Regulations 1981 SI 1981/917

Control of Substances Hazardous to Health Regulations 2002 (as amended) SI 2002/2677

Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995 SI 1995/3163

Ionising Radiation Regulations 1999 SI 1999/3232

Regulatory Reform (Fire Safety) Order 2005 SI 2005/1541

Control of Noise at Work Regulations 2005 SI 2005/1643

Personal Protective Equipment at Work Regulations 1992 SI 1992/2966

Control of Pesticides (Amendment) Regulations 1997 SI 1997/188

Control of Asbestos at Work Regulations 2002 SI 2002/2675

Work at Height Regulations 2005 SI 2005/735

Animal By-Products Regulations 2005 SI 2005/2347 (separate regulations for England, Scotland and Wales)

Control of Vibration at Work Regulations 2005 SI 2005/1093

Plant Protection Products Regulations 2005 SI 2005/1435

Welfare of Animals (Transport) (Amendment) Order 1999 SI 1999/1622

Health and Safety at Work etc Act 1974

1 The Health and Safety at Work etc Act 1974 (the HSW Act) applies to all employers, employees and self-employed people. The Act protects not only people at work but also members of the public and volunteers who may be affected by a work activity.

Duties of employers to employees

2 All employers have a duty under section 2 of the Act to ensure that the health, safety and welfare of their employees are protected when they are at work. In practical terms, zoo operators must ensure that their establishments are safe places of work and without risk, so far as is reasonably practicable. Zoo operators must ensure that:

- safe working procedures are set and followed;
- machinery and equipment are properly maintained and safe to use;
- equipment and harmful substances are used properly and stored safely; and
- employees have healthy working conditions.

Duties of the self-employed

3 Duties are placed on self-employed workers similar to those placed upon employers. Self-employed workers should not create risks to themselves or other people.

Duties of employers to people not employed by them

4 Zoo operators have a responsibility for the health and safety of:

- members of the public;
- self-employed workers or contractors;
- the general public visiting the zoo;
- volunteer workers and food and merchandise vendors; and
- others involved in the zoo's supplementary activities.

5 Zoo operators may need to provide information so that these groups are not put at risk, eg children feeding animals using feedbags.

Duties of employees

6 Employees have a legal duty under section 7 of the Act to take reasonable care of themselves and other people. Employees must co-operate with their employer where safety is concerned.

Duties of people in control of premises or equipment

7 Many zoos have equipment or substances that they provide for people to use on site, eg animal recovery vehicles, veterinary equipment etc. Under section 4, the HSW Act requires that each person who has any control of premises or equipment must take reasonable precautions to make sure that the location and equipment to be used is safe and without risks to health. Also, where people come onto a site to use it as a place of work, eg contractors, providers of supplementary activities, food stall workers etc, the people in control of the site should make sure, so far as possible, that it is safe and does not represent a health risk.

Zoo Licensing Act 1981 (as amended)

8 The Zoo Licensing Act 1981 (as amended) requires all zoos in Great Britain, with some exceptions, to be inspected and licensed. It regulates their operation and introduces four main aims. These are intended to ensure:

- high standards of animal care and husbandry in zoos;
- high standards of health and safety for zoo visitors;
- participation of zoos in proactive measures to conserve biodiversity; and
- participation of zoos in promoting public education and awareness in relation to conservation of biodiversity.

Health and Safety (Enforcing Authority) Regulations 1998

9 The Health and Safety (Enforcing Authority) Regulations 1998 allocate enforcement responsibility for the HSW Act between HSE and local authorities.

Health and Safety (Consultation with Employees) Regulations 1996

10 These Regulations state that you should consult any employees[10] not in groups covered by trade union safety representatives either directly or through elected representatives. If you decide to consult your employees through elected representatives, you must make the arrangements for an election. The Regulations outline general requirements for employee consultation and the rights and functions of elected representatives including the right to 'time off' with pay to carry out their functions and to undergo training.

Safety Representative and Safety Committee Regulations 1977

11 Employees may be represented by safety representatives[10] appointed through a recognised union. These Regulations require you to consult safety representatives on arrangements that will enable them and employees to co-operate effectively in promoting and developing measures to ensure the health and safety of the employees, and to check the effectiveness of such measures. These Regulations set out the rights and functions of safety representatives, including the provision of information, facilities and assistance, and the right to take 'time off' with pay to carry out their functions and undergo training. If two or more safety representatives request a safety committee, one must be set up.

Health and Safety (Safety Signs and Signals) Regulations 1996

12 These Regulations[54] require you to provide specific signs whenever there is a risk that has not been avoided or controlled by other means, eg by safe systems of work. There is no need to provide a sign if it would not help to reduce the risk, or where the risk is not significant. You will need to take into account, as part of the risk assessment, the provision of safety signs as an effective way to help control the risks, particularly in relation to emergency exits, electrified fences etc.

Workplace (Health, Safety and Welfare) Regulations 1992

13 The Workplace (Health, Safety and Welfare) Regulations 1992[32] expand on the general duties of the HSW Act and cover a wide range of basic health, safety and welfare issues. They apply to most workplaces. These Regulations place requirements on employers and people having (to any extent) control of workplaces. They cover areas such as: temperature; ventilation; lighting; cleanliness and waste materials; room dimensions and space; maintenance; floors and traffic routes; windows, doors, gates and walls, cleaning windows etc safely; escalators and moving walkways; toilet, washing, employees changing and clothes storage facilities; supply of fresh drinking water; and facilities for rest and eating meals.

Provision and Use of Work Equipment Regulations 1998

14 The Provision and Use of Work Equipment Regulations 1998 (PUWER) expand upon the general duties of the HSW Act and require that work equipment supplied to employees is suitable, safe to use and used only by people who have received adequate information, instruction and training. Work equipment should be regularly maintained and, if necessary, inspected by a competent person to ensure that it remains safe to use.[14,25] Work equipment, regardless of its age, should not cause a risk to health and safety.

15 PUWER makes more explicit the general duties already placed on you as the employer, a self-employed person or someone with control to any extent of plant and operations, to provide safe plant and equipment and to ensure employees are adequately trained in its use.

16 Where lifting equipment is used, the requirements of the Lifting Operations and Lifting Equipment Regulations (LOLER) 1998[16] apply. The key requirements of LOLER are that lifting operations should be planned, supervised and carried out safely by a competent person, and that lifting equipment which may deteriorate and become dangerous should be thoroughly examined by a competent person at regular intervals.

17 You will need to ensure that:

- work equipment is suitable, properly maintained and if necessary, inspected;
- lifting equipment is thoroughly examined by a competent person;
- employees are properly informed about the work equipment, including foreseeable malfunctions which could occur during its operation; and
- employees are competent in the use of work equipment.

Manual Handling Operations Regulations 1992 (as amended)

18 Manual handling[45, 46] is the transporting or supporting of loads by lifting, putting down, pushing, pulling, carrying and moving, either by hand or by bodily force. In zoos, there will be a wide range of handling and transporting taking place, from handling animals large and small, alive or dead, to moving foodstuffs, hay and meats. The Regulations will apply to these and similar situations. As an employer you will need to consider the risks that arise from manual handling that could impact on the health and safety of your employees.

Construction (Design and Management) Regulations 2007

19 The Construction (Design and Management) Regulations 2007 (CDM) apply to all construction projects where people are at work, including, for example, refurbishment and demolition. If the construction phase of a project will be longer than 30 days, or 500 person days, it must be notified to HSE, except where there is a domestic client. The aim is for health and safety considerations to be treated as a normal part of a project's development, not an afterthought or bolt-on extra, thereby reducing the risk of harm to those that have to build, use, maintain and demolish structures.

20 The Regulations are divided into five parts:

Part 1 – Application of the Regulations and definitions

Part 2 – General duties that apply to all construction projects

Part 3 – Additional duties that only apply to notifiable construction projects, ie those lasting more than 30 days, or involving more than 500 person days of construction work

Part 4 – Practical requirements that apply to all construction sites

Part 5 – Transitional arrangements and revocations

21 HSE is the enforcing authority for the CDM Regulations and most construction work. You can find out more about the regulations on the HSE website at www.hse.gov.uk/construction/cdm.htm

Electricity at Work Regulations 1989

22 The Electricity at Work Regulations 1989 cover health and safety duties for the safe use of electricity at work. The Regulations require that electrical installations and equipment are properly constructed, maintained and fit for the purpose and environment in which they are used.[23, 24]

23 There are numerous areas where electricity may interact with the environment to introduce hazards, eg outdoor displays, internal displays featuring water displays, maintenance at high levels near overhead lines and maintenance of paths. Consideration should be given to these areas.

Diving at Work Regulations 1997

24 The Diving at Work Regulations 1997 (DWR) cover all dives when one or more divers are at work, whether employed or self-employed. The Regulations apply to everyone from the client for whom the work is being done, to the diver undertaking the work. Everyone involved has a responsibility to ensure the health and safety of those taking part in the diving project. There are five Approved Codes of Practice (ACOPs) that give practical advice on how to comply with the DWR Regulations. If you follow the advice in the relevant ACOP then you will normally be complying with the law. Diving in zoos would normally fall under the Scientific and Archeological ACOP.[63] If, however, work includes civil engineering or media work then it will fall under the Inland/Inshore ACOP[64] or the Media ACOP[65] respectively.

25 Regulation 6 of the DWR Regulations requires the diving contractor to have overall responsibility for the safety of the diving project. Contractors' responsibilities include:

- carrying out a risk assessment and ensuring a diving project plan is prepared;
- ensuring safe entry and exit to and from the water;
- ensuring the dive team is aware of the diving project plan;
- providing sufficient and suitable plant and equipment;
- ensuring there are enough competent divers;
- making adequate arrangements for emergencies, first aid and medical treatment; and
- ensuring a record is kept for each diving operation.

26 All divers at work must have a current certificate of medical fitness to dive, issued by an HSE approved medical examiner of divers, and an approved qualification. A list of approved qualifications can be found at www.hse.gov.uk/diving/qualifications/index.htm

Management of Health and Safety at Work Regulations 1999

27 These Regulations introduce the concept of risk assessment. Regulation 19 requires every employer to ensure that young people are protected from any risks to their health and safety resulting from lack of experience, awareness or maturity. In this context, a young person is anyone under 18 years of age. Zoos often have volunteers who carry out a number of tasks and they are entitled to the same level of protection.

28 A detailed risk assessment should be made before a young worker starts work to determine whether the work could cause harm or involve an element of risk. The risk assessment will have to take account of specific factors such as immaturity, inexperience and lack of awareness. When control measures have been taken against these risks and a significant risk still remains, no child (ie young worker under 16) can be employed to do this work.

Health and Safety (First Aid) Regulations 1981

29 The Health and Safety (First Aid) Regulations 1981 (FAW)[66, 67] require employers to provide adequate and appropriate equipment, facilities and personnel to enable first aid to be given to employees if they are injured or become ill at work. The assessment of first-aid needs should consider:

- the nature of work and the risks to health and safety it poses;
- size of the zoo;
- past history and consequences of accidents; and
- the distribution of the workforce.

30 You also need to consider whether trained first-aiders are needed, the items that should be included in their first-aid kit and whether a first-aid room is required.

31 The FAW Regulations do not oblige you to provide first aid for members of the public. Nevertheless, many organisations do provide such a service for others, eg shops, places of entertainment etc. HSE strongly recommends that employers make first aid provision for them.

Control of Substances Hazardous to Health Regulations 2002 (as amended)

32 The Control of Substances Hazardous to Health Regulations 2002 (as amended) (COSHH) require a COSHH assessment[41] to be carried out in order to protect employees and visitors against health risks from hazardous substances used at the zoo. Hazardous substances can be biological agents, dusts, substances with exposure limits or substances highlighted as hazardous in the safety data sheet.

33 These Regulations require you to take the following steps:[34]

- assess the risks from hazardous substances;
- decide what precautions are required;
- prevent or adequately control exposure;
- demonstrate that you have achieved adequate control;
- ensure that control measures are used and maintained;
- monitor the exposure;
- carry out appropriate health surveillance;
- prepare plans and procedures to deal with accidents etc;
- ensure employees are properly informed, trained and supervised.

Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995 (as amended)

34 As an employer or person in control of work premises you must report deaths and serious injuries to people at work and visitors to your zoo who are not at work, if the death or injury arose out of or is connected to the zoo's work.

Injuries to people at work

35 You must make a report if one of your employees or a self-employed person working at your zoo suffers a major injury or an over-seven day injury. Reportable major injuries are listed at www.hse.gov.uk/riddor/what-must-i-report.htm.

Over-seven-day injuries

36 On 6 April 2012, the law changed to replace the over-three day injury requirement with the new over-seven-day injury category. This is where an employee, or self-employed person, is away from work or unable to perform their normal work duties for more than seven consecutive days (not counting the day of the accident).

Over-three-day injuries

37 From 6 April 2012, although you do not have report over-three-day injuries, you must still keep a record of them. If you are an employer who must keep an accident book under the Social Security (Claims and Payments) Regulations 1979, the record you keep in your accident book will be enough.

Injuries to people not at work

38 Injuries to members of the public or people not at work where they are injured and taken from the scene of an accident to hospital for treatment.

Occupational illness

39 The Regulations list (in Schedule 3) occupational diseases that are reportable under RIDDOR. The Regulations require employers to report cases where a person at work suffers one of a number of specified diseases, provided that a doctor diagnoses the disease and the person's job involves a work activity specified in the Regulations. Examples of reportable diseases that may affect zoo workers include:

- infection from biological agents, eg Brucellosis from work involving contact with animals or their carcasses;
- occupational dermatitis from biocides, antibacterial agents or disinfectants; and
- ill health from respiratory sensitisers, eg farmer's lung, caused by spores of microorganisms from mouldy hay or straw.

Ionising Radiation Regulations 1999

40 These Regulations aim to ensure that exposure to ionising radiation is kept as low as reasonably practicable and does not exceed dose limits. As an employer there are specific requirements on you to:

- undertake a risk assessment before you start any new activity involving work with ionising radiation. It may well be that this risk assessment is already covered by your overall risk assessment under the Management Regulations, in which case nothing further may be needed;
- notify HSE that you intend to work with ionising radiation (unless exempt under Schedule 1 of the Regulations) before you commence the activity, and also ensure that what you propose conforms, where necessary, to HSE's generic prior-authorisation certificates;[33]
- restrict exposure, so far as is reasonably practicable, through engineering controls (ie lead shielding), design features (ie remote access) and the provision and use of safety features and warning devices. Only after these measures have been investigated should you consider using a system of work (ie restricting time and number of employees in the area) to reduce exposure. The provision of personal protective equipment should be the last measure to be considered;
- establish investigation levels based on available evidence to monitor that the exposure to employees is restricted;
- limit the doses of your employees to within the specified limits.
  - for adults over 18 this is 20 millisieverts (mSv) per year.
  - employees under 18 who are defined as a trainee by the Management Regulations will need to have their doses restricted to 6 mSv.
  - pregnant employees need to have the dose to the abdomen restricted to 1 mSv for the remainder of their pregnancy;
- seek the advice of a competent and suitable radiation employer on compliance with the Regulations;
- provide appropriate information and training to your workers on the risks from working with ionising radiation, for female employees this will also include

informing them of the importance of telling you that they are pregnant, so that appropriate action can be taken;
- co-operate with other employers using ionising radiation who may work on your site;
- designate any work areas if it is necessary to ensure that anyone who works in that area is either classified or works to suitable written arrangements designed to restrict their exposure;
- develop local rules which set out the working arrangements for restricting the exposure of those who work in the designated areas;
- appoint suitable radiation protection supervisors to supervise local rules;
- make appropriate arrangements to assess the doses of classified workers who work in the designated areas, and provide ongoing medical surveillance;
- investigate over-exposures (ie any worker who receives a dose over the relevant dose limit), and report the incident to HSE.

Regulatory Reform (Fire Safety) Order 2005

41 The Regulatory Reform (Fire Safety) Order 2005 became law on 1 October 2006. The main effect of the changes was a move towards greater emphasis on fire prevention in all non-domestic premises, including the voluntary sector and self-employed people with premises separate from their homes.

42 The Fire Safety Order applies in England and Wales. (Northern Ireland and Scotland have their own laws.) It covers 'general fire precautions' and other fire safety duties which are needed to protect 'relevant people' in case of fire in and around most 'premises'. The Order requires fire precautions to be put in place 'where necessary' and to the extent that it is reasonable and practicable in the circumstances of the case.

43 Responsibility for complying with the Fire Safety Order will rest with the 'responsible person'. In a workplace, this is the employer and any other person who may have control of any part of the premises, eg the occupier or owner. In all other premises the person or people in control of the premises will be responsible. If there is more than one responsible person in any type of premises, all must take all reasonable steps to work with each other.

44 If you are the responsible person you will have to carry out a fire risk assessment which must focus on the safety in case of fire of all 'relevant people'. It should pay particular attention to those at special risk, such as the disabled and those with special needs, and must include consideration of any dangerous substance likely to be on the premises. Your fire risk assessment will help you identify risks that can be removed or reduced and to decide the nature and extent of the general fire precautions you need to take to protect people against the fire risks that remain.

45 If you employ five or more people you must record the significant findings of the assessment.

46 *A short guide to making your premises safe from fire*[61] provides entry level guidance on how to make sure you are meeting the Regulatory Reform (Fire Safety) Order 2005.

Control of Noise at Work Regulations 2005

47 The Control of Noise at Work Regulations 2005 require employers to prevent or reduce the risks to health and safety from exposure to noise at work. They

require you as an employer to:

- assess the risks to employees from exposure to noise at work;
- take action to reduce the noise exposures that produce those risks;
- take specific actions at the action levels and make sure the limits for noise exposure are not exceeded;
- provide employees with hearing protection if you cannot reduce the noise exposure enough by using other methods;
- provide your employees with information, instruction and training;
- carry out health surveillance where there is a risk to health.

48 As a rough guide, noise is likely to be at a hazardous level if people have to shout or have difficulty being heard clearly by someone about two metres away. If there is a likely noise hazard, you will need to arrange for a competent person to complete a noise assessment. This will identify the daily individual noise exposure for each of your employees who might be at risk of over-exposure, and will provide information to help you decide what you will do to control the noise exposure. This should be the first step for you in developing an action plan for introducing noise control measures. Hearing protection for employees should be provided as a last resort.

Personal Protective Equipment at Work Regulations 1992

49 The Personal Protective Equipment at Work Regulations 1992 (PPE Regulations) expand on the general duties of the HSW Act and build on the Management Regulations.

50 PPE should always be the 'last resort' and should only be used to protect against the risk if engineering controls are not sufficient to reduce the risks to an acceptable level. In these circumstances, the Regulations require that an assessment be made to ensure that any PPE provided is suitable, compatible with other PPE required for the work, and is the last resort. Again, risks and hazards must be assessed and if engineering controls/systems will not overcome the hazards, suitable PPE must be provided. This can range from gloves to glasses, headgear to full-body options. In assessing the requirement for PPE, all parts of the body must be considered.[42]

Control of Pesticides Regulations 1986

51 The supply and use of products such as insecticides, wood preservatives, weed killers, fungicides and other pest-control products are controlled by this legislation. The Regulations are intended to safeguard the health of human beings, animals and plants, and protect the environment. They are enforced in zoos by the environmental health department of your local authority. Ultimately, all biocidal and plant protection products[57] will have to be positively approved under the Plant Protection Product Regulations 2005 which implement EC-wide product approval schemes. These will gradually supersede the UK national regime represented by the Control of Pesticides Regulations 1986 (COPR). See www.hse.gov.uk/pesticides for more information.

52 Everyone who uses these types of products should be trained and given instructions so that they can work safely and legally. Approved products will have a label on the container which should include a DEFRA/MAPP (ministerially approved pesticide product) or HSE number. If you are unsure you should check with the supplier or the manufacturer. The instructions on the label should be followed precisely. If the label has become unreadable or if the pesticide is no longer

needed, it should be disposed of safely. Local waste regulation authorities can provide advice on this.

53 All pesticides should be kept in a suitable storage container capable of resisting fire, theft, vandalism or impact damage. The store needs to have a sump in case containers leak, and must carry warning signs and 'no smoking' notices.

Control of Asbestos at Work Regulations 2002

54 Every dutyholder (person who is contracted or has an obligation to maintain or repair non-domestic premises) must manage the possible risk to employees and others who have access to the building, from exposure to asbestos.

55 The dutyholder must undertake a suitable risk assessment of whether asbestos is, or is liable to be, present in the premises and what condition the asbestos is in. They must ensure that the asbestos is properly maintained, monitored and safely removed where necessary. The conclusions of this assessment must be recorded and reviewed regularly.

56 They should also ensure that information about the location and condition of any asbestos is provided to every person liable to disturb it and made available to the emergency services.

Work at Height Regulations 2005

57 The Work at Height Regulations 2005 apply to all work at height (including work below ground) where there is a risk of a fall liable to cause personal injury.

58 The Regulations impose duties relating to the organising and planning of work at height, and require that people at work ensure:[13]

- all work at height is properly planned and organised;
- all work at height takes account of weather conditions that could endanger health and safety;
- those involved in work at height are trained and competent;
- the place where work at height is done is safe;
- equipment for work at height is appropriately inspected;
- the risks from fragile surfaces are properly controlled; and
- the risks from falling objects are properly controlled.

Animal By-Products Regulations 2005 (separate Regulations for England, Scotland and Wales)

59 These Regulations tighten rules on the processing, use, disposal, trade and import of animal by-products. The Regulations:

- ban the routine burial of fallen stock;
- allow the treatment of animal by-products in approved composting or biogas plants;
- maintain the existing UK ban on swill feeding;
- introduce controls on animal carcass incinerators; and
- require the treatment of previously uncontrolled animal by-products such as blood and feathers.

Control of Vibration at Work Regulations 2005

60 The Control of Vibration at Work Regulations 2005 require employers to protect workers (and other people who may be affected by the work) from the potential long-term risks of damage by exposure to either whole-body or hand-arm vibration at work.

61 They require employers to:

- assess the risks from exposure to vibration, both whole-body vibration (WBV) and hand-arm vibration (HAV);
- decide if employees are likely to be exposed above the exposure action values (EAV) for WBV and HAV and if they are, introduce a programme of controls to eliminate or reduce the risk of exposure to as low as reasonably practicable;
- for HAV, if employees are likely to continue to be exposed above the EAV or otherwise continue to be at risk, you should provide health surveillance to monitor for ill health;
- decide if employees are likely to be exposed above the exposure limit values (ELV) for WBV and HAV, and if they are, take immediate action to reduce their exposure to below the limit value;
- provide information and training on the health risks and the action you are taking to control those risks.

62 Health surveillance is not appropriate for WBV, however you could carry out health monitoring for symptoms of low back pain on employees who operate off-road mobile machinery, agricultural vehicles or industrial trucks. This will enable you to take a holistic approach to reducing the combined risks from manual handling, ergonomic issues and WBV should they be present.

Welfare of Animals (Transport) Order 1997

63 The aim of the above legislation is to ensure a high minimum standard of welfare for all animals while they are transported. It applies to the transport of all animals (except pets accompanied by their owners and non-commercial transport, individual animals travelling accompanied) by road, sea, air or rail from the moment animals are loaded onto a vehicle, through to their care during transport, and unloading at their destination.

Appendix 2 Useful contacts

This is not a definitive list but provides a useful cross section of organisations that can provide relevant advice.

The Health and Safety Executive (HSE)
www.hse.gov.uk

DEFRA (Department of Environment, Food and Rural Affairs)
Global Wildlife Division, Temple Quay, Bristol BS1 6EB
Tel: 0117 372 6290 www.defra.gov.uk

SERAD (Scottish Environment and Rural Affairs Department)
Pentland House, 47 Robb's Loan, Edinburgh EH14 1TY
Tel: 08457 741 741 www.scotland.gov.uk

DEPC (Department for Environment, Planning and Countryside)
National Assembly for Wales, Cardiff Bay, Cardiff CF99 1NA
Tel: 029 2082 5111 www.countryside.wales.gov.uk

SEPA (Scottish Environmental Health Agency)
Erskine Court, Castle Business Park, Stirling FK9 4TR
Tel: 01786 457700 www.sepa.org.uk

Qualifications and Curriculum Authority
83 Piccadilly, London W1J 8QA
Tel: 020 7509 5555 www.qca.org.uk

Scottish Qualifications Authority
Hanover House, 24 Douglas Street, Glasgow G2 7NQ
Tel: 0845 279 1000 www.sqa.org.uk

BIAZA (British and Irish Association of Zoos and Aquariums)
Regent's Park, London NW1 4RY
Tel: 0207 449 6351 www.biaza.org.uk

National Poisons Information Service
Regional centres in London, Cardiff, Newcastle,Edinburgh, Belfast and Dublin
Tel: 0870 600 6266 (24-hour line) www.npis.org

Department of Trade and Industry (DTI)
Response Centre, 1 Victoria Street, London SW1H 0ET
Tel: 020 7215 5000 www.dti.gov.uk

Water Management Society
6 Sir Robert Peel Mill, Tolson's Enterprise Park, Hoye Walk, Fazeley, Tamworth, Staffordshire B79 3QD
Tel: 01827 289558 www.wmsoc.org.uk

British Association for Chemical Specialities (BACS)
Simpson House, Windsor Court, Clarence Drive, Harrogate HG1 2PE
Tel: 01423 700249 Email: enquiries@bacsnet.org www.bacsnet.org

Royal College of Veterinary Surgeons
Belgravia House, 62-64 Horseferry Road, London SW1P 2AF
Tel: 0207 222 2001 Email: admin@rcvs.org.uk www.rcvs.org.uk

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Animal Transportation Association
Animal Welfare Science, Ethics and Law Veterinary Association
Association of British Wild Animal Keepers
Belfast Zoological Gardens
Blackpool Zoo
Bristol Zoo
British and Irish Association of Zoos and Aquariums
British Herpetological Society
British Veterinary Association
Chester Zoo
Colchester Zoo
Cricket St Thomas Wildlife Park
Convention of Scottish Local Authorities
Confederation of British Industry
Chartered Institute of Environmental Health
Drusillas Park Zoo
Dudley Zoological Gardens
Department of Trade and Industry
Edinburgh Zoo
Environment Agency
English Tourist Board
Federation of City Farms and Community Gardens
Home Office
Health Promotion Agency (Northern Ireland)
Local Government Association
Joint Nature Conservation Committee
Marwell Zoological Park
North of England Zoological Society
National Birds of Prey Centre
National Assembly for Wales
Paignton Zoo Environmental Park
Royal Environmental Health Institute of Scotland
Royal Zoological Society of Scotland
Royal College of Veterinary Surgeons
Royal Zoological Society of Scotland
Royal Society for the Prevention of Cruelty to Animals
Royal Society for the Protection of Birds
Scottish Executive
Scottish Environment Protection Agency
Trades Union Congress
Twycross Zoo – East Midland Zoological Society
Universities Federation for Animal Welfare
Welsh Mountain Zoo
Whipsnade Wild Animal Park
Whitley Wildlife Conservation Trust
Wildlife Information Network
Wildfowl and Wetlands Trust
Woburn Safari Park
Zoos Forum
Zoo Conservation and Breeding Committee
Zoological Society of Glasgow and West Scotland
Zoological Society of Ireland
Zoological Society of London

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3 *Essentials of health and safety at work* (Fourth edition) HSE Books 2006 ISBN 978 0 7176 6179 4 www.hse.gov.uk/pubns/books/essentials.htm

4 *An introduction to health and safety: Health and safety in small businesses* Leaflet INDG259(rev1) HSE Books 2003 www.hse.gov.uk/pubns/indg259.pdf

5 *Five steps to risk assessment* Leaflet INDG163(rev3) HSE Books 2011 (priced packs ISBN 978 0 7176 6440 5) www.hse.gov.uk/pubns/indg163.pdf

6 *Health and safety training: What you need to know* Leaflet INDG345 HSE Books 2001 (priced packs ISBN 978 0 7176 2137 8) www.hse.gov.uk/pubns/indg345.pdf

7 New and expectant mothers at work: www.hse.gov.uk/mothers/

8 *Managing health and safety: Five steps to success* Leaflet INDG275 HSE Books 1998 (priced packs ISBN 978 0 7176 2170 5) www.hse.gov.uk/pubns/indg275.pdf

9 *Successful health and safety management* HSG65 (Second edition) HSE Books 1997 ISBN 978 0 7176 1276 5 www.hse.gov.uk/pubns/books/hsg65.htm

10 *Consulting workers on health and safety: Safety Representatives and Safety Committees Regulations 1977 (as amended) and Health and Safety (Consultation with Employees) Regulations 1996 (as amended)* L146 HSE Books 2008 ISBN 978 0 7176 6311 8 www.hse.gov.uk/pubns/books/l146.htm

11 *A guide to the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995* L73 (Fourth edition) HSE Books 2012 ISBN 978 0 7176 6459 7 www.hse.gov.uk/pubns/books/l73.htm

12 *Preventing slips and trips at work* Leaflet INDG225(rev1) HSE Books 2005 (priced packs ISBN 978 0 7176 2760 8) www.hse.gov.uk/pubns/indg225.pdf

13 *The Work at Height Regulations 2005 (as amended): A brief guide* Leaflet INDG401(rev1) HSE Books 2007 (priced packs ISBN 978 0 7176 6231 9) www.hse.gov.uk/pubns/indg401.pdf

14 *Using work equipment safely* Leaflet INDG229(rev1) HSE Books 2002 (priced packs ISBN 978 0 7176 2389 1) www.hse.gov.uk/pubns/indg229.pdf

15 *Workplace transport safety: An overview* Leaflet INDG199(rev1) HSE Books 2005 (priced packs ISBN 978 0 7176 2821 6) www.hse.gov.uk/pubns/indg199.pdf

16 *Simple guide to the Lifting Operations and Lifting Equipment Regulations 1998* Leaflet INDG290 HSE Books 1999 www.hse.gov.uk/pubns/indg290.pdf

17 *Are you making the best use of lifting and handling aids?* Leaflet INDG398 HSE Books 2004 (priced packs ISBN 978 0 7176 2900 8) www.hse.gov.uk/pubns/indg398.pdf

18 *Violence at work: A guide for employers* Leaflet INDG69(rev) HSE Books 1996 priced packs ISBN 978 0 7176 1271 0) www.hse.gov.uk/pubns/indg69.pdf

19 *Managing health and safety in construction. Construction (Design and Management) Regulations 2007. Approved Code of Practice* L144 HSE Books 2007 ISBN 978 0 7176 6223 4 www.hse.gov.uk/pubns/books/l144.htm

20 *A short guide to managing asbestos in premises* Leaflet INDG223(rev3) HSE Books 2002 (priced packs ISBN 978 0 7176 2564 2) www.hse.gov.uk/pubns/indg223.pdf

21 *The management of asbestos in non-domestic premises. Regulation 4 of the Control of Asbestos Regulations 2006. Approved Code of Practice and guidance* L127 (Second edition) HSE Books 2006 ISBN 978 0 7176 6209 8 www.hse.gov.uk/pubns/books/l127.htm

22 *Preventing contact dermatitis at work* Leaflet INDG233(rev1) HSE Books 2007 (priced packs ISBN 978 0 7176 6183 1) www.hse.gov.uk/pubns/indg233.pdf

23 *Electricity at work: Safe working practices* HSG85 (Second edition) HSE Books 2003 ISBN 978 0 7176 2164 4 www.hse.gov.uk/pubns/books/hsg85.htm

24 *Electrical safety and you* Leaflet INDG231 HSE Books 1996 (priced packs ISBN 978 0 7176 1207 9) www.hse.gov.uk/pubns/indg231.pdf

25 *Simple guide to the Provision and Use of Work Equipment Regulations 1998* Leaflet INDG291 HSE Books 2008 (priced packs ISBN 978 0 7176 2429 4) www.hse.gov.uk/pubns/indg291.pdf

26 *Are you involved in a diving project?* Leaflet INDG266 HSE Books 1998 (priced packs ISBN 978 0 7176 1529 2) www.hse.gov.uk/pubns/indg266.pdf

27 *Diving in benign conditions, and in pools, tanks, aquariums and helicopter underwater escape training* Diving Information Sheet DVIS8 HSE Books 1999 www.hse.gov.uk/pubns/diveindx.htm

28 *Recreational diving projects. Diving at Work Regulations 1997. Approved Code of Practice* L105 HSE Books 1998 ISBN 978 0 7176 1496 7 www.hse.gov.uk/pubns/books/l105.htm

29 *The right start: Work experience for young people – Health and safety basics for employers* Leaflet INDG364 HSE Books 2002 www.hse.gov.uk/pubns/indg364.pdf

30 *Your guide to the Working Time Regulations* available from the Department of Trade and Industry www.dti.gov.uk

31 *Preventing or controlling ill health from animal contact at visitor attractions: Includes a supplement for teachers and others who organise visits for children* Agriculture Information Sheet AIS23(rev2) HSE 2011 www.hse.gov.uk/pubns/agindex.htm

32 *Workplace health, safety and welfare. Workplace (Health, Safety and Welfare) Regulations 1992. Approved Code of Practice* L24 HSE Books 1992 ISBN 978 0 7176 0413 5 www.hse.gov.uk/pubns/books/l24.htm

33 *Work with ionising radiation. The Ionising Radiations Regulations 1999. Approved Code of Practice and guidance* L121 HSE Books 2000 ISBN 978 0 7176 1746 3 www.hse.gov.uk/pubns/books/l121.htm

34 *Control of substances hazardous to health (Fifth edition). The Control of Substances Hazardous to Health Regulations 2002 (as amended). Approved Code of Practice and guidance* L5 (Fifth edition) HSE Books 2005 ISBN 978 0 7176 2981 7 www.hse.gov.uk/pubns/books/l5.htm

35 *Managing sickness absence and return to work: An employer's and manager's guide* HSG249 HSE Books 2004 www.hse.gov.uk/pubns/books/hsg249.htm

36 *Managing sickness absence and return to work in small businesses* Leaflet INDG399 HSE Books 2004 (priced packs ISBN 978 0 7176 2914 5) www.hse.gov.uk/pubns/indg399.pdf

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38 *Common zoonoses in agriculture Agriculture* Information Sheet AIS2(rev2) HSE Books 2000 www.hse.gov.uk/pubns/agindex.htm

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43 *Working together to reduce stress at work: A guide for employees* Leaflet INDG424 HSE Books 2008 (priced packs ISBN 978 0 7176 6320 0) www.hse.gov.uk/pubns/indg424.pdf

44 *How to tackle work-related stress: A guide for employers on making the Management Standards work* Leaflet INDG430 HSE Books 2009 (priced packs ISBN 978 0 7176 6378 1) www.hse.gov.uk/pubns/indg430.pdf

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47 *Chainsaws at work* Leaflet INDG317(rev1) HSE Books 2006 (priced packs ISBN 978 0 7176 6187 9) www.hse.gov.uk/pubns/indg317.pdf

48 *Control the risks from hand-arm vibration: Advice for employers on the Control of Vibration at Work Regulations 2005* Leaflet INDG175(rev2) HSE Books 2005 (priced packs ISBN 978 0 7176 6117 6) www.hse.gov.uk/pubns/indg175.pdf

49 *Vibration solutions: Practical ways to reduce the risk of hand-arm vibration injury* HSG170 HSE Books 1997 ISBN 978 0 7176 0954 3 www.hse.gov.uk/pubns/books/hsg170.htm

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51 *Legionnaires' disease. The control of legionella bacteria in water systems. Approved Code of Practice and guidance* L8 (Third edition) HSE Books 2000 ISBN 978 0 7176 1772 2 www.hse.gov.uk/pubns/books/l8.htm

52 *Legionnaires' disease: A guide for dutyholders* INDG458 HSE Books 2012 (priced packs ISBN 978 0 7176 6500 6) www.hse.gov.uk/pubns/indg458.htm

53 *Keep your top on: Health risks from working in the sun* Leaflet INDG147(rev1) HSE Books 1998 (priced packs ISBN 978 0 7176 1578 0) www.hse.gov.uk/pubns/indg147.pdf

54 *Safety signs and signals. The Health and Safety (Safety Signs and Signals) Regulations 1996. Guidance on Regulations* L64 (Second edition) HSE Books 2009 ISBN 978 0 7176 6359 0 www.hse.gov.uk/pubns/books/l64.htm

55 *Asthmagen? Critical assessments of the evidence for agents implicated in occupational asthma* HSE Books 1997 www.hse.gov.uk/asthma/asthmagen.pdf

56 *Latex and you* Leaflet INDG320 HSE Books 2000 www.hse.gov.uk/pubns/indg320.pdf

57 *Pesticides: Use them safely* Leaflet INDG257 HSE Books 1997 www.hse.gov.uk/pubns/indg257.pdf

58 *Reporting incidents of exposure to pesticides and veterinary medicines: What to do if you think people, animals or the environment have been harmed by exposure to pesticides or veterinary medicines* Leaflet INDG141(rev1) HSE Books 1999
www.hse.gov.uk/pubns/indg141.pdf

59 *Protect your hearing or lose it!* Pocket card INDG363(rev1) HSE Books 2005 (priced packs ISBN 978 0 7176 6166 4) www.hse.gov.uk/pubns/indg363.pdf

60 *Controlling noise at work. The Control of Noise at Work Regulations 2005. Guidance on Regulations* L108 (Second edition) HSE Books 2005 ISBN 978 0 7176 6164 0 www.hse.gov.uk/pubns/books/l108.htm

61 *A short guide to making your premises safe from fire* is available free of charge from DCLG Publications, PO Box 236, Wetherby LS23 7NB. Tel: 0870 1226 236 Email: communities@twoten.com. Also available for free download from www.odpm.gov.uk

62 *Managing crowds safely: A guide for organisers at events and venues* HSG154 (Second edition) HSE Books 2000 ISBN 978 0 7176 1834 7 www.hse.gov.uk/pubns/books/hsg154.htm

63 *Scientific and archaeological diving projects. Diving at Work Regulations 1997. Approved Code of Practice* L107 HSE Books 1998 ISBN 978 0 7176 1498 1 www.hse.gov.uk/pubns/books/l107.htm

64 *Commercial diving projects inland/inshore. Diving at Work Regulations 1997. Approved Code of Practice* L104 HSE Books 1998 ISBN 978 0 7176 1495 0 www.hse.gov.uk/pubns/books/l104.htm

65 *Media diving projects. Diving at Work Regulations 1997. Approved Code of Practice* L106 HSE Books 1998 ISBN 978 0 7176 1497 4 www.hse.gov.uk/pubns/books/l106.htm

66 *First aid at work. The Health and safety (First-Aid) Regulations 1981. Approved Code of Practice and guidance* L74 (Second edition) HSE Books 2009 ISBN 978 07176 6260 9 www.hse.gov.uk/pubns/books/l74.htm

67 *First aid at work: Your questions answered* Leaflet INDG214(rev1) HSE Books 2009 (priced packs ISBN 978 0 7176 6372 9) www.hse.gov.uk/pubns/indg214.pdf

Further reading

BIAZA publications

Guidelines for Firearms in Zoological Collections

Animal Close Contact Guidelines

Preventative Health Measures for Primates and Keeping Staff in British and Irish Collections

Management Guidelines for the Welfare of Zoo Animals Various species covered, including Elephants

BIAZA publications are available to members and others on request. See Appendix 2 for contact details.

The control of legionellosis: A recommended code of conduct for service providers Water Management Society/British Association for Chemical Specialties 1999

Further information

For information about health and safety, or to report inconsistencies or inaccuracies in this guidance, visit www.hse.gov.uk/. You can view HSE guidance online and order priced publications from the website. HSE priced publications are also available from bookshops.

This document contains notes on good practice which are not compulsory but which you may find helpful in considering what you need to do.

This document is available at: www.hse.gov.uk/pubns/books/hsg219.htm