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GUIDANCE NOTE	HEALTH AND SAFETY ADVICE/SUPPORT	Code: A002	Issue: C

HEALTH AND SAFETY ASSISTANCE

The Health and Safety People Limited have been retained to assist this organisation in keeping up to date with changes in the law and to provide advice on all matters relating to health and safety at work.

The Health and Safety People Limited operate a telephone advisory service which is available to all, should you have need to call them a Director should be notified. The telephone number for the advice service is shown below. Out of hours the call will be answered by a recorded message for simple requests you should leave your Name, Company Name and a telephone number on which you can be reached. For the more pressing or urgent problems a number will be given on which you can contact the duty officer.

08456 122 144

ACCIDENTS AND EMERGENCIES

Fatal and Major incidents may be notified by telephone to the National Incident Contact Centre between the hours of 8.30 a.m. and 5.00 p.m. on weekdays, without the need to follow up with a report.

Telephone the Incident Contact Centre on:

0845 300 9923

Reporting of all other incidents under RIDDOR must be submitted via the relevant online interactive form, available on the HSE Website - www.riddor.gov.uk <http://www.riddor.gov.uk>.

CONTACTING THE HEALTH AND SAFETY EXECUTIVE (HSE) / EMPLOYMENT MEDICAL ADVISORY SERVICE

Refer to: - www.hse.gov.uk

CONTACTING THE HSE OUT OF HOURS

The types of circumstances where the HSE may need to respond out of hours are:

- Following a work-related death, or where there is strong likelihood of death following and incident at or connected with work
- Following a serious accident at a workplace, to gather details of physical evidence that would be lost if you waited until normal working hours
- Following a major incident at a workplace where the severity of the incident, or the degree of public concern requires an immediate public statement from either HSE or Government ministers

The duty officer can be contacted on **0151 922 9235.**

GUIDANCE NOTE	UPPER LIMB DISORDERS	Code: B101	Issue: A

INTRODUCTION

Upper limb disorders (ULDs) generally relate to medical conditions which affect muscles, joints, tendons and ligaments. ULDs can be caused or worsened by poor work practices. As the term suggests, it relates to areas of the upper torso such as the neck, shoulders, arms, wrist and fingers. Repetitive strain injuries (RSI) and musculoskeletal disorder of the upper limbs are common terms which fall within the definition of ULDs.

Employees who adopt or are forced to adopt an awkward posture or who apply too much force to their bodies for long or frequent periods can be at an increased risk of developing ULDs.

The failure to deal directly to resolve problems created by ULDs can lead to serious ill health, lost of productivity, absenteeism and civil claims. Significant civil claims from ULD injuries are well-established.

Under the Management of Health and Safety at Work Regulations the employer must carry out a risk assessment to ensure that risks which could lead to ULDs are adequately controlled.

ULDs can occur in jobs that require an employee to carry out repetitive movements. Both office-based and manual workers can be at risk from ULDs. Employees involved in the following work activities can be at risk of developing ULDs:

- Manufacturing and production line assembly workers.
- Electronic and electrical assembly workers.
- Workers involved in word processing, data inputting and keyboard workers.
- Food processing workers.
- Packers.
- Textile machinists.
- Construction workers.
- Retail workers.

HUMAN FACTORS

Effective ways of controlling risk from ULDs are based on human factors which take into account individual capacities and limitations. This consideration is termed ergonomics.

REPETITIVE OPERATIONS

Work which is repetitive and requires the employee to use the same set of muscles increases the risk of the employee developing ULDs. This is a significant factor because the more the operative is exposed to the task the more the risk of injury is increased.

The exposure to repetitive operations can be reduced by considering:

- Job rotation to allow employees to carry out other tasks, thus reducing the period of exposure.
- Removal of the person from the task by automation.
- Provision of adequate rest periods.

When considering assembly activities the following factors should be considered to improve the layout of the workstation which would allow the employee to adopt a neutral position when working:

- **Seating at workstations.** - Seated workstations lead to fewer stresses being applied to the employee's joints and muscles. Suitable seating, which can be adjusted in height and has adjustable back support that can be raised, lowered and tilted, should be provided. Swivel chairs with five-pointed caster bases are best suited for assembly type work. When employees are engaged in precision work a forward tilting seat and work surface can assist the operator in the assembly activity. Footrests should be provided to employees where necessary.

- **Standing at workstations.** - Standing workstations may be provided for the operation of machinery or production line assembly. Factors to be considered in reducing the risk of ULDs whilst using standing workstations are:

  - The provision of alternatives to conventional seating, such as lean or foldaway seats and sit-stand seats;
  - The provision of feeder tables to reduce the amount of bending and twisting;
  - Placing control panels within easy reach of the employee;
  - Ensuring mechanical handling devices are provided to eliminate any manual handling.

- **Layout of workstation.** - The layout of the workstation should eliminate the need for the employee to carry out repetitive reaching. Component picking bins should be placed within the individual's reach zone, ideally within 450mm of the front of the operator. Any components used in the assembly activity should be arranged in a semi-circle to ensure that the employee does not have to overreach, which could lead to a loss of support provided by the seat. Tools needed in the assembly activity can be suspended to reduce the need for the employee to reach outside the work zone. Racking provided for materials and finished items should be placed well within the individual's reach to prevent overstretching when large quantities of components are required in the assembly work.

HAND TOOLS

Hand tools are used for most assembly activities. Use of excessive force by the employee when using hand tools can be a significant risk factor. Forces can also be applied to muscles and joints by handling heavy objects or when using tools which need to be impacted onto a material, such as hammering.

Local force and stress can be imposed on muscles, joints in the finger, arm and forearm when using tools held in the palm, such as pliers. Specifically designed hand tools which have been modified to ensure that employees adopt an ergonomic hand position are a solution to this problem.

Forces which need be applied by employees when carrying out assembly work can be reduced by:

- Careful selection of the correct tool.
- Routine sharpening of any cutting surfaces and faces.
- Routine inspection of the tool for wear and damage.
- Ensuring tools are provided with a suitable gripping surface.

USE OF POWER TOOLS

A wide range of power tools are available and, where practical, these should be provided as an alternative to hand tools. The use of power tools can significantly reduce the force to which employees may be subjected to in their work activity.

However, the following factors need to be considered if selecting power tools over hand tools:

- Suitability of the power tools for the task.
- The need for increased maintenance and inspection arrangements.
- Additional risks created by the use of pneumatic or electrical powered tools.
- Increases in the weight of tools - this can be controlled by suspending or counterbalancing the tools.

LIGHTING

Poor lighting can lead employees to adopt poor working postures in order to see their work. Typically this could lead to an employee developing muscular problems in the neck and shoulders if they find it difficult to see the work.

It is recommended that, for the following activities, average illumination, which is measured in Lux (Lx), should be:

Activity	Average Lx	Minimum Lx
Assembly of large components	100	50
Office work	200	100
Electronic assembly	500	200

TRAINING

All workers and management need to be given basic training in the awareness of ULD issues. Specific training needs to be given to particular employees at specific risk from ULDs through their job or task.

General training should include:

- Early identification and awareness of the symptoms of ULDs.
- Work activities and tasks where risk factors are significant.
- Safe methods and practices to be adopted to prevent ULDs.

GUIDANCE NOTE	OFFICE SAFETY	Code: B301	Issue: A

ENVIRONMENTAL

Offices shall be kept clean and tidy. Each person shall have a minimum of 3.7m^2 of floor space or, where the ceiling height is less than 3 metres, 11m^3 of air space. The volume of any items of equipment is to be subtracted from the total room volume before obtaining this figure.

A minimum temperature of 16^oC shall be attained within 1 hour of work commencing and be maintained throughout the working day.

Lighting shall be either natural or artificial and steps shall be taken to eliminate glare and shadows.

Adequate fresh air shall be provided, either through open windows or by the means of air conditioning. In areas where fumes are likely to be present, local exhaust ventilation shall be provided.

ACCESS

Stairs, steps and floors shall be maintained in good condition. They shall, as far as is reasonably practicable, be kept free of materials likely to cause persons to slip or trip and shall not be obstructed.

Non-slip floor polishes shall be used on linoleum or similar surfaces.

Trailing cables from telephones, computers, etc. shall be kept to a minimum and are to be positioned so as not to cause a tripping hazard.

Full-height glass screens and doors shall be marked to indicate their presence.

WASHING AND TOILET FACILITIES

The facilities shall normally include clean hot and cold (or warm) running water, soap, clean towels or other suitable means of cleaning and drying. They shall be adequately cleaned and maintained, and be properly ventilated. The room should be well-lit and should not open on to any room where food is processed, prepared or eaten.

Suitable and sufficient sanitary conveniences shall be provided and maintained in accordance with the numbers of persons employed, as detailed in Table 1. Where separate sanitary accommodation is for a group of workers, e.g. men/women or office/manual workers, then a separate calculation shall be made for each group.

MACHINERY

All parts of every machine that is likely to present a risk of injury shall be adequately guarded and the guards regularly maintained and inspected. Records shall be kept of the inspections and maintenance carried out.

TABLE 1

Number of **people** at work	Number of water closets	Number of wash stations
1 - 5	1	1
6 - 25	2	2
26 - 50	3	3
51 - 75	4	4
76 - 100	5	5

Table 2 details sanitary requirements for accommodation used only by men.

TABLE 2

Number of **men** at work	Number of water closets	Number of urinals
1 - 15	1	1
16 - 30	2	1
31 - 45	2	2
46 - 60	3	2
61 - 75	3	3
76 - 90	4	3
91 - 100	4	4

An additional WC and one additional wash station should be provided for every 25 people above 100 (or fraction of 25). Where work activities result in heavy soiling of hands, face and forearms, the number of wash stations should be increased to one for every ten people (or fraction of ten) up to 50 people and one extra for every additional 20 people (or fraction of 20).

ELECTRICAL HAZARDS

In order to minimise the risk of electrocution caused by defective plugs, sockets, wiring or appliances, only persons who are competent to carry out the work shall install all electrical installations. IEE installation certificates shall be obtained.

All electrical equipment shall be regularly checked for defects and records shall be kept. Fuses shall be checked to ensure the correct rating is used. As a guide, 3 amp fuses shall be used for appliances with a power output of up to 700 watts; 5 amp fuses for up to 1000 watts and 13 amp fuses for appliances up to 3000 watts.

FILING AND STORAGE

Incorrectly used filing cabinets can become unstable. If too many drawers are opened at one time they may topple over. All filing cabinets are to have the lowest drawer loaded first and only one drawer is to be opened at a time.

All racking shall be of adequate strength for the loads placed upon it and shall be rigidly secured to adjacent racks or the wall of the building. Steps or ladders are to be used to gain access to the higher levels of shelving. Heavy items shall not be placed on the higher shelves.

Prior to the installation of racking or filing cabinets, the floor strength is to be ascertained to ensure that the floor is capable of withstanding the load to be applied to it.

GUIDANCE NOTE	MAINTENANCE	Code: B302	Issue: A

INTRODUCTION

Detailed guidance on the procedures to be followed for specific trades and in specific areas is to be found elsewhere in this manual. This section highlights the factors creating special risks during maintenance operations.

Some of the factors that influence attitudes to maintenance and produce hazards are:

- The short duration of much of the work, which can and does lead to the least time consuming and least safe means of access.
- The repetitive nature of the work, leading to complacency and contempt for the safety procedures and precautions to be taken.
- The difficulties experienced with supervising and monitoring small mobile groups of workers.
- The deterioration of the structure after years of service.
- The difficulty of carrying out operations whilst the building remains in use and the resultant risks to the occupiers of the building.

To reduce the risks the following steps shall be taken:

- Preliminary surveys are to be undertaken.
- Standard procedures shall be prepared, in conjunction with those employees who will operate them, for the more common access and workplace problems.
- Safety shall be incorporated into the planning of individual jobs and all the relevant information on the building structure and the activities carried on within the building shall be exchanged between the occupier and the contractor.
- Training of all operators involved in maintenance shall be carried out to enable them to recognise problems and differentiate between problems that they can easily solve and those on which advice must be sought.
- Effective supervision and monitoring shall be instituted to ensure that experience is reflected in the planning stages.
- Where work is to be undertaken on live equipment, equipment that cannot be effectively isolated or in any potentially hazardous atmosphere (including flammable areas) a permit-to-work system shall be utilised.

PRELIMINARY SURVEY

Prior to the work being planned, a thorough preliminary survey shall be carried out to ensure that any risks within the proposed work area are reduced or eliminated, as far as is reasonably practicable. This preliminary survey shall include the following:

- The condition of the structure.
- The proximity of live services, such as electricity, water, telephone lines, gas supplies, etc.
- The presence of toxic substances, both in the structure itself and also from any processes that are being, or have been, carried out within the structure.
- The proximity of other persons who will not be directly involved with the maintenance work and the general public.
- The presence of any machinery that may be required to be running whilst maintenance work is being undertaken.

Notes shall also be taken of any safety rules imposed by the occupier of the premises, with which those involved with maintenance work will be required to comply.

Condition of the Structure

The physical condition of the structure shall be investigated to determine the presence and condition of:

- Fragile roofs, including any gutters that may be required to be used either as a working place or as a means of access. The roof should be checked to ensure that there are no fragile areas, such as skylights or previous repairs, in an otherwise sound structure.
- Floor joists and roof trusses, to ensure that they are capable of withstanding any extra loading placed on them due to the storage of materials or the use of scaffolding.
- Walls, to ensure that they are capable of withstanding the forces of any added floor weight, the installation of scaffold ties or the fixings for safety nets or harnesses.
- Permanently installed access equipment such as ladders, walkways and working platforms to ensure that they are capable of withstanding the required loading.
- Any permanently installed lifting equipment such as gantries, etc. to ensure that they are in sound condition, have an in-date inspection and test certificate, and are rated for the proposed loads.
- Areas where substances may be emitted from extraction equipment that may give rise to local concentrations of harmful or noxious fumes or gases.

Existing Services

All existing services are to be located and their routes traced, marked and recorded. These are to include:

- Electrical.
- Gas.
- Water.
- Airlines.
- Fuel lines, both liquid and gaseous.
- Any supply lines needed for processes within the building.
- Any extraction and exhaust equipment.
- Any steam or heating supply lines.

Where there is a risk of damage to the services from the maintenance operation, every attempt shall be made to isolate those lines.

Where isolation is not practicable, steps shall be taken to protect the services from damage during maintenance.

Where the maintenance involves working on equipment, that equipment is to be isolated and locked-off to prevent it becoming activated whilst work is being carried out on it. Under no circumstances is live equipment or live services to be worked on.

Care is to be taken when handling smoke detectors as they may contain a small, sealed, radioactive source.

Machinery

Where persons are required to work in elevated positions adjacent to moving machinery, that machinery is to be locked-off, with the maintenance operator holding the key, and the activity is to be controlled by a permit-to-work system. If it is necessary to keep the machine working then the maintenance work is to be rescheduled to a time when the machine is shut down or protective screens shall be installed. Particular attention shall be paid to persons working on or near to the wheel tracks of overhead travelling cranes, or in any position where they are likely to be struck by a part of that crane. The crane shall be either locked-off or have stops fitted to ensure that it does not come within 6 metres of that person.

Toxic Substances

The survey shall take into account any work that may give rise to exposure to dust and fumes, paying particular attention to:

- Asbestos. - It is necessary to establish the type of asbestos that has been encountered. To this end it will be necessary to call in a specialist to have the asbestos sampled and to give advice on its treatment.
- Lead. - Particular attention is to be paid to steelwork that may have been coated with a lead-based paint. If such steelwork is to be burned, wire brushed, ground, etc. then samples of the paint are to be taken to establish the lead content and, if the paint does prove to contain lead, specialist advice sought.
- Dust. - Other dusts may have been produced during current or past processes carried out within the building. These may contain hazardous substances and their nature is to be identified before work commences.
- Chemicals. - All chemicals and chemical residues either produced or used in any processes within the building are to be identified.

Protection of Persons not Employed in Maintenance Work

Consideration shall be given to the effects that maintenance work may have on those not employed. Particular attention shall be paid to:

- Public highways. - Where it is necessary to obstruct the public highway, including any footpath, then the obstruction shall be signed in accordance with the New Roads and Street Works Act Code of Practice, “Safety at Street Works and Road Works” together with any restrictions imposed by the local authority.
- Access routes. - Care shall be taken to ensure that plant and materials do not obstruct any pedestrian or vehicular access without the prior permission of the occupier. Fire evacuation routes shall be investigated to ensure that the works do not impede the exits.
- Maintenance plant. - Consideration shall be given to the noise levels and the fumes that are emitted from plant in order to cause the minimum amount of disturbance to occupiers of the premises where work is taking place, as well as those other premises in the area.
- Overhead work. - Adequate protection shall be provided to ensure that falling tools, materials, debris, etc. do not endanger persons passing. This shall be achieved by the use of nets, fans, meshing the face of the scaffold or structure, or by the erection of an exclusion zone.

ACCESS AND WORKING PLACES

Access shall be provided for all maintenance tasks and shall be either by the use of ladders, scaffolds or mechanical platforms, all of which shall conform to and comply with the standards laid down by current legislation. Under no circumstances is any access equipment to be borrowed from the client unless the client is obliged contractually to supply it.

Where the work involves working on a roof or at height the Work at Height Regulations shall be complied with.

Forklift Trucks

Where a platform mounted on the forks of a forklift truck is to be used the following safeguards shall be taken:

- The platform to be secured to the forks or carriage shall be provided with double guardrails, toe boards and an inward opening self-closing gate. Platforms are only to be fitted to forklift trucks designed for that purpose.
- On machines with tilting masts the mast shall be secured in the vertical position; on side lift trucks the mast shall be fixed in the mid-position.
- The total weight of the platform, materials and persons to be lifted shall not exceed the safe working load of the forklift truck.
- Only trained and competent persons are to operate the forklift truck and they are not to leave the operating position whilst the platform is raised.
- The forklift truck is not to be moved whilst a person is on the platform, unless it has been designed specifically to do so.

Overhead Cranes

Maintenance at high levels may sometimes be carried out from the traveller of an overhead gantry. If this occurs the traveller shall be treated as any other working place and shall be fitted with guardrails and toe boards or safety belts, nets or harnesses shall be used.

GUIDANCE NOTE	LONE WORKING	Code: B304	Issue: A

LONE WORKERS

There is no general prohibition to employees working alone with the exception of a few special circumstances where, due to the risk and hazard, there is a prohibition, e.g. for divers. However, lone workers may, obviously, be exposed to special risks and there is a need to put in place special arrangements to address those risks.

There are two major areas of risk for lone workers:

- The possibility of being unable to summon assistance if they have an accident or if they are incapacitated in some other way.
- Their vulnerability to violence.

The risk assessment carried out under the Management of Health and Safety at Work Regulations ought to properly examine the special circumstance of lone workers. The control measures recommended by this assessment should be enforced.

The sort of concerns that should be examined in the risk assessment includes:

- What might go wrong?
- How serious might it be?
- Would the worker be able to summon help?
- How would you check that they are OK?
- Are they going to come across circumstances in which they will attempt to do something that requires two people?
- Are they mentally and physically suited to working alone?
- What instruction have they received?
- Is that instruction in writing?
- What training have they received?
- How are you going to supervise them?
- What first aid arrangements should be made?

This list is not exhaustive.

After considering these things and putting into place such precautions as you can, you must assess whether it is safe or unsafe for a particular worker to work alone.

GUIDANCE NOTE	UV EXPOSURE	Code: B311	Issue: A

HAZARDS

Exposure to ultraviolet (UV) radiation from the sun can cause skin damage including sunburn, blistering, skin ageing and in the long term can lead to skin cancer. Skin cancer is the most common form of cancer in the UK, with over 40 000 new cases diagnosed each year.

UV radiation should be considered an occupational hazard for people who work outdoors.

CONTROL MEASURES

- Encourage workers to keep covered up during the summer months - especially at lunch time when the sun is at its hottest. They can cover up with a long-sleeved shirt and a hat with a brim or flap that protects the ears and neck in non head protection areas.
- Encourage workers to use sunscreen of at least SPF (Sun Protection Factor)15 on any part of the body they can't cover up due to PPE requirements such as ears and neck. Apply it as directed on the product. They might prefer to use a spray or an alcohol-based (non-greasy) sunscreen.
- Encourage workers to take their breaks in the shade, if possible, rather than staying out in the sun.
- Consider scheduling work to minimise exposure.
- Site water points and rest areas in the shade.
- Encourage workers to drink plenty of water to avoid dehydration.
- Keep your workers informed about the dangers of sun exposure.
- Encourage workers to check their skin regularly for unusual spots or moles that change size, shape or colour and to seek medical advice promptly if they find anything that causes them concern.

Consulting your employees and their safety representatives is important. Take their views into account when introducing any new sun safety initiatives.

REFERENCE

HSE Guidance: IND(G)147, IND(G)337

GUIDANCE NOTE	PERMITS - HOT-WORKS	Code: B402	Issue: A

INTRODUCTION

In order to reduce the risk of fire on the organisation's premises all hot-work activities and those likely to generate sparks or flames will be controlled by implementing a hot-work permit system.

These permits will be issued on a daily basis by the organisation's nominated responsible person.

It is the responsibility of the employee carrying out any hot-works to request a permit from the responsible person in good time prior to carrying out the work. The hot-work permit checklist shall be completed by the responsible person and signed by them and the person conducting the hot-works.

One copy is to be held by the person conducting the works and one is to be filed by the responsible person.

Upon completion the hot-worker is to return their copy of the permit to the responsible person. The permit is no longer active and no further hot-work may be carried out until a new permit is issued.

The responsible person is to ensure that, 1 hour after the permit is returned, a fire watchman checks the area to ensure that there is no residual fire problem before signing and closing the permit.

PERMIT CHECKLIST

The responsible person must ensure that all of the relevant control measures listed on the permit are in place and should also consider whether the following additional controls are required:

- Any special firefighting requirements? (Refer to COSHH data sheets.)
- Will fire routes or exits be blocked?
- Is a method statement required and have operatives been briefed?

If so they should be detailed in the "additional precautions" section of the permit.

CANCELLATION CHECKLIST

The permit is cancelled when the permit holder has cleared the work area of all materials and equipment and has finished any hot-work activities. The permit is then signed by the permit holder and handed to the issuing responsible person. One hour after receiving the signed permit the responsible person shall inspect the work area and ensure the following:

- All hot-works to which the permit relates have ceased.
- The area has been checked and is free from residual fire risk.
- All gas cylinders and flammable materials have been removed to a safe store.

When satisfied that the area is free of fire hazards the responsible person will sign off and close the permit.

HOT-WORKS PERMIT

Contract: **Permit number:**

This permit is valid from: **hours to:** **hours on (date):**

Issued by: **Issued to:**

This permit covers hot-works:

Location:

ISSUE CHECKLIST	Y/N	N/A	SIGNED
Has a risk assessment been carried out?			
Are operatives trained in the use of the equipment?			
Will non-combustible screens/sheets be erected?			
Is the area clear of all combustible materials?			
Will a fire watcher be necessary and provided?			
Have the correct type of fire-extinguishers been provided?			
Are extinguishers fully charged and inspected?			
Are flashback arrestors fitted to gas cylinders?			
Has a fireproof container been provided for discarded welding rods?			
Has personal protective equipment been provided?			
Additional Precautions			

AUTHORISATION

Signed: Time: Date:

RECEIPT

I have read this form and understand the special precautions to be taken prior to and during hot-works.

Signed: Time: Date:

CANCELLATION

I have completed the work detailed above and left the site in a safe condition.

Signed: Time: Date:

I have inspected the work area above and cancel this hot-work permit.

Signed: Time: Date:

GUIDANCE NOTE	PERMITS - ROOF ACCESS WORKS	Code: B404	Issue: A

INTRODUCTION

In order to reduce the risk of falls from height on the premises all roof works activities will be controlled by implementing a roof access permit system.

These permits will be issued on a daily basis by the premises nominated responsible person.

It is the responsibility of the employee carrying out any roof-works to request a permit from the responsible person in good time prior to carrying out the work. The roof-work permit checklist shall be completed by the responsible person and signed by them and the person conducting the roof-works.

One copy is to be held by the person conducting the works and one is to be filed by the premises responsible person.

Upon completion the roof-worker is to return their copy of the permit to the premises responsible person. The permit is no longer active and no further roof-work may be carried out until a new permit is issued.

PERMIT CHECKLIST

The designated responsible person must ensure that all of the relevant control measures listed on the permit is in place and should also consider whether any of the following additional controls are required for example:

- Hot works permits.
- Lone working procedures are implemented.
- Is a method statement required and have operatives been briefed?

If so they should be detailed in the “additional precautions” section of the permit.

CANCELLATION CHECKLIST

The permit is cancelled when the permit holder has cleared the work area of all materials and equipment, finished all roof-work activities and has replaced any control measures in place preventing access to the area. The permit is then signed by the permit holder and handed to the issuing responsible person.

ROOF ACCESS PERMIT

Contract: **Permit number:**

This permit is valid from: **hours to:** **hours on (date):**

Issued by: **Issued to:**

This permit covers roof access to the following area / building:

Brief description of works to be undertaken including any limitations:

ISSUE CHECKLIST	Y/N	N/A	SIGNED
Are suitable measures (lock out procedure) in place to prevent unauthorised access to the area?			
Has a risk assessment been carried out?			
Has a method statement been produced?			
Does a safe working platform already exist or has one been provided?			
Are “collective” fall prevention measures in place? (e.g. guard rails)			
Are work exclusion zones established below the works areas?			
Is personal fall protection (PFP) equipment to be used? (restraint / arrest)			
Are operatives trained and competent in the use of equipment to be used including PFP equipment?			
Is an emergency rescue / recovery procedure in place?			
Is it safe to start work in the prevailing weather conditions?			
Is a suitable means of communication available?			
Additional Precautions / Permits Required			

AUTHORISATION

Signed: Time: Date:

RECEIPT

I have read this form and understand the special precautions to be taken prior to and during the period required to access the roof area.

Signed: Time: Date:

CANCELLATION

I have completed the work detailed above and left the site in a safe condition.

Signed: Time: Date:

I have inspected the work area above and cancel this roof access permit.

Signed: Time: Date:

GUIDANCE NOTE	PRE-CONSTRUCTION INFORMATION	Code: C007	Issue: A

INTRODUCTION

The purpose of the Pre-Construction Information is to provide relevant information about the health and safety hazards associated with a construction project. Designers and tendering Contractors use the information to assimilate and subsequently provide adequate resources to manage the issues effectively.

Pre-Construction Information must occur early in the supply chain to allow greater opportunity for the design phase to address and reduce reported risks. The information is intended to be dispatched together with the tender documentation to allow:

- sufficient time for its contents to be appreciated
- solutions to be formulated prior to the return of a tender submission.

The focus of the information is on issues over and above those a competent Contractor would normally expect to deal with on a construction site.

Additional Pre-Construction Information may also be required throughout the duration of the project for example when new Contractors are appointed, additional survey information is available, the scope of works has changed.

Typical Pre-Construction Information contents include:

PROJECT

- Description and details of the project.
- Client, Designers, CDM co-ordinator and details of others involved.
- Existing plans and records: location, content and sufficiency.

CLIENT'S EXPRESS REQUIREMENTS

- Client's organisation and structure.
- Overall project safety goals, with monitoring and review arrangements.
- Requirements for authorisations, permits and emergency procedures.
- Client's continued use of the site, e.g. restrictions on access, site rules for contractors/suppliers, etc.
- Other activities that could affect these works.
- Site security issues.
- Establishing and maintaining communications between the parties.

EXISTING ON-SITE RISKS AND ENVIRONMENTAL ISSUES

- Safety hazards:
  - site boundary and adjacent land use
  - temporary/normal means of access
  - hazardous materials
  - locations of existing services
  - stability/construction of existing structures
  - general ground conditions
  - previous structural modifications
  - fire damage
  - existing plant and associated restrictions
  - previous health and safety information.

- Health hazards:
  - hazardous materials - storage/use in existing structures, e.g. asbestos, lead
  - contaminated land
  - activities of Client.

HAZARDS IN DESIGN AND CONSTRUCTION

- Assumptions denoted by Designers and control measures identified.
- Significant health and safety risks identified during design.
- Materials specified that require special precautions in use/handling.
- Continuing management of ongoing design work and changes.

HEALTH AND SAFETY FILE DEVELOPMENT

- Structure of format, layout and content.

GUIDANCE NOTE	CONSTRUCTION PHASE PLAN	Code: C008	Issue: A

INTRODUCTION

Regulation 23 of the Construction (Design and Management) Regulations places a specific duty on the appointed principal contractor to prepare a Construction phase plan (before the start of the Construction phase) which is sufficient to ensure that the construction is planned, managed and monitored in a way which enables the work to be started so far as is reasonably practicable without risk to health or safety.

The Construction Phase Plan uses the information from the pre-construction information and information provided by the designers and is developed further to produce safe systems of work through:

- detailed procedures
- method statements
- working instructions relevant to the actual construction activities.

CONTENTS

Section 1 - Project Description

This section describes background information already contained in the relevant first part of the pre-construction information. The information is extended to include details about the principal contractor and other appointed designers, contractors, etc.

This section should include:

- a description of the project and programme details
- details about the client, designers, CDM co-ordinator, principal contractor and other consultants
- the extent and location of existing records and plans.

Section 2 - Communication and Management of the Work

This section should cover the following areas.

- Management Structure and Responsibilities
- Individual responsibility, particularly for health and safety management, needs to be identified within the management structure on site. This responsibility must embrace management from the top down to include all subcontractors and relevant health and safety communication links.

Health and Safety Goals for the Project

The principal contractor needs to focus on those health and safety goals already outlined by the client and embrace them further into his or her own systems for proactive monitoring and reviewing of effectiveness on site.

RIDDOR Arrangements

Arrangements (in conjunction with the Management of Health and Safety at Work Regulations and the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations must be made for:

- ensuring regular liaison between parties on site, e.g. induction talks, briefings, etc
- consulting with the workforce (communication with the workforce ensures that information is transmitted/received in the most efficient manner)
- exchanging design information between the client, designers, CDM co-ordinator and contractors on site
- handling design changes during the project
- selecting and controlling contractors
- exchanging health and safety information between contractors
- site security
- site induction and on-site training
- putting welfare and first-aid facilities in place (facilities for personal hygiene must be on site from the beginning of any construction project)
- reporting and investigating accidents and incidents, including near misses
- producing and approving risk assessments and method statements (these form a key element in the development of the construction phase plan and need to be presented and accepted before the associated work begins).

Site Rules

Principal contractors will enforce their own site rules. Where work is undertaken within an ongoing facility, the client's site rules may also have to be embraced.

Fire and Emergency Procedures

These procedures need to account for overlapping projects and changes brought about by partial and sectional handovers, as well as shared sites. The question of whose procedures take precedence in an occupied site when there is an emergency needs to be resolved before work starts. For example, escape routes and assembly areas should be identified and made known to individuals on site.

Section 3 - Arrangements for Controlling Significant Site Risks

All work activities will be the subject of work-based risk assessments and method statements, which continue to contribute to the construction phase plan. It is essential that modern technological developments are employed as far as is reasonably practicable to minimise occupational health risks (e.g. craneage for the movement of heavy and/or awkward loads).

This section should cover safety and health risks, as outlined below.

Safety Risks

Safety risks involving:
- delivery and removal of materials (including waste) and work equipment, taking account of any risks to the public, e.g. during access to or egress from the site
- dealing with services - water, electricity and gas, including overhead power lines and temporary electrical installations
- accommodating adjacent land use
- stability of structures whilst carrying out construction work, including temporary structures and existing unstable structures
- preventing falls
- work with or near fragile materials
- control of lifting operations
- the maintenance of plant and equipment
- work on excavations and work where there are poor ground conditions
- work on wells, underground earthworks and tunnels
- work on or near water where there is a risk of drowning
- traffic routes and segregation of vehicles and pedestrians
- storage of materials (particularly hazardous materials) and work equipment.

Health Risks

Health risks involving:

- removing asbestos
- dealing with contaminated land
- manual handling
- using hazardous substances
- reducing noise and vibration
- work with ionising radiation
- exposure to UV radiation from the sun.

Section 4 - Health and Safety File

The principal contractor must collate and store relevant information arising out of his or her own processes, as well as those of his or her contractors, designers, etc. It is preferable to document the information into an agreed format, but this information will eventually be passed to the CDM co-ordinator who, by virtue of his or her duties, will amend and add information before ensuring the health and safety file is handed over to the client.

This section should cover:

- layout and format
- arrangements for collecting and gathering information
- storing information.

Implementation and Review

Regulation 23(1)(b) and (c) place a duty on the principal contractor to not only produce a construction phase plan but also to implement, review and refine it in such a way as to ensure the safety of those carrying out the work. The regulations require that the plan continues to be sufficient throughout the construction period and that planning and monitoring continue for the duration.

The plan must be a practical document to ensure that careful planning for the construction phase is followed through and becomes an effective management tool for on-site health and safety. It must be developed in discussion with, and communicated to, any subcontractors and it must be kept up to date at all times throughout the construction period. Of particular importance is the development and vetting of site-specific method statements.

Subcontractors must comply with the plan in order to ensure, so far as is reasonably practicable, the health and safety of their employees and the public and must supply information relevant to their work (e.g. method statements and risk assessments) to the principal contractor for inclusion within the construction phase plan. In turn, the principal contractor must allow the subcontractor time to prepare properly for the work they have to undertake.

REFERENCE

Regulations/ACoPs:

- L144 Managing Health and Safety in Construction. Construction (Design and Management) Regulations. Approved Code of Practice.
- Construction (Design and Management) Regulations
- Control of Substances Hazardous to Health Regulations
- Management of Health and Safety at Work Regulations
- Reporting of Injuries, Diseases and Dangerous Occurrences Regulations

GUIDANCE NOTE	HEALTH AND SAFETY FILE	Code: C010	Issue: A

INTRODUCTION

The health and safety file should contain the information needed to allow future construction work, including cleaning, maintenance, alterations, refurbishment and demolition to be carried out safely. Information in the file should alert those carrying out such work to risks and should help them to decide how to work safely.

Duties of Parties Involved (Client, CDM Co-ordinator and Principal Contractor)

- Under the Construction (Design and Management) Regulations (CDM Regulations), the Client is required to ensure that the health and safety file is available for inspection.
- The CDM Co-ordinator is responsible for ensuring that the health and safety file is prepared for each structure comprised within a construction project.
- The Principal Contractor must make certain that the CDM Co-ordinator is supplied with any relevant information for inclusion in the health and safety file.

The scope, structure and format for the file should be agreed between the client and the CDM-C at the start of a project. There can be a separate file for each structure, one for an entire project or site or one for a group of related structures. The file may be combined with the building regulations log book or maintenance manual, providing that this does not result in the health and safety information being lost or buried.

Contents of the Health and Safety File

Although the format of the file will vary depending on the type of project the list below indicates the basic elements of what should be included in any file.

- A brief description of the work carried out.
- Any residual hazards which remain and how they have been dealt with, e.g. surveys or other information concerning asbestos, contaminated land, water-bearing strata, buried services, etc.
- Key structural principles, e.g. bracing or sources of substantial stored energy (including pre- or post-tensioned members), and safe working loads for floors and roofs, particularly where these may preclude placing scaffolding or heavy machinery there.
- Hazardous materials used, e.g. lead paint, pesticides or special coatings which should not be burnt off.
- Information regarding the removal or dismantling of installed plant and equipment, e.g. any special arrangements for lifting, the sequence or other special instructions for dismantling, etc.
- Health and safety information about equipment provided for cleaning or maintaining the structure.
- The nature, location and markings of significant services, including underground cables, gas supply equipment or fire fighting services, etc.
- Information and as-built drawings of the structure, its plant and equipment, e.g. the means of safe access to and from service voids, fire doors, etc.

The Health and Safety File should NOT contain:

- the pre-construction information, or construction phase plan
- construction phase risk assessments, written systems of work and COSHH assessments
- details about the normal operation of the completed structure, e.g. Operation and Maintenance Manuals
- construction phase accident statistics
- details of all the contractors and designers involved in the project (though it may be useful to include details of the principal contractor and CDM co-ordinator)
- contractual documents
- information about structures, or parts of structures, that have been demolished, unless there are any implications for remaining or future structures, for example voids
- Information contained in other documents, but relevant cross-references can be included.

Managing the Health and Safety File

The Health and Safety File will need to be prepared and then managed throughout the project.

- Preparation of the Health and Safety File
- Preparation of the file should begin at the same time as the pre-construction information is being prepared. If the file is left until the end of the project, it will result in a great deal of duplication of effort to trace the same information sources and will delay the completion of the file unnecessarily.

The file involves compiling information from a variety of sources, including:

- the Client, who can provide existing information, e.g. drawings and location of services, as well as information on how he/she would like the final maintenance procedures to be arranged
- the designers, e.g. architects, structural engineers and quantity surveyors
- the Principal Contractor and subcontractors
- Statutory/private undertakers for utilities, e.g. gas, electricity, water and telecommunications.

Updating the Health and Safety File during construction

The CDM Co-ordinator will need to liaise with the Principal Contractor and sub-contractors during the construction phase of a project in order to assess any design variations or new design elements for possible inclusion in the health and safety file.

The compilation of the health and safety file should be properly managed in order to prevent it from becoming an unstructured dumping ground for miscellaneous data. Such management requires:

- ? rganising regular meetings between the CDM co-ordinator and the principal contractor to review design variations
- Checking that all variations to the work content are recorded, even when there is no financial effect
- Verifying that all variations are assessed in health and safety terms, risk assessments are carried out and that risks to health and safety for future maintenance or demolition are recorded in the file.

Function of the Health and Safety File after the project is complete

The Construction (Design and Management) Regulations (CDM Regulations) require the Client to keep the Health and Safety File once it has been delivered by the CDM Co-ordinator at the conclusion of a project. The client must make the file available to:

- The CDM Co-ordinator and designers on subsequent projects
- Anyone else who has need of it.

Storing the Health and Safety File

The information for the Health and Safety File can be recorded in a variety of ways, including:

- In paper format, with all of the necessary information bound into a single or series of folders, properly cross-indexed
- On computer, ensuring that all information will be retrievable in future.

The safe keeping of the file should be treated with as much care as other important legal documents. In multi-occupancy situations, e.g. where a housing association owns a block of flats, the owner should keep and maintain the file but ensure that individual flat occupiers are supplied with health and safety information concerning their home.

(For further guidance relating to responsibilities for, and the contents of, the health and safety file refer to CDM 2007 ACoP.)

GUIDANCE NOTE	METHOD STATEMENT CHECKLIST	Code: C011	Issue: A

INTRODUCTION

This is simply a format to work to when formulating a Method Statement using the Template contained in the Method Statement Guidance Note. It will ensure that all (or nearly all) requirements are considered. There may be nothing to enter in some of the headings. Keep entries short and simple and relevant to the task/work to be undertaken.

Scope of Works:

In this section give a brief description of what the project entails, for example:

"The demolition of a single-storey building containing some asbestos products and the subsequent rebuilding using the reclaimed materials".

Access / Egress:

Describe access, both on to site and to the workplace once on site. Reference should be made to road names, width restrictions, entry/exit points, suitability for unloading, restrictions on stopping, parking, etc. On site consideration should be given to one-way circuits and the separation of pedestrians and vehicular traffic. This section could also be used to describe availability of on- and off-site parking for contractors.

Lighting:

Consideration should be given to site hours; this may immediately highlight the need for artificial/task lighting if work starts before first light or continues after dusk. Additionally the requirement for general site lighting and specific task lighting would be inserted here and who would be responsible for its provision of it.

Plant and Equipment used:

This section is purely a list of plant and equipment that it is proposed to use on site. It may be useful to include dimensions, weights etc. This box can then be referred to later when specific risk assessments are attached for the various operations/activities.

Materials used:

A comprehensive list of materials is to be entered here. This will highlight any COSHH Assessments and Safety Data Sheets that should be attached to the Method Statement.

Sequence of Tasks:

This section will contain a step-by-step explanation of how the work will be carried out. As the sequence of tasks is followed through, you must insert all the safety considerations that apply to the work, for example:

"The brickwork will then be removed using non-vibratory hand tools by operatives working from a correctly constructed mobile tower scaffold. Only trained operatives will erect mobile scaffold towers".

Risks and Controls:

Within this section a list of identified risks throughout the task will be noted, along with the basic control measures to be put in place. This should be a summary of risks and controls, not just a copy of the actual risk assessments. The full risk assessments can be found at a later annex.

Manual Handling

"Where possible mechanical devices such as Forklifts should be used when carrying out manual handling operations, where this is not possible, operatives must be made aware of the Kinetic System of lifting and moving materials, and employ these methods, where appropriate PPE such as gloves and protective clothing, also where possible the weight and centre of gravity of materials to be manually handled should be made available"

Technical Information:

Any information that is critical to the safety of the project; this may include elements of the structural engineer's reports, previous safety plans, plus inclusion of any design drawings or specifications that may be available.

Training:

Outline clearly activities requiring training that are going to take place on site. If a certain standard of training is required, then ensure it is detailed here. Operatives must be trained and competent in the use of abrasive wheels and cartridge operated tools etc (all training requirements must be fulfilled prior to operatives being set to work).

Example:
"A competent person will at all times control any lifting operations, all loads will be attached and moved by a competent Slinger/Signaller. As with all lifting equipment all accessories are subject to thorough examinations but in this case every 6 months (chains, slings etc.) All accessories are to be inspected weekly and these inspections are to be recorded in a register held on site. At all times during lifting operations the work area is to be barriered so as to prevent unauthorised persons entering the area"

Supervision:

Shown here is who the contracts manager, site manager, foreman/supervisor are, what each will be responsible for, their availability on site and their contact numbers.

Housekeeping and Waste Removal Procedure:

How will waste be removed from site? Consider location of skips, provision of bins and what collection arrangements will be put in place.

The following Risk/COSHH/Noise/Manual Handling assessments are attached:

COSHH Assessments: See attached sheets

Risk Assessments: See attached sheets

Manual Handling Assessments: Manual Handling assessments will be carried out where the need is identified.

Noise Assessments: Where equipment used in this task generates a noise level above the first action level of 80db(A), a noise assessment will be carried out.

GUIDANCE NOTE	METHOD STATEMENTS	Code: C012	Issue: A

INTRODUCTION

WHAT ARE METHOD STATEMENTS

- Method Statements are simply a written form explaining how a task/work will be carried out.
- They should be as simple and straightforward as the CDM-Coordinator / Principal Contractor / Client demands.
- They do however serve an important role in Health and Safety.

PROBLEMS WITH METHOD STATEMENTS

- Too much time and effort in formulating them.
- Lack of understanding as to the reasons and functions of Method Statements.
- Inability to put thoughts and the sequence of tasks onto paper.
- Generic work practices can cause problems when presenting them for vetting by CDM-Coordinator / Principal Contractor / Client.
- Method Statements being seen as a “Paper Chase"
- Method Statements contents not being transmitted to operatives, for example not being ”Live" documents.
- Over complicating or simplifying of Method of Work.

WHY ARE METHOD STATEMENTS IMPORTANT?

Under the duties of the Health and Safety at Work etc Act the Employer has certain duties, for example:

- The provision of a safe place of work for their employees
- A duty to ensure the health and safety at work of their employees
- A duty to ensure the health and safety of others (for example other sub-contractors, members of public, etc) who are not their employees
- One of the more effective ways to ensure that the above is complied with is through the compilation and revision of Method Statements
- It illustrates competence of an organisation
- It shows the logical sequence of steps to management, operatives, so that risks can be identified and addressed, resources can be allocated such as First Aid, Fire, Plant Inspections, Scaffolds, Welfare etc
- It can serves as an aid to illustrating shortcomings in the organisation's safety management systems, for example training and supervision
- The employer is required to ensure that operatives receive instruction, information and training in tasks - Method Statements can act in the partial fulfillment of this requirement
- Method Statements can indicate special precautions that may have to be taken which are not usual to that particular task
- It should indicate division of responsibilities
- Serves as a reference point for persons not knowledgeable about the task, for example Clients, Designers, CDM-Coordinators and Principal Contractors

- Assists principal contractor in the planning of works, for example, any risks, hazards or dangers of the organisation's task/work that could affect other organisations working in the same area at the same time.
- They serve as a reference point for anyone not knowledgeable about the task/work, for example, Clients, Designers, CDM-Coordinators and Principal Contractors.
- It can assist Principal Contractor in the planning of works, for example, dangers of organisation's task that could affect another organisation working in the same area at the same time.

WHEN SHOULD METHOD STATEMENTS BE CARRIED OUT?

- They have now become a standard requirement for almost all construction activities, particularly with regards to CDM works;
- They should be formulated prior to the task/work is carried out;
- They will normally be submitted to a Principal Contractor or CDM-Coordinator for vetting and approval prior to the task/works being given the go-ahead;
- If there is substantial change to the way the task/work is carried out or it is rendered invalid, then Method Statement must be amended accordingly to take into account the effect of those changes.

GENERIC METHOD STATEMENTS

- Although these forms of Method Statements have their uses, they will only be satisfactory in circumstances where the work is of a minor nature and essentially repetitive.
- Different working environment conditions generally make generics ineffective. Method Statements should always be made site specific
- Many Clients, CDM-Coordinators, Principal Contractors reject generic Method Statements.

WHO SHOULD COMPILE METHOD STATEMENTS?

- Ideally it this should be done by someone who is trained and competent within the organisation management structure, though any person who is competent and is familiar with the task can do it.

WHO REQUIRES METHOD STATEMENTS?

- Principal Contractor: for vetting procedures, competence, and addition to construction phase plan (CPP).
- CDM-Coordinator: for establishing an organisation's competency, inclusion in the health and safety file and as a reference point.

HOW IS A METHOD STATEMENT COMPILED?

Ask the questions Who, What, Why, When, How when compiling Method Statements

A basic Method Statement format should look at various aspects:

- The sequence of tasks
- Resource requirements, plant, equipment and materials
- Isolation or services and any other special measures to be taken
- The safety of the public and other contractors
- Housekeeping and waste removal
- First Aid and welfare facilities
- Access for materials both onto the site and to the workplace
- Fire precautions and emergency procedures
- Principal Contractors should not do Method Statements for sub contractors**.**

SOURCES OF INFORMATION WHEN COMPILING METHOD STATEMENTS

- Safe Systems of Work.
- Knowledge and/or work experience of competent operatives carrying out the work.
- Manufacturers and suppliers instructions and information on any products, plant and equipment.

ADDITIONS TO METHOD STATEMENTS HAZARDS

- Risk assessments
- COSHH assessments
- Manual Handling assessments
- Noise assessments
- Layout drawings/sketches
- Safe Systems of Work
- Specific training needs

EXAMPLE METHOD STATEMENT TEMPLATE

METHOD STATEMENT FOR WORKS

Project:

Method Statement Prepared By:

Site Address:

Method Statement No.:

Revision:

Scope of Works:
Access / Egress:

Lighting:
Plant and Equipment used:

Materials used:

Sequence of Tasks:

Risks and Controls: The following risks and control measures have been identified: See Risk Assessment index for detailed assessments.
Technical Information:
Emergency Arrangements:

Training:
Supervision:
Housekeeping and Waste Removal Procedure:

The following Risk/COSHH/Noise/Manual Handling assessments are attached:

COSHH Assessments: See attached sheets

Risk Assessments: See attached sheets

Manual Handling Assessments: Manual Handling assessments will be carried out where the need is identified.

Noise Assessments: Where equipment used in this task generates a noise level above the first action level of 80db(A), a noise assessment will be carried out.

Date of compilation:

REFERENCE

Regulations/ACoPs:

HSE Guidance:

Standards:

Other:

GUIDANCE NOTE	COMMUNICATION WITH FOREIGN WORKERS	Code: D002	Issue: A

INTRODUCTION

Good communication is essential to ensure a safe working environment. Employment of foreign nationals, can present communication difficulties. Many workers have only a basic level of understanding of the English language. Employers must be able to ensure that the health and safety message is communicated to everyone at risk, whatever their ethnic background or standard of literacy.

RISKS IDENTIFIED

The majority of risks arise from an inability to understand written or verbal instructions, how equipment works or specific warnings. Failure to understand instructions places workers in danger to themselves and also endangers other work colleagues.

SOLUTIONS

There are many solutions available to help improve communication:

- Buddy system. - Use of an English speaking compatriot to act as an interpreter to pass on information and act as a minder for the non-English speaker.
- Design. - Consideration at the design/procurement stages of a contract to ensure tender documents address this issue. Request that contractors have appropriate arrangements and funding is in place.
- Guidance. - Provision of information in various languages and formats, including pictograms, clear diagrams, pocket safety notes, etc. for providing essential information.
- Inductions. - Inductions could be carried out in a variety of languages where appropriate. Detailed explanation of site procedures and site signage is essential.
- Supervision. - Increased supervision and appropriate training to ensure correct working practices are followed. Ideally the supervisor should be bilingual.
- Toolbox talks. - Regular toolbox talks can form an essential part of ongoing consultation with employees, these must be relevant and an interpreter could be employed if English is not understood.
- Training. - It is essential that the operative is competent to undertake the task and they must be appropriately trained. Training media is often available in different languages. However, there is a risk that the individual may not have an adequate understanding of signs and instruction, which must not be overlooked.
- Translators/translation. - Where the workforce has difficulty with the English language individuals can be provided with a list of commonly used words and their meanings, wording can be replaced with pictograms, simple instructions and guidelines in a number of common foreign languages can be provided and it can be ensured that groups of foreign operatives have at least one bilingual member to interpret. Provide important documentation such as method statements and risk assessments in the employee's native language.

GUIDANCE NOTE	INDUCTION TRAINING METHODOLOGY	Code: E002	Issue: A

It is important, that the safety induction training concentrates on the core elements that allow employees to work safely. The following key points should be considered.

- Training should not overload new employees with information. This can be both confusing and demotivating.
- The major issues that new employees will encounter during their early days with the organisation should be covered in the training.
- The level of detail in the training should be limited, but signposts to more detailed information should be provided.
- Safety training should be incorporated into any general induction training, as opposed to being “tacked onto” the end of it, as is often the case. If safety is not given equal prominence in a general induction programme, the message that the organisation does not rate safety as highly as other issues will be sent to new employees.

Generally, safety induction training presents information at three levels:

- general information regarding health and safety in the organisation.
- local health and safety information.
- job-specific information necessary to allow the person to begin working safely.

ORGANISING THE INDUCTIONS

The health and safety induction must be undertaken as soon after the commencement of the new starter as practicable, preferably within the first few days.

In an ideal situation, the induction would be carried out on a one-to-one basis or with no more than three or four people. This allows the induction to be better tailored to the needs of each individual and is more likely to ensure a more effective acceptance of the information being passed on. In some cases, however, it will not be practicable to undertake the inductions other than in larger numbers and probably in conjunction with other induction sessions. In this case it is important that a competent person, probably at the new work area, provides the more specific aspects of the induction, ie those particular to the person, or their new work area.

Quite often it is difficult for the health and safety adviser to be aware of the actual start date of new employees. Since the human resources department is most likely to be aware of new starters, it is useful to develop some form of notification, preferably well in advance.

Some organisations use video or computer-based training to provide the induction training. These have many advantages, notably the much reduced need for administration and the ability to review it at will, but they can de-personalise the message and thus not have the best effect on encouraging positive safety culture that a face-to-face induction session can have. If this type of induction is planned, however, it is important that the new starter has adequate access to the means of using this type of induction.

GENERAL INFORMATION REGARDING HEALTH AND SAFETY IN THE ORGANISATION

Refer to Part 2 Arrangements Section E of the policy document for forms & Content.

In addition to general Health and Safety Information you should consider local health and safety information

LOCAL HEALTH AND SAFETY INFORMATION MIGHT INCLUDE:

- local fire and emergency arrangements, including the required action in the event of a fire or emergency, escape routes, muster points, identities of fire wardens, etc.
- first-aid and accident-reporting procedures, such as the identities and locations of first aiders, location of the accident book, and action to be taken in the event of an accident.
- welfare arrangements e.g. the location of facilities for obtaining food and water.
- local rules and instructions, including any particular requirements for that location, over and above general organisation rules.
- details of safety representatives and safety committees.

JOB-SPECIFIC INFORMATION NECESSARY TO ALLOW THE PERSON TO BEGIN WORKING SAFELY

Job-specific information necessary to allow employees to begin working safely includes:

- the nature of the hazardous substances employees are using, and the relevant controls.
- any hazards related to the equipment employees are using, along with instructions on safe working procedures.
- any other hazards to which employees might be exposed, and the appropriate safe systems of work.

SAFETY INDUCTION TRAINING METHODS

The training method used will depend on the length of the induction programme, and how hazardous the working environment is. In low-risk environments, e.g. offices, the training might be only a few hours long and could be conducted in the office itself. In more hazardous environments, a combination of methods might be necessary.

The principal methods appropriate for safety induction training are:

- lectures and discussions.
- videos/DVDs.
- computer-based training.
- tours.
- documents and literature.

LECTURES AND DISCUSSIONS

For induction purposes, these must be informal and of short duration. They must give new employees the opportunity to ask questions. It is preferable to have a senior supervisor or manager attend, as well as the trainer, as this adds weight and importance to the subject matter.

VIDEOS/DVDS

Many suitable videos/DVDs are available off-the-shelf that cover general topics relevant to induction training, such as:

- display screen equipment use.
- general attitudes to safety and an introduction to the Health and Safety at Work etc. Act, 1974.
- fire safety.
- office safety, etc..

Many organisations will have their own induction videos/DVDs produced, which not only have the advantage of covering site and organisation-specific issues, but also reinforce the safety culture by emphasising the importance of safety to the organisation. However, it is important not to rely wholly on videos/DVDs for induction training purposes - some interaction is also required within the training programme.

COMPUTER-BASED TRAINING

This involves the new employee undergoing training via interactive computer software, covering a particular health and safety topic. Normally these programmes are tailored to the needs of an organisation. The programme usually includes some form of evaluation, such as a test at each stage. It is also possible to monitor the time that employees spend on each subject area, to ensure that they do not neglect any of the material.

TOURS

An escorted tour of the work premises is essential for the general familiarisation and orientation of new employees. It is also an opportunity to meet key personnel, such as safety advisors, first aiders and fire wardens. During the tour, any hazardous areas, e.g. noise hazard zones, should be pointed out, and particular restrictions explained.

DOCUMENTS AND LITERATURE

During induction, it is useful to give new employees appropriate documentation. However, it is important not to overload them with material that is either irrelevant or too detailed. Appropriate documentation might include:

- third-party information, e.g. leaflets produced by the Health and Safety Executive (HSE).
- organisation information, such as:
  - leaflets, e.g. a summary of the safety policy or general rules and information.
  - specific safety instructions for carrying out certain tasks or working in hazardous areas, etc.
  - purpose-designed induction information, which might also include an evaluation test to ensure understanding and retention of the contents of the programme.

PLANNING INDUCTION TRAINING

Whichever method, or combination of methods, is used, it is important that the training is planned, and that new employees are given a timetable of induction activities. The induction might be spread over the first few months of employment. However, certain information must be given at the earliest opportunity. Therefore, a typical induction programme might look like the following.

Typical induction Programme

Timescale	Content
First Day	● Fire evacuation procedures. ● "No smoking" policy and general safety rules. ● Names and locations of first aiders. ● Any job-specific information needed by employees immediately so they can carry out their jobs safely.
Within the first week	● The health and safety policy. ● The safe systems of work applicable to their employment. ● Names and locations of key staff, such as the safety advisors, safety representatives, etc.
Within the first month	● Formal induction to the organisation's safety arrangements. ● More details of the safety culture of the organisation, and the standards expected of employees. ● Evaluation of new employees' understanding and retention of the induction information.

EVALUATING INDUCTION TRAINING

In simple, low-risk environments, e.g. offices, it may not be critical to evaluate the degree to which new employees have absorbed and understood the safety induction material. The greater the hazards faced, however, the more important it is to be reassured that new employees have fully understood what is required of them in terms of safety. Induction training, as opposed to other health and safety training can be evaluated using the following methods:

- simple written tests, usually following a multiple-choice format, or requiring single word/short sentence answers
- tests incorporated within computer-based training, or organisation induction booklets
- close observation of behaviour by the supervisor or manager, to ensure that the induction material is reflected in new employees' conduct.

It is important that new employees are informed of the evaluation. They should also be informed that failure to achieve the minimum standard may result in their having to repeat the training or retake tests - and might ultimately impact on whether or not they are retained after the probationary period has expired.

SAFETY INDUCTION FOR NON-EMPLOYEES

Employers have a legal duty to provide information to non-employees. However, this duty varies, according to the relationship between the employer and non-employee. Non-employees fall into three main categories:

- contractors, e.g. for maintenance or installation work
- temporary agency staff, provided by an employment business
- people working on fixed-term contracts

CONTRACTORS

Organisations should have separate arrangements for the engagement and control of contractors. Hence, separate induction training is usually necessary. This training will include the organisation's requirements for contractors. Contractors may bring their own hazards onto the site, and both the contractors themselves and the client's employees could potentially be exposed to these hazards. Contractors may also be exposed to the client's hazards.

Induction training for contractors should include, as a minimum:

- health and safety rules for contractors.
- specific site restrictions.
- hazards of the client's undertaking, as far as they might affect the contractors.
- security arrangements.
- incident and accident-reporting arrangements.
- welfare arrangements - clients may restrict the use of their own facilities to employees, and require contractors to make their own arrangements.
- fire and emergency arrangements for the site.

It is common for large clients to have booklets containing rules and arrangements specifically for contractors. These cover the above points. Induction training for contractors can be delivered via many different methods. In hazardous environments contractors should be tested on their understanding of health and safety issues before they commence work.

TEMPORARY AGENCY STAFF

Temporary agency staff are employees of the employment business ("agency"). Therefore, both the agency and the host employer have a legal duty to provide the following information to them.

- The host employer must inform the agency of any skills required by workers in order for them to work safely.
- Agencies must supply staff with the appropriate skills.
- Host employers need to ensure agency staff have the appropriate skills.
- The host employer must provide induction training detailing arrangements and work procedures for the health, safety and welfare of agency workers.

PEOPLE WORKING ON FIXED-TERM CONTRACTS

People working on fixed-term contracts should be treated as employees, although a simplified induction training programme may be used for very short-term contracts.

MEANS OF PROVIDING INFORMATION

The main means of providing information are as follows.

- Verbal and audio information provision.
- Signs and notices.
- Posters.
- Notice boards.
- Electronic displays.
- Computer-based information provision.
- Newsletters and publications.
- Static displays.

Visual information should be varied on a regular basis. If not, the information will soon be ignored as it will become part of the “decoration” of the area and no longer be noticed.

It is advantageous to change posters once a week if possible, even if only to rotate them to different parts of the premises. Notice boards should be kept tidy and free from information not related to health and safety, e.g. social events or general announcements. It can be useful to have a notice board that has a locking glass cover to prevent unauthorised placing or removal of notices.

A particularly useful way of ensuring that the information is changed is to use one of the modern types of electronic displays. These use a variety of techniques, but the most common are the panel of small lights that can be programmed into moving displays of text and simple figures, and visual display monitors displaying information fed from a computer source.

Static displays can be very useful to use for the provision of information. They can provide a distinct focal point, as long as they do not cause an unwanted obstruction. They can be used to display purely text and pictorial information, but can also be used to demonstrate items of equipment, e.g. a range of personal protective equipment, or equipment or techniques that form part of a safe system of work, particularly if it is a new method.

GUIDANCE NOTE	TOOL BOX TALKS	Code: F003	Issue: A

INTRODUCTION

Tool box talks have been developed to promote health and safety of our employees and others who may be working for us or may be affected by our work.

Tool box talks are intended to be a part of ongoing operational training to be presented weekly or every other week. The aim for any major contract should be to cover all the subjects within the period of the contract but, if possible, the majority of the subjects should be covered before halfway through the contract. Any non relevant subjects to the job in question may be omitted for short contracts.

Copies of these sets of talks should be provided to each site. When a talk has been given, the supervisor should record the talk. Attendees should sign and print as confirmation

Proof of this type of training is important as evidence of health and safety competence of operatives.

ADVICE ON PRESENTATION

The purpose of tool box talks is to assist supervisory staff who have some knowledge of the subjects to be able to give sufficient advice and instructions to employees so as to enable them to prevent accidents and injuries at work.

To do this, it is important to bear in mind the following points:-

- Although detailed specialist knowledge is not required to do the talk, experience of the activities is necessary together with an adequate appreciation of safety issues. The supervisor on site is probably the best person to lead the discussions.
- The supervisor on site should set aside time for these talks either by appending the time (10-15 minutes) to a tea break or first thing in the morning, when people are most likely to give their attention.
- Choose the right place. Avoid locations where distractions are likely. Make sure you can be heard and you will not be interrupted. Ensure phone calls and visitors are dealt with by someone else so that you and your listeners can concentrate on the talks.
- Speak clearly and loudly enough to get the message across. Use your experience, mention any examples you know of or any stories you have heard to liven up the presentation.
- You do not have to read the content of each talk - if you wish, use the points on the sheet as a basis for the talk and relate the subject to activities or equipment relevant to the site. Some preparation will be required beforehand to plan what your will actually say.
- Allow time for questions. Be prepared for a few questions, some of which may have to be referred to a safety advisor or senior management. Also be prepared for silence - try to ''break the ice'' with a question to provoke discussion. If someone asks a question, make sure everybody heads the question before you answer it and address your answer to the whole group, not just the questioner.
- Place a clock or watch where you can easily see it so that you can pace your talk without obviously doing so - glancing at your wristwatch periodically to check the time makes your listeners restless.

GUIDANCE NOTE	TRAINING MATRIX	Code: F004	Issue: A

Training	IOSH Directing Safely	IOSH Managing Safely	Site Safety for Mangers / Supervsiors (SMSTS/ SSSTS)	First Aid (FAW / EFAW)	Asbestos Awareness	CSCS or Equiv Skill Card	NVQ / C&G	Fork Lift Truck Training	Plant Training
Senior Mgt									
Middle Mgt									
Fire Wardens									
First Aiders									
Office Based Staff									
Operatives									

Note this training matrix identifies examples of training courses only; it should be considered a live document and amended to suit organisational needs.

Further details on course outlines can be found on The Health and Safety People Ltd's website training page www.thsp.co.uk

GUIDANCE NOTE	STEP UPS/HOP UPS	Code: G103	Issue: A

INTRODUCTION

Step ups also known as hop ups, low level platforms or fold ups, are usually used by decorators (painters and plasters) for low level access work. As such work is deemed as "working at height" under the Working at Height Regulations 2005, a safe working platform should be used. Step ups are therefore useful within the correct environment due to its light weight aluminium frame and size (they are usually 510mm wide and 2m high). Step ups can also be made from glass fibre. Step ups therefore provide an ideal, suitable working platform for low level access and provide a safe station for a worker to carry out their duties. However falls are the major cause of accidents of which 2/3rds of all major injuries are caused by "low falls" (below head height).

HAZARDS

Operatives should only be using Step ups for low level work and not gain additional height by placing blocks, pallets, boxes or other materials on top of the platform.

Operatives must not over reach when using platforms, Step ups need to be moved into position to permit safe working practices.

Stepping back from the platform can cause a fall resulting in possible major injuries.

CONTROL MEASURES

Under the Management Regulations (Reg 3) a suitable and sufficient risk assessment should be carried out prior to using Step ups. Hierarchy of control measures need to be considered when working at height and best practice considered.

All work using a platform needs to be properly planned, organised, appropriately supervised and carried out by a competent person.

If using Step ups to external areas they should not be used if weather conditions jeopardise health and safety of the operative.

SAFE SYSTEMS OF WORK

Once a risk assessment is in place and an alternative safer method of access can not be identified then all operatives should have awareness of the risks involved and follow the above control measures. Daily inspection should be completed for Step ups prior to first use and weekly inspections recorded. Any defects found should be reported and an alternative means of access found.

The safe working load identified on Step ups should not be exceeded by the person using this platform or by materials stored.

Step ups should only be used in areas where an alternative safer platform can not be used (i.e. due to constraints on space and access). They should only be used for short duration and light works.

TRAINING & COMPETENCE

All operatives should have working at height training and be familiar with safe systems of work. All works should be appropriately supervised.

PERSONAL PROTECTIVE EQUIPMENT

Additional PPE should not be required other than for associated tools or equipment in use. Mandatory PPE should be worn as per site rules.

REFERENCE

Regulations/ACoPs: Working At Height Regulations
Management Regulations

GUIDANCE NOTE	PODIUM STEPS	Code: G106	Issue: A

INTRODUCTION

Falls from height are a major safety concern in industry, and one of the main causes of falls from height are the use of stepladders, which are often unstable and not suitable for use when carrying major weights. Podium Steps and micro-mobile work platforms have been shown as safer alternatives to stepladders

PODIUM STEPS

Podium steps provide a practical alternative to the stepladder, meeting the requirements of The Working at Height Regulations, by adding handrails to a small working platform, thus providing the element of fall prevention required by the regulations.
The folding frame of Podium Steps makes access into enclosed or confined spaces, for work at height, much easier.
The ability to pass through standard doorways, ease of transport, and their light weight, are distinct advantages of the use of Podium Steps.

GENERAL ADVICE FOR USE

- Users should be instructed in assembly and use.
- All podium components must be fitted.
- Outriggers extended (if fitted).
- Platform gates to be closed and locked (these sometimes contribute to stability).
- Wheel locks must be engaged when the Podium is in use.
- Podium positioned in such a way as to avoid overreaching.
- Guardrails adjusted to suit platform height.
- Podiums to be inspected regularly.

INSPECTIONS

Establish that the Podium Steps, stability devices and other accessories are in a safe condition before using them. Only use equipment that:

- Does not have any visible defects, by ensuring a pre-use check is made by the user each working day.
- Has a current visual inspection report. It is recommended that inspections are carried out at least once every 7 days for frequently used Podium Steps
- Is suitable for the type of work to be carried out. (As a result of a risk assessment)
- Has been maintained and stored in accordance with the manufacturer's instructions.

REFERENCES

SI 2005/735 The Work at Height Regulations.
MCG Health & Safety Strategy
Podium Steps - User Information

GUIDANCE NOTE	MOBILE ACCESS TOWERS	Code: G107	Issue: A

INTRODUCTION

This guidance relates to free-standing mobile access towers manufactured from prefabricated components. It is based on information contained within the Prefabricated Access Suppliers' and Manufacturers' Association (PASMA) Operator's Code of Practice which incorporates the requirements of health and safety law, the Health and Safety Executive (HSE) guidance, and British and European standards.

STABILITY

One of the main reasons for selecting aluminium alloy towers is their lightness and ease of assembly. Due to this lightness, care must be taken to ensure the stability of the structure.

It is no longer appropriate to apply simple rules of thumb, e.g. height to base ratio of 3 x base dimensions for external use or 3.5 for internal use. Instead, reference must be made to the supplier's assembly instruction manual, which will specify the safe height to which various tower configurations can be erected and provide information on the use of stabilisers and outriggers to increase the stability of high towers. PASMA recommends that stabilisers or outriggers are added at the first available opportunity, usually after the first module is complete.

Wind affects the stability of a tower by imposing a horizontal load onto the tower, which in turn may cause it to overturn. During normal safe working conditions this tendency is counteracted by the weight of the tower and the effect of the outriggers or stabilisers.

Towers should be stable in a free-standing condition in a wind pressure that equates to 28mph (Beaufort force 6). However, **if the wind speed should exceed 17mph you should cease to work upon the tower**. If the wind speed is likely to reach 25mph the tower should be tied into a rigid structure and if it is likely to reach 40mph it should be dismantled.

SAFE LOADING

Generally, the manufacturer's instructions will give the safe working load (SWL) that can be placed on any platform, the SWL that can be placed on the tower as a whole and the SWL that can be placed on the castors. The castors will have this loading marked upon them. It is recommended that the maximum design load be displayed at the base of the tower for the information of all users.

Any load hoisted onto the tower must be within the effective base dimensions of the tower. Attempting to hoist a load outside the base area may cause it to overturn. Advice must be gained from the suppliers before hoisting loads to ensure the safe and stable use of the tower.

MEANS OF ACCESS

Access to the platform must be provided by integral/vertical ladders, stair ladders, inclined ladders or stairways. These should be erected in accordance with the supplier's instructions. A stairway should be used where there is frequent movement on or off the tower or where materials are carried. External ladders must never be used. Where access is through a fully decked platform, this must be via a hatch in the platform that is capable of being secured in the closed position. The minimum size of the hatch must be 400mm x 600mm.

MOVING

Towers are never to be moved with persons or materials on the platform and are only to be moved by applying force at or near the base of the tower.

All holes, ducts, pits or gratings near the tower are to be securely covered prior to movement being carried out.

If towers fitted with outriggers are to be moved regularly it is advisable that the outriggers should also be fitted with castors.

CANTILEVER PLATFORMS

Towers can be fitted with cantilever platforms. Such towers are to be erected in accordance with the manufacturer's instructions and must only be comprised of components designed and supplied by the manufacturer for that purpose. If such towers are mobile their stability will be affected, therefore, great care is to be taken whilst moving them.

SCAFFOLD BOARDS AND STAGING

Deck areas on aluminium towers must not be made up of scaffold boards. If a bridge is being constructed between two towers proprietary staging units are to be used. Care is to be taken to ensure the stability of the towers. The staging is to be firmly supported on a load-bearing part of the tower and secured to prevent movement with a minimum of 600mm oversail on either end support. If the unit is purpose-designed, with integral hooks for attachment to the tubular transom, the oversail is not required. Guardrails and toe boards are to be provided to such staging.

Care should be taken that the design load and stability requirements are complied with and that the working platform width is a minimum of 600mm. This may require the use of two staging units.

INSPECTIONS

Before Erection

Ensure that the supplier's manual is on site and has been read and understood, and that the operatives erecting the tower are competent. The following components are to be checked to ensure they are in good condition and are compatible:

- Castors. - Check that the castor housing and wheel are not damaged, that the wheel and swivels rotate freely and that the brake is effective.
- Adjustable legs. - Check they are not bent, that threads are free from debris, are clean and are not damaged. Check that the device fitted to stop the leg falling out is functioning.
- Frames. - Check that the members are straight and undamaged, and that they are free from extraneous material such as concrete. Spigots are to be straight and parallel with the axis of the column tube, and locking devices are to be functioning correctly.
- Braces, stairways and ladders. - Check that they are straight and undamaged, and locking hook mechanisms are functioning correctly.
- Platforms. - Check that they are undamaged and the frames are true and square. Check plywood decks are not split or warped and are fixed firmly to the frames. Where toe boards incorporate clips or fittings, check that these are undamaged.
- Ancillary parts, such as outriggers and stabilisers. - Check they are undamaged and function correctly.

Before Use
After the tower has been erected the following checks are to be made before it is used:

- The tower is level and square, and the horizontal braces and platforms are level.
- Outriggers or stabilisers are correctly positioned and secure.
- Base plates or castors are fully in contact with the ground and castors are properly locked.
- Spigot and socket joints are secure.
- Bracing members have been located in accordance with the manufacturer's instructions.
- Guardrails and toe boards are in position.
- Access stairways and ladders are in position and correctly secured.
- The ground is clear of obstructions, potholes and overhead obstructions.

During Use
During use the scaffold is to be kept in good order. Should parts become damaged they are to be replaced before the scaffold is used again. Due to the nature of these towers and the materials used in their construction, they are unstable during high winds and are, therefore, not to be used in windy conditions. After high winds have been experienced they are to be inspected as detailed in "before use" above.

A working platform that is used for construction work and from which a person could fall 2 metres or more must be inspected at least every 7 days and a formal record of inspection kept - this includes a mobile working platform.

Should a tower be used in a public place, e.g. housing estate or industrial area, etc. precautions should be taken to prevent unauthorised access onto the tower or vehicles colliding with it. This may be by the use of security fencing. Certain locations may require a pavement license that may impose additional conditions of use.

If towers are to be left incomplete or damaged they should display a clearly visible warning notice stating the tower's condition.

HANDLING AND STORAGE

The life of aluminium towers will be increased if proper care is taken during handling and storage. Before storage, the components should be cleaned and any concrete or corrosive substances should be removed. Proper stacking will reduce damage and make identification of components easier.

GUIDANCE NOTE	MOBILE ELEVATED WORK PLATFORMS (MEWPs)	Code: G108	Issue: A

INTRODUCTION

There are two main types of power-operated work platforms - mobile elevating work platforms (MEWPs) and mast climbing work platforms (MCWPs).

MOBILE ELEVATING WORK PLATFORMS

MEWPs are available in a wide variety of different types; ranging from vehicle mounted articulated and telescopic booms, self-propelled articulated and telescopic booms, scissor-lift platforms and trailer mounted articulated/telescopic booms.

Safety Features

Regardless of type, there are a number of safety features that must be present on the platform before it is used:

- The operator controls shall be fitted at the platform level with an override at ground level for emergency use only.
- The platform shall be fitted with guardrails and toe boards, with a safe means of access provided.
- The chassis is to be fitted with a levelling device to ensure that the platform is vertical when in use.
- All operators shall be trained and competent in the use of the equipment.
- All units shall be fitted with an audible reversing signal.

Safety Precautions

The following safety precautions shall be taken:

- The platform is only to be used on firm, level ground, sufficiently compacted to take the weight of the platform, operators and materials.
- All wheels shall be locked or outriggers used in accordance with the manufacturer's instructions.
- Sole plates shall be used under the outriggers where necessary.
- The safe working load (SWL) is to be marked on the machine and shall not, under any circumstances, be exceeded.
- The maximum number of people allowed in the carrier should not be exceeded.
- Allowance shall be made for any effects that the wind may have on the platform.
- Persons shall not leave the platform whilst it is in an elevated position; nor shall materials be transferred to or from the platform.
- Stability of the platform shall be ensured at all times whilst it is in use.
- The work area should be segregated off to separate the MEWP from other site traffic.
- Check the work area to avoid overhead crushing or contact hazards.
- The platform shall not be erected in the vicinity of overhead power lines until such time as the electricity board have provided details of the necessary clearances and these clearances have been complied with.
- A rescue plan should be agreed and in place in the event of a fall.

Maintenance, Servicing and Inspections

Maintenance, servicing and inspections shall be carried out in accordance with the manufacturer's instructions and shall be carried out by suitably trained and experienced persons.

Inspections and examinations shall be carried out as follows:

- Daily. - The operator shall carry out a visual inspection prior to use and after adverse weather conditions, such as rain.
- Weekly. - A person authorised for the purpose shall carry out an inspection and the findings of the inspection shall be recorded in a record of inspection. Any defect found shall be corrected immediately or the platform withdrawn from use.
- Six monthly or after accidental damage or major repair or modification. - A competent person shall carry out an inspection. All working parts of the platform shall be thoroughly examined. A certificate shall be provided stating that the platform is safe for continued use and giving the date of the next thorough examination.

Records

Records of all maintenance, repairs, inspections and examinations shall be kept at head office. The record of weekly inspections shall be retained with the platform. Machines that are hired in shall only be accepted if they are accompanied by proof of inspection.

Use of fall protection

If there is still a residual risk of impact or persons falling after you have assessed the risks and put the control measures in place, then the use of fall protection equipment should be considered, for example:

- when working next to or in a live highway or where there is a risk of a vehicle hitting the MEWP;
- when travelling with the carrier in a raised position where it may strike fixed objects in its path);
- when travelling with the carrier in a raised position over uneven ground;
- steel erection where the carrier has to move in and around the steelwork.

The MEWP must be suitable for travelling with the carrier in a raised position.

Types of fall protection equipment

There are two types of fall protection that a person can use in the carrier:

- **WORK RESTRAINT SYSTEM** (also known as fall restraint and incorrectly referred to as work positioning) - this stops a person falling from the carrier in the first place (unless it is a MEWP overturn).
- **FALL ARREST SYSTEM** - this stops a person after they have fallen from the carrier (unless it is a MEWP overturn).
- When deciding, as part of a risk assessment, which system should be used, the following points should be considered.
    - Check with the manufacturer that the MEWP can be used as part of a fall arrest system. Does the carrier have suitable anchor points? The majority of anchor points are currently rated for work restraint and not fall arrest. Anchor points in the carrier should be marked for work restraint or fall arrest and the number of persons for which they are rated (arresting a fall could also generate enough force to cause an overturn - check the MEWP can absorb this shock load).
    - After a fall the MEWP will flex, causing more severe swinging movements than normal (this could lead to a higher risk of striking the MEWP or other nearby structures).
    - Could the dynamic impact of a fall arrest cause other occupants, loose materials or tools to be ejected from the carrier?
    - The user needs to establish the height the carrier will be working at and select fall arrest equipment that will work within that height. A typical fall arrest system with a full body harness, 2.0 m lanyard and shock-absorbing device requires over 5 m clearance height to deploy and arrest a fall. Contact the fall arrest equipment supplier to establish the minimum clearance height for the proposed equipment.
    - Check that there are no projections (balconies, canopies) that a person could strike during a fall.
    - After a person’s fall has been arrested, how are you going to rescue them? There should be a rescue plan and people should be practiced in this.

GUIDANCE NOTE	FALL ARREST - RESCUE PROCEDURES	Code: G109	Issue: A

INTRODUCTION

The use of fall arrest equipment is now commonplace with operatives relying upon harnesses and other associated devices to save their lives in the event that work at height goes wrong. A failure to properly plan for this event could have potentially fatal consequences.

The Work at Height Regulations requires employers to ensure that all work at height is properly planned and to make provisions for rescue arrangements where any work at height is carried out. This guidance note addresses issues relating to the rescue of an arrested operative following a fall and assumes that the hierarchy of controls laid down by the Work at Height Regulations have been properly observed. Further information can be found in Guidance Note G100 Working at Height.

KEY HAZARDS

Some key hazards associated with an arrested fall are listed below. This list is not exhaustive:

- Injury sustained resulting from striking objects during the fall.
- Injury sustained during the fall arrest resulting from poorly fitting harness.
- Suspension trauma resulting from the operative being suspended in an upright position and not being rescued in time.

KEY CONTROL MEASURES

Once a fall has occurred a rapid response is essential. Even if the operative is conscious and un-injured suspension trauma will set in rapidly resulting in the operative becoming unconscious. It is essential that:

- A work at height rescue plan is in place.
- Those affecting the rescue, including self rescue, are fully trained.
- The correct equipment has been identified and is readily available for use.
- Rescuers are not placed in unnecessary danger.
- First aiders are aware of how to treat suspension trauma.

SUSPENSION TRAUMA / TOXIC SHOCK

Suspension trauma is a condition brought on by an individual being suspended in a vertical position in a harness and can be deadly. Once a person becomes suspended circulating body fluids begin to pool in the lower limbs. This can reduce the blood flow to the heart which in turn can reduce the blood flow to the brain resulting in unconsciousness. Once the casualty becomes unconscious the condition is compounded by the loss of movement of the limbs and the straps of the harness restricting blood flow. At this stage the blood circulating around the system can be so reduced as to cause oxygen starvation to the brain resulting in death or damage to other vital organs such as the kidneys.

It is worth noting that where a person has suffered an injury during the fall then the speed with which suspension trauma sets in is likely to increase. Other issues such as the physical fitness, age and even weather conditions can also have an effect.

To avoid the onset of suspension trauma the casualty should be encouraged to exercise their legs by raising them up and down slowly stimulating the flow of blood. Also, suspension trauma relief equipment is now available from some manufacturers. Both are only effective with conscious casualties and must not delay the rescue.

Once an operative has been rescued it is important that those taking part in the rescue and those administering first aid understand the dangers posed by **toxic shock** which is also potentially fatal. This results from the blood which has been pooled in the body becoming de-oxygenated and heavily contaminated with carbon dioxide and toxins. If the stale blood is allowed to rush back to the heart the casualty could suffer a heart attack or organ failure which can occur several days later.

To avoid toxic shock the casualty should be placed in a sitting position with the knees drawn up toward the chest. Any operative who has been suspended in a harness for more than 5 minutes should be taken to casualty for treatment. If suspension trauma is possible then the casualty may need dialysis to protect their kidneys.

THE RESCUE PLAN

All rescue plans should aim to recover a casualty within ten minutes to avoid the risk of suspension trauma. It is important that a rescue plan is available for each different type of work at height that is taking place on any given site. It is not sufficient to have a generic plan in place as this may not suit each different circumstance. Managers, supervisors and operatives who are to be involved in attempting a rescue must be trained to a suitable standard and the rescue plan should be periodically rehearsed. No rescue should rely upon the emergency services. The rescue plan should be a written document and should contain the following:

- Site address / location of work
- Names of operatives involved in work at height operations.
- The nature of the work.
- Names of managers, supervisors and operatives who will be involved in the rescue.
- Competency of rescuers including details of training especially relating to any rescue equipment being used.
- Communications i.e. how the alarm will be raised, how the rescue team will be summoned and how they will communicate during the rescue.
- First aid availability and who will summon the emergency services.
- The rescue methodology.
- Nature of the rescue equipment including availability and serviceability.
- Conscious casualty procedure.
- Unconscious casualty procedure.
- Any unusual considerations such as the structure, weather conditions etc.

RESCUE METHODS

There are so many methods of rescue that it is not possible to list them all off. When considering the method of rescue that is most suitable, each unique situation from which a casualty may need to be recovered from must be considered. The type of fall protection equipment in use will also need to be considered.

In some cases the rescue could be very simple such as where a scaffolder falls and is suspended it may be possible for him to self recover back into the scaffold. This situation would however change substantially if the scaffolder were to suffer an injury or become unconscious. A further example is the use of a man-rider cage suspended from a crane. Here a rescuer can be attached to the cage, be lowered adjacent to the suspended casualty, open the gate and recover the casualty. But what if the crane could not operate because of high winds, or the casualty had fallen through a gap not accessible by the man-rider.

It is essential that the risk assessment process be applied to each situation and that each unique situation is considered. Only then can the method of rescue be determined.

GENERAL CONSIDERATIONS

- The rescue plan must take into consideration the potential situation from where the casualty may need to be recovered from. It should also consider the type of equipment being used by the casualty and its condition if it has been damaged during the fall.
- There must be sufficient additional anchor points available for rescue equipment. These will also need to be correctly positioned.
- The potential loading of anchor points or devices and associated rescue equipment should be pre-planned and their suitability for purpose confirmed.
- Consider the potential for abrasions to equipment suspending the casualty and to the rescue equipment.
- Rescue equipment should be maintained similarly with other work at height equipment. It is recommended that the equipment is checked by a competent person each day of its potential use.
- Any operative required to use a harness as part of his work should be provided with sufficient information and training to ensure its correct use and maintenance. Harnesses and associated devices must be used and maintained in accordance with manufacturer's instructions.

REFERENCES

Other Guidance sheets that may be of use:

- G100 Working at Height
- G111 Safety Nets and Safety Harnesses
- G117 Roof Work
- G111 Rope Access Techniques

Other useful sources of information:

INDG401 The Work at Height Regulations 2005 (as amended) A brief guide. (HSE)
The Work at Height Association Technical Guidance Notes
NASC Guidance notes SG4:05 and SG19:06

GUIDANCE NOTE	FALL ARREST SAFETY NETS	Code: G110	Issue: A

Introduction

Safety netting is the preferred method of fall protection when undertaking work at height as it provides a collective protection and does not rely on the individual user's discipline to guarantee acceptable safety standards. Using nets can simplify systems of work and protect both roof workers and others, such as supervisors.

Construction

The mesh is normally formed by 100mm or 60mm diamonds or squares. The safety net must have a full and continuous (spliced joint) border rope with a breaking strain of 30kN.

Identification

Every net must have an identification label with the date of manufacture, net system, class, and reference to the product standard (BSEN1263-1:2002). To allow the net to be traced it should have a unique serial number. The removable test meshes should also have a serial numbers which allow traceability to that particular safety net.

Safety net repairs should be tagged to confirm the repair has been carried out by a competent person. The tag should have the name or identification number of the person carrying out the repair and the date of repair as a minimum.

Installation

Installation should always be carried out by competent safety net riggers.

The following hierarchy should be implemented to access the best installation and de-rigging method:

- Remote positioning devices
- Mobile Elevated Work Platforms (MEWPs)
- Footed ladders
- Industrial access techniques.

The rigger must always aim to rig the safety net with no gaps between the net edge and the structure. The maximum permissible gap should be limited to 100mm wherever practical. It may not always be possible to achieve this when lacing around service pipes, columns, etc, in these exceptional circumstances gaps up to 225mm are permitted.

The net should be attached at a maximum of 2.5m centres when rope ties are being used. It must be noted that other attachment devices may require closer attachment points and in this case manufactures recommendations must be followed.

Safety nets are manufactured to be able to absorb falls from 6m however they should be rigged as close to the working area as possible. For safety nets less than 35 square metres in total area, or a side less than 5m in length the working area should not be more than 2m above the net.

Industry best practice is to rig the whole area, if this is not possible the net should extend a minimum of 3m beyond the leading edge this is known as the catching area. Areas not covered by the net should be made inaccessible to personnel.

If debris netting is to be used it should be laid directly on top of the safety net in such away that it will not deform the safety net in the event of a fall this can be achieved by ensuring the debris net is oversized and loosely attached.

Safety nets must never be attached to handrails unless they have been designed and tested to take a minimum load of 6KN at 45 degrees to vertical.

Storage

It is recommended that nets are stored so they are clear of the ground and protected from the heat and damp. It is good practice prior to folding them for storage after use, to hang them so the air can circulate around them allowing them to dry naturally.

Testing / Inspection

All fall arrest safety nets should be subject to an annual energy absorption test of the capacity of the net. New nets are normally fitted with 3 test meshes so that annually one can be detached and tested in accordance with ISO1806.

The user should always carry out a visual inspection prior to commencing work.

It is good practice for nets returned to the riggers premises after a contract to have a formal inspection.

Once installed and a hand over certificate has been issued by the riggers a competent person should carry out a further inspections at intervals not exceeding 7 days. In addition to the above safety nets should be inspected after any period of adverse weather conditions.

Competency / Training

Regulation 5 of the Work at Height Regulations stipulates that no person should engage in any activity (including organisation planning and supervision) in relation to work at height or work equipment for use in such work unless he or she is competent to do so. If training is being undertaken for work at height, this should also be supervised by a competent person.

Safety net riggers therefore must be suitably trained in both industrial access techniques and be trained in the safety net rigging. They must have suitable training and sufficient practical experience of rigging safety nets to the application areas within which they work, and understand the attributes and limits of the type of safety netting they're using.

Personnel involved in the design, inspection and maintenance must also have suitable training and experience to be able to carry out their duties.

GUIDANCE NOTE	SCAFFOLDS - GENERAL PRINCIPLES & STANDARDS	Code: G113	Issue: A

THE IMPORTANCE OF TRAINING

Effective training of scaffolders is possibly the most essential factor in preventing accidents amongst both scaffolders and those who use scaffolds. The Construction Industry Training Board (CITB), and many firms in the industry and several safety groups, such as The Health and Safety People offer a wide range of training courses, not only for scaffolders and charge hand scaffolders, engaged in erecting scaffolds, but also for site managers, general foremen and safety officers who may have to inspect scaffolds.

THE SCAFFOLDERS RECORD SCHEME (CISRS)

The construction industry Scaffolders Record Scheme (CISRS) has been in place for over 30 years. It is one of the oldest trade card schemes in existence. CISRS has continually strived to maintain the highest standards in scaffolding sector training.

CISRS is divided into 3 categories, with each category offering different courses and programmes. These categories are:

1. Scaffolding Operative Schemes;
2. Scaffolding Management and Supervisory Training;
3. Scaffolding Inspector Training.

The Operative training schemes apply to all scaffolding operatives who are at any time required to erect, substantially alter or dismantle scaffolding. Scaffolders are grouped into three categories:

1. Trainee;
2. Basic scaffolder;
3. Advanced scaffolder.

An operative who had not attained prescribed levels of training, assessment and experience in Scaffolding of a given kind must not be employed on such scaffolding work unless they are under adequate supervision.

Employers must demonstrate compliance with the requirements of the Health and Safety at Work Act 1974, the Work at Height Regulations, the Construction (Design and management) Regulations and other relevant statutory provisions with regard to training, competence and supervision.

Participation in the scheme is not a legal requirement, but the scheme should lead to a general raising of the level of expertise throughout the industry. It is important to note that the legal requirements relating to the training of workers in the Health and Safety at Work etc. Act, and to the competence and experience of scaffolders in The Work at Height Regulations apply to all scaffolds.

STATUTORY REQUIREMENTS

ERECTING / ALTERING / DISMANTLING A SCAFFOLD

The principal legislation, standards and guidance that apply to access scaffolding are:

- The Health and Safety at Work Act
- The Work at Height Regulations
- The Construction (Design and Management) Regulations
- The Management of Health and Safety at Work Regulations
- The Provision and Use of Work Equipment Regulations
- The Manual Handling Operations Regulations
- The Construction (Head Protection) Regulations
- BS EN 12811 Temporary Works Equipment - Scaffolds (BS 5973 withdrawn June 2004)
- BS EN 1139 Steel Tubes and Couplers
- BS 2482 Scaffold Boards
- NASC TG20 - Guide to Good Practice for Scaffolding with Tubes and Fittings
- NASC SG4 - Preventing Falls in Scaffolding and Falsework

All work at height must be planned in accordance with the hierarchy of preventative and protective measures that are central to The Work at Height Regulations.

TG20 Is a Guide to good Practice for Scaffolding with tubes and Fittings produced by The National Access and Scaffolding Confederation is also referred to throughout and should be considered by inspectors when conducting inspections in the field along with the relevant Legislative requirements.

NASC TG20 provides a viable method of working in accordance with BS EN 12811-1 and takes into consideration technical requirements that were previously included in BS 5973 and not covered in BS EN 12811-1.

CONSTRUCTION ACCIDENTS

The principle cause of fatal accidents in the Construction Industry is falls from height of persons. These are not all caused by defects in scaffolding - some people are killed falling through holes in floors, or even just walking across a site. There is no doubt, however, that accidents with scaffolding are a major cause of fatal accidents in the Construction Industry.

These can be classified as follows:

- Collapses of a scaffold;
- Falls from the scaffold;
- Materials falling from the scaffold;
- Scaffolding components falling during erection and dismantling;
- Persons or vehicles striking the scaffold structure;
- Failure of operatives to wear safety equipment.

PROTECTION OF THE PUBLIC

During erection, modification and dismantling, care should be taken to exclude the public from the work area and a sufficient area around the work. It may be necessary to provide an adequately protected thoroughfare while the scaffold is in use. Effective steps should be taken to prevent persons being struck by falling objects. The provision of suitable brick guards, facade nets, sheeting or fans may be necessary.

Care should be taken that the scaffold has no protruding tubes or obstructions such as low headroom, etc that could cause damage or injury to members of the general public.
Where access through parts of the base of a scaffold structure might prove hazardous, entrance to such areas should be denied by means of a horizontal tube or other suitable obstruction.

MATERIALS

Materials shall fulfil the requirements given in BS EN 12811-2 and shall be sufficiently robust and durable to withstand normal working conditions.

Materials shall be free from any impurities and defects that may affect their use.

BS EN 12811-2 details yield strength/elongation/wall thickness for both steel and aluminium alloy materials.

FOUNDATIONS FOR STANDARD ACCESS SCAFFOLDS

The foundations of a scaffold must be adequate to safely carry and disperse the load imposed, both locally at each standard, and in general to carry the complete weight of the scaffold.

The foundation must be inspected regularly and maintained in an adequate condition during the life of the scaffold.

In order to support the standards and then to spread the load evenly on to various ground surfaces, timber sole plates are used.

These timbers are generally the same boards that are used as deck boards and, in fact, are usually selected from older, used deck boards with any damaged portions sawn off and rejected.

It is good practice to position at least two standards to one length of sole plate and it is bad practice to position a standard over any joint in a sole plate.

The sole plates can be set either parallel or at right-angles to the building face.
In order to support the standards, and to spread the load evenly onto various ground surfaces, timber sole plates may be used the minimum size of any sole plate should be at least 1000cm2 with a minimum dimension of 220mm.

SCAFFOLD BOARDS (BS2482)

The scaffold board with which we are most familiar is 225mm wide and 38mm thick.

Boards should not span more than the dimension given on the end protection.

As timber is a natural material it must vary in quality; therefore, a visual check needs to be carried out to select timber that complies with the standard. This check should be repeated each time that scaffold boards are used.
Timber must be free from excessive splits, i.e. splits that extend more than 300mm from the end, shakes or decay. Any board which is noticeably lighter in weight than the others in the stack should be rejected.

Boards must not be excessively knotted; measurement of knots is described at some length in the standard. Boards that have been used as shuttering for concrete or show signs of concrete contamination should be rejected. The action of concrete on wood is to draw the natural resin, and with it the natural strength, out of the board.

The surfaces shall have a sawn finish with the corners either left square or chamfered, and the ends bound with galvanised hoop iron extended for a minimum of 150mm along each edge or, alternatively, special nail plates of galvanised steel pressed into the upper and lower surfaces near the board ends. Identification and the permitted maximum span (either 1.2 metres or 1.5 metres) should be stamped on the end protection.

Some suppliers supply boards which are not to BS2482 and may only be capable of spanning a maximum of 1.2 metres. Keep a careful check on the end protection for these particular boards.

The maximum overhang of the boards beyond the end support transoms is four times the board thickness. For a 38mm thick board this is 152mm, generally accepted as 150mm. The minimum overhang is 50mm.

If a split occurs on the end of a board and approaches a length of 300mm, then nail plates can be pressed on to both faces to prevent further splitting.

If deck boards have been “fire-proofed” then investigations should be carried out to ensure that this process has not reduced the normal strength of the board.

Do not use a scaffold board as a ramp, e.g. barrow runs over long spans. The same rules of supporting boards every 1.2 metres still applies to ramps.

Do not allow site plant or lorries to run over boards. Damage is inevitable and any boards subjected to this treatment should be downgraded and not used as deck boards.

BASE PLATES AND BASE JACKS

BASE PLATES - shall be made of steel conforming to EN74.

BASE JACKS - shall be provided with a centrally positioned adjusting spindle of such dimension that, in the unloaded condition, the greatest inclination of the shaft from the axis of the standard does not exceed 2.5%. The minimum overlap length at any position of adjustment shall be 25% of the total length of the shaft or 150mm, whichever is greater. The thickness of the endplate shall be at least 6.0mm and shaped endplates shall have at least the same rigidity.

STANDARDS / LOAD CLASSES

Standards may not deviate from the vertical by more than 20mm in any length of 2.0 metres or by more than 50mm in the whole structure. Joints should be staggered and tubes supported at intervals not exceeding the designated design safe load and use of the scaffold see below:

Load Class	Duty / Usage	Load (kN/m2)	Max. bay length (metres)	Max. no. of boards
1	Very light duty (e.g. inspection)	0.75	2.7	3
2	Light duty (e.g. plastering/painting)	1.50	2.4	4
3	General purpose (e.g. brickwork)	2.00	2.1	5 +
4	Heavy duty (e.g. cladding/masonry)	3.00	1.8	5 +

NOTE: Further load classes have been introduced by the NASC TG:20 Guide to identify scaffolds with boards on the inside of the inside standard. (Please refer to TG:20 for further guidance)

There are three main types of loading which need to be considered:

- Permanent loads - These shall include the self weight of the scaffold structure including all components, such as platforms, fences, fans and other protective structures and any ancillary structures such as hoist towers.
- Variable loads - These shall include service loads (loading on the working area, loads on the side protection) and wind loads and, if appropriate, snow and ice loads.
- Accidental loads - Unexpected downward loading on the guardrail or intermediate guardrail.

Scaffold design should take into account the load factors identified in BS EN 12811-1 Section 6, table 3.

SCAFFOLDING PRINCIPLES - TO BS EN 12811-1

It is essential to spend some time planning even the smallest scaffold, it is normally necessary to carry out an analysis and **design** of any scaffold, however there is a restricted range of un-sheeted putlog and independent tied scaffolds that may be erected without further calculations these are defined in 4.4.2 of TG20 as basic scaffolds.

LEDGERS

Ledgers must be fixed to standards with right-angled load-bearing couplers and should be horizontal, except that a “kicker” lift may follow the slope of the ground. In this case the transoms may be attached to the standards and the ledgers to the transoms.

JOINTS

Joints in standards must be staggered and sleeve couplers or spigot pins may be used. However, if tension is expected, then use sleeve couplers that can accept a load of approximately 6.0kN in tension. Spigot pins cannot be used for tension forces.

Joints in ledgers must also be staggered and preferably made at a distance of one-third of the span between two standards. The connection may be made with sleeve couplers or spigot pins, but if tension is expected on the tube, only use sleeve couplers.

It is considered good practice to use sleeve couplers if the joints in the ledgers are beyond 450mm from a standard.

TRANSOMS AND PUTLOGS

Where transoms are used to support a working platform constructed of 38mm thick boards, they should be fixed not more than 1.2 metres apart and connected with right-angled couplers or putlog couplers, unless bracing tubes are connected to them, when only right-angled couplers may be used.

Transoms on non-boarded lifts, known as structural transoms, shall be fixed at the rate of one per pair of standards and positioned within 300mm of the standards. On scaffolds greater than 15m, the transoms on un-boarded lifts should be fixed at the frequency of one transom per set of standards to the standards or transoms using right angle fittings.

BRACING

Ledger bracing is placed on alternate pairs of standards and is best fitted from ledger to ledger, using right-angled load-bearing couplers. If this causes problems on boarded lifts, then the brace may go from outside ledger down to the inside standard connected by a swivel coupler.

NB Guardrails are not a load bearing part of the scaffold and should not be used to support spurs, platforms, braces etc.

It is also acceptable to connect the bracing to the standards, using swivel couplers.

Where the lower lift may be erected to a maximum height of 2.7 metres, e.g. when scaffolding over access walk ways, knee braces must be inserted on every pair of standards, (Plan bracing).

Facade (sway) bracing must be provided to all scaffolds in which movement is not prevented along the face of the building in some other way.

This can be arranged in two ways:

1. In a zigzag line across one bay of scaffold on the outside face, from top to bottom of the scaffold. To be repeated every 6 bays along the face of the scaffold.

2. Using a continuous tube on the outside face of the scaffold at an angle between 35? and 55?. The bracing may be connected by swivel fittings to the standards or, alternatively, to extended transoms using right-angled load-bearing couplers. When connecting to transoms, it is important that the transom is itself connected to its supporting ledger with load-bearing couplers (not putlog couplers).

PLAN BRACING

Plan bracing should be provided to all portions of an independent tied scaffold that are not otherwise stabilized against lateral distortion.

To achieve safe heights for basic scaffolds that are greater than 8m in height, Basic scaffolds shall have plan bracing fitted in addition to the facade bracing unless the facade bracing is across two bays and links ledger braced standards to form a tower braced on three sides.

TYING SCAFFOLDING

There is no doubt that more scaffolds collapse because of the removal of ties, or the failure to fit them in the first place, than for any other reason. Ties must be provided to resist both inward and outward movement of the scaffold and can normally be split into two classes:

1. Moveable Ties - It may be necessary to temporarily remove these ties, one at a time, to enable work to progress. They must be replaced as soon as possible.

2. Non-Moveable Ties - These are ties which remain undisturbed until the scaffold is dismantled. As these ties are always in place during the life of the scaffold, fewer numbers of this type are required than those of the moveable type.

TYPES OF TIES

1. Box Ties - These consist of tubes and right-angled fittings that form a square, usually fixed around columns, or other parts of the building, to resist both the inward and outward movement of the scaffold and, at the same time, give some degree of lateral restraint.

2. Lip Ties - Where it is not possible to use box ties, lip ties may be used. These consist of an L shaped arrangement of tubes and couplers to hook the scaffold behind elements of the building. The load capacity of a lip tie is generally limited by the strength of the fitting. Lip ties may be used over sills and under lintels. Adjacent butting transoms and sway transoms should accompany them.

3. Through Ties - These consist of three tubes. The first spans across the inside of an opening in a building, such as a window opening. It is preferably vertical and resting on the floor but may be horizontal. The second tube is placed horizontally on the outside of the building, hard against the wall and overlapping the opening by about 300mm. The third tube (known as the tie tube) connects to both of the above tubes and also connects onto the scaffold ledgers. All couplers must be the right-angled load-bearing type and not “putlog” type. Timber packing pieces are positioned between the tubes and the brickwork.

4. Reveal Ties - These may be used where it is impracticable to open windows for “through” ties or even to drill into the wall for “anchor” ties, where the quality of the wall structure may be uncertain. Opposing faces of, say, the sides of a window opening or alternatively the lintel and sill of a window opening, if parallel and not sloping, may be used to make an attachment by means of a scaffold tube wedged or jacked tight between the opposing faces. The jacking is made by a reveal pin at one end of the tube and a plain base at the other end. Timber packing pieces are required between the steel and the walls. The tie tube must be attached to the reveal tube, with right-angled load-bearing couplers, as near as possible to the end opposite to the reveal pin. Due to the possible shrinkage of the timber packing pieces it is important that reveal ties are regularly inspected and tightened where necessary. It is recommended that they should not be relied upon for more than 50% of the total number of ties required.

5. Bolt-in Ties - This type of tie is very effective in securing the scaffold to the building and a variety of expanding anchor sockets are available for fixing into holes drilled into brick or concrete and appropriate cleats or ring bolts then screwed into the anchors. When drilling into brickwork the anchor should be placed in the solid core of the brick and not near its edge. In some types of anchor sockets the expansion required for fixing is not made by the turning in of the screw bolt or ring bolt but rather by a hand hammer and a hardened steel rod tool. Reference should be made to the supplier’s instructions.

In all ties, the tie tube must be connected by right-angled load-bearing couplers. It is preferred that the tube is connected to both standards but, if the tube restricts movement along the scaffold platform, then it may be connected to the inside standard only, provided that the coupling is load-bearing with a SWL of 10.0kN.

The general rule spacing of scaffold ties is not to exceed 4 metres horizontally and 4 metres vertically creating a tie point every 16m2. For sheeted and debris netted scaffolds the top lift must also be tied inclusive.

For all other scaffolds, the requirements for ties should be determined by calculation by a competent person and incorporated into the design process.

WORKING PLATFORMS

The Work at Height Regulations state that any working platform must be of sufficient dimensions to permit the safe passage of persons and the safe use of any plant or materials required to be used and to provide a safe working area having regard to the work being carried out there. There should be no gap through which a person could fall or through which any material or object could fall and injure a person.

Scaffold platforms should be of the widths given in the table below for the purposes given. Further guidance is available in TG:20.

Widths of Access Scaffold Platforms			
Purpose	Minimum clear width (mm)	Minimum number of boards (225mm width board)	Effective width of boarded platform for loading calculations (mm)
Platforms for persons without materials or only for the passage of materials	600	3 boards	705
For persons and materials provided there is 430mm left clear for the passage of persons or 600mm if barrows are used	800	4 boards	930
For carrying trestles or other similar higher platforms	1050	5 boards or 4+ boards	1155
For use in dressing or roughly shaping stone (should be specially designed)	1300	6 boards	1350

ACCESS BETWEEN LEVELS

Safe and ergonomic means of access shall be provided. The scaffold system shall include provision for access between the different levels. This shall be by inclined ladders or stairs and shall be within the platform and within a widening of the working scaffold at one bay or in a tower immediately adjacent.

LADDER ACCESS

Every sloping ladder should stand on a firm and level base and must be tied at the upper deck level. Ties must be made using the stiles of the ladder and not the rungs.

Where practicable, it should be set at an angle of four vertical to one horizontal. Ladders should project at least 1.05 metres above the top landing place with the landing rung level or slightly above the level of the landing platform. The vertical distance between two successive landing places should not exceed 9.0 metres. The landing places must be kept clear of all materials and should be provided with guardrails and toe-boards. Where space is available stairways should be provided for access.

ACCESS OPENINGS

The dimensions of an access opening in a platform shall be at least 450mm wide by 600mm long. Should it not be possible to close the opening by means of a permanently attached trapdoor, a protective railing should be provided. The trapdoor shall be fastenable in the closed position.

STAIRWAYS

Ladder and stair towers are generally constructed with one side common with the outside of the access scaffold.

Stair towers are more rigid because of built in bracing resulting from the sloping stringers for the steps, which may be taken to act as the bracing of the tower at one side. Bracing should be fixed to the remaining sides except in the bays through which access is required.

To cater for different requirements the standard specifies two classes of stairway dimensions. The dimensions of stair flights shall be in accordance with BS EN 12811-1 Section 5, figure 4.

GUARDRAILS

Working platforms from which a person may fall a distance liable to cause personal injury must have a principal guardrail fixed inside the standards at a height of at least 950mm above the level of the decking. There must not be an unprotected gap exceeding 470mm between any guardrail, toe-board or other similar means of protection. That, in practice, may mean the insertion of an intermediate guardrail.

TOE-BOARDS

Toe-boards must be suitably fixed to any working platform from which materials may fall and cause personal injury to a minimum height of 150mm (As recommended in TG:20)

BRICK-GUARDS

Brick-guards, or other suitable vertical protection, are required where materials may fall from the scaffold, e.g. when materials are stacked higher than the toe-boards. These screens can be hung from the guardrails and should be prevented from outward movement. They must be capable of preventing materials from falling through.

GIN WHEELS

Gin wheels of 50kg maximum loading can be used to raise and lower materials and should be positioned at a point not more than 750mm from the scaffold face. The support for a gin wheel must be connected with right-angled couplers to two standards. Hook-on types of wheels must be lashed and moused, unless it is fitted with a safety catch. In either case the gin wheel fixing to the tube should be prevented from slipping towards or from the building by one fitting either side of the fixing. Ring and lashed-on types must be held in position by two scaffold fittings. Materials must be firmly attached to the gin wheel rope.

INDEPENDENT TIED SCAFFOLD

An independent tied scaffold is erected independently of the building, in that it will support its own weight and the load placed upon it, but it must be tied into the building to ensure stability.

This type of scaffold is constructed with two parallel rows of standards, each row connected together with ledgers using right-angled load-bearing couplers.

Transoms span the inner and outer ledgers on which they are fixed using putlog couplers. Transoms must not be more than 1.2 metres apart for 38mm boards. Normally the inner standards are set 325mm from the face of the building that provides space for one 225mm board.

The distance between inner and outer standards is determined by the type of work being carried out, but is not usually less than 924mm for four boards.

The distance between the standards must be determined by:

- The load that the scaffold is required to carry.
- The height of the scaffold.
- The number of working lifts.

Ledger bracing must be incorporated in the scaffold at every other pair of standards. Facade (sway) bracing must be fixed across the outer row of standards to prevent longitudinal movement and should be connected to the horizontal tubes with load-bearing couplers.

Lifts are usually set initially at floor levels and subsequently adapted to suit the requirements of the trades.

PUTLOG SCAFFOLDS

Putlog scaffolds are mainly used as bricklayers' working platforms and depend for their inner support on the brickwork of the building.

The standards are normally set at 1.8/2.0 metre intervals according to load and not to exceed 2.1metres. The ledgers normally rise at 1.35 metre lifts with the progress of the work and only one lift may be boarded out at any one time.

The distance from the standards to the wall should be between 1.3 and 1.4 metres, allowing for five boards. Standards must be vertical and pitched on metal base plates on timber sole plates of adequate dimensions, bearing in mind the ground conditions. Joints in standards must be staggered to distribute the weak points in the scaffold.

Putlogs are connected to the ledgers at intervals of not more than 1.2 metres for boarded lifts with the full flat bearing surface in or on the bedding joints of the brickwork. It is quite wrong for putlogs to be “edge-on” in the vertical joints. Where putlogs come opposite a window or door opening, they must be supported on their inner face by a bridge tube which is slung beneath the adjacent putlogs. Intermediate putlogs may be removed as the work progresses providing that one putlog remains within 300mm of each standard and is connected with load-bearing couplers.

For the first few lifts, and until the scaffold reaches the height at which ties into the building are required, some form of raking tube should be incorporated to ensure the stability of the structure.

Facade bracing is required and should be arranged in accordance with the notes on bracing above.

Tying into the building is of paramount importance and the effectiveness of the ties must be sufficient to prevent the putlogs from pulling loose from the building.

LOADING BAYS

Based on the requirements of BS EN 12811-1, structural calculations should be made for all special scaffolds. The recommendations in NASC TG20 present a design approach in permissible stress terminology using familiar terms such as “safe working loads”.

Loading bays for the storage of material in palletised form should be designed for a distributed load ok 10kNm2 or the actual weight of the load to be stored, whichever is the greater. If several pallets are envisaged, this guide recommends a distributed load of 15 kN/m2.

Where material is placed by powered means (e.g. crane or fork lift) the dynamic effect of an impact load should be allowed for 20% increase of the largest individual load to be placed on the platform, and should be included in the design.

Where loading bays form part of a pavement gantry and carry further lifts of access scaffolding above, the extra loads should be taken into account.

The maximum width of a typical loading bay is 5 boards wide. The scaffold tube transoms are placed at 450mm centres. Where widths greater than 5 boards are required another line of standards and ladder beams may be inserted. A separate design will be required.

BIRDCAGE SCAFFOLDS

A birdcage scaffold consists of a multiplicity of standards arranged at regular intervals in parallel lines, usually evenly spaced apart. These standards are laced together with a grid of ledgers and transoms at every lift height and the top lift is boarded to form the access platform.

Birdcage scaffolds are normally used for interior work in larger buildings like factories, public halls, cinemas, churches, etc to provide access to ceilings, walls or soffits for light work, such as painting, plastering and decorating.

The floor of the building has to carry the full load of the scaffold and the total weight involved should be distributed as widely as possible. Floors must be carefully examined before the scaffold is begun and, if there is any doubt as to whether they are capable of supporting the weight of the scaffold, they should be shored. Soleplates distribute the load of the scaffold and also help to prevent damage to the flooring. Soleplates should always be set at right-angles to floor beams or joists.

PREFABRICATED MOBILE TOWERS (ALUMINIUM)

Mobile towers made up of proprietary lightweight materials must be erected by competent people in accordance with the manufacturer's instructions; the height to base specifications must be strictly adhered to. The PASMA guidance for the stability of mobile towers recommends that outriggers are used when there is more than one vertical section.

HOIST TOWERS

Hoist towers are tall slender structures subject to torsional distortion. In general they should be attached to the main access scaffold and may have common standards. The attachment of hoist guides to the ledgers or transoms should be by the method recommended by the hoist manufacturer. No wind resisting sheeting should be attached to the tower unless account is taken of the wind force.

Hoist towers and the adjacent scaffold should be tied into the building at every floor level. The height of the tower above the last tie point should not exceed 6 metres.

Gates must be erected at ground level and at every other place where access is required (the enclosure and gates should be at least 2 metres high). Where access is not required but where the hoist platform passes a working place, the place must be effectively screened off to prevent persons being struck by the hoist platform. The other three sides of the base enclosure must be securely meshed to prevent persons entering, or straying in to the enclosure.

SLUNG AND SUSPENDED SCAFFOLDS - Excluded from BS EN 12811

A slung scaffold is suspended at a fixed height using tube and fittings either below load-bearing projecting brackets or beams or from the structural members of a roof or other over head structure. Slung and suspended scaffolds need to be erected to a design incorporating stress and loads.

Suspended scaffolds are mostly used for the installation of windows, curtain walling, repair work, sheeting and cladding, painting, etc on tall buildings or in areas where scaffolding is inappropriate, such as on busy streets.

PEDESTRIAN BRIDGES AND WALKWAYS

Pedestrian bridges and walkways are frequently of box type construction with overhead and under deck bracing. All pedestrian bridges and walkways should be subject to a design calculation.

TEMPORARY ROOFS AND BUILDINGS

A temporary building is a sheeted structure designed to provide a cover for an area. It may stand on the ground or on top of a building, or be an extension to a scaffold round a building. It may have fully sheeted walls and roof or only a roof or a roof with skirts.

The application within the NASC guideline is limited to temporary buildings and temporary roofs, which do not exceed the following dimensions:

1. 15 metres in total height.
2. 4 metres between the bottom of the truss and the highest ledger point of tying to the permanent structure (ledger bracing required above the penultimate tie to every pair of standards, adequately braced longitudinally).
3. 15 metres roof span between the support structures disregarding knee braces.

Beyond any of these limits specialist advice should be sought, in particular because of the risks associated with wind induced deflection and vibration.

TABLES OF MAXIMUM SAFE HEIGHT

The safe working heights for Basic scaffolds are tabulated in Appendix A within TG20. (Volume 2)

COUPLERS

ALLOWABLE LOADS

Fittings which comply with the requirements of BS EN12811 will have the capacities as demonstrated below. It is necessary that they are in reasonable condition and properly fastened. They must be used on type 4 steel or aluminium tubes complying with the requirements of BS 1139 unless the supplier states that they are suitable for use only with certain types of tube.

For further information please refer to table 24 within the NASC guidance TG:20.

INSPECTION OF SCAFFOLDS

When complete, scaffolds should be in a condition suitable to perform the duty for which they were intended and should comply with the requirements of the statutory regulations and any local authority requirements.

A scaffold should be inspected by the organisation that built it before it is handed over for use. The user should inspect it at least weekly to ensure it remains in compliance with the statutory regulations. Records of inspections should be maintained.

When equipment other than scaffolding materials is attached to a scaffold, which is subject to statutory inspections, this other equipment should also be inspected and the appropriate certification made.

Additional equipment may include:

- Lighting;
- Lifting appliances and lifting gear;
- Electrical supplies;
- Hoist ways; ropes.

It should also be remembered that any employer whose employees use a scaffold that is provided by another contractor (usually the principal contractor) has a responsibility for the safety of their own employees and should satisfy themselves regarding the safety of the scaffold.

SCAFFOLD INSPECTIONS (NASC GUIDANCE TG20)

The inspector should ascertain what duties have to be carried out from the working platforms; that the scaffold is properly constructed, that it is the right type for the planned duty, that it is the correct height, width and length and that the working platforms are correctly positioned.

Although not exhaustive, the following items may form part of the inspection, check that:

- The working platforms comply with the various requirements of the statutory regulations and the recommendations of the NASC guidance.
- Access and egress is suitable and safe.
- The foundations are adequate, and are not likely to be disturbed.
- The lower portion of the scaffold is not liable to damage by interference, accident, traffic or any other cause.
- The scaffold is designed and appropriately constructed to carry the loads.
- It is correctly tied, anchored and braced to have and maintain stability under load and environmental influences.
- It complies with the requirements of the local authority for lighting, hoarding and fenders and in general that it is not constructed in a way which can cause damage or injury to persons near the base of it by protruding tubes, low head room, etc.
- Any attachments such as fans, loading bays, hoists and hoist towers and lifting tackle are properly constructed and in compliance with the statutory regulations.

THE WORKING AT HEIGHT REGULATIONS

Any person who carries out an inspection under Regulation 12 of the Work at Height Regulations shall prepare a report before the end of the working period during which the inspection is completed. A copy of this report must be provided to the person requesting the report within 24 hours.

A copy of this report must also be held on site throughout the duration of the work and, after the work on site is complete, at the company head office for at least 3 months after the work was completed.

The report must be available, at reasonable times, for inspection by her Majesty's Inspector of Health and Safety.

The report must contain the following particulars:

- The name and address of the person on whose behalf the inspection was carried out.
- The location of the work equipment inspected.
- A description of the work equipment inspected.
- The date and time of the inspection.
- Details of any matter identified that could give rise to a risk to health and safety of any person.
- Details of any action taken as a result of any matter identified.
- Details of any further action considered necessary.
- The name and position of the person making the report.

SCAFFOLDS - ON SITE CHECKLIST

Tubes must not be bent, split, badly corroded or distorted. Fittings must not be distorted and moving parts must be sound and lubricated.	
Scaffold boards should be in serviceable condition.	
All standards must be plumb and all transoms and ledgers must be level.	
The should be a metal base plant under every standard.	
Timber sole plates are normally required to distribute loads and prevent damage, but may be omitted in certain instances where the ground will bear the load e.g. a substantial concrete base.	
Joints in standards should be in alternate lifts.	
Joints in ledgers should be in alternate bays and preferably located at a position not greater than one third of a bay away from a standard. Joint in ledgers should be made using sleeve couplers.	
Ledgers must be fixed to standards with right angle (double) load bearing couplers.	
Principal guardrail should be fixed at least 950mm above every working lift, including ends. The space between any guard rails and toe boards should not exceed 470mm.	
Toe boards not less than 150mm high should be fixed on every working lift including end and inside standards if they do not abut the wall.	
Transoms should be spaced at 1.2m for 38mm nominal thick boards conforming to BS2482. (This information should be found on the tin strap (hoop iron) around the end of the board)	

Check maximum bay length does not exceed that allowed for load class/usage as below.

Load Class	Duty / Usage	Load (kN/m²)	May bay length (metres)	Max no. of boards
1	Very light duty (e.g. inspection)	0.75	2.7	3
2	Light duty (e.g. plastering/painting)	1.5	2.4	4
3	General purpose (e.g. brickwork)	2.00	2.1	5 or (4 + 1)
4	Heavy duty (e.g. cladding/masonry)	3.00	1.8	5 or (5 + 1)

Lifts should not exceed 2 metres except where access for public is required when the first lift may be 2.7 metres (provided it is tied at this level at alternate standards).	
Ties should be: ● On alternate standards ● At alternate lifts (not more than 4 metres aparts vertically) ● Positive two-way (at least 50% of the total number)	
Ledger bracing is required at right angles to the building at alternate pairs of standards to the full height of the scaffold. Bracing can be zigzag or from outer ledger down to inner ledger or from outer ledger up to inner ledger or fixed to the standards with swivel couplers.	
Facade bracing is required to full height of the scaffold intervals not greater than 30m. Joints in continuous brace should be made with sleeve couplers and the brace should be connected to the transoms with right angle couple or brace couplers. Swivels can be used to fix braces to standards.	
Working platforms should be close boarded and not usually less than 4 boards wide. Boards should butt and not overhang their end supports by more than 150mm wide (min overhang should be 50mm). The inside gap near a wall should be as small as practicable.	
Gin wheels should be positioned at a point not more than 750mm from the scaffold face. A tube supporting a gin wheel should be secured at two points with right angle couplers and preferably braced. Lift loading should not exceed 50kg.	

GUIDANCE NOTE	ROOF WORK	Code: G117	Issue: A

PLANNING

As a high-risk activity, it is important that any roof work operation is pre-planned. Precautions must be taken either to prevent a person from falling or, if that is not reasonably practicable, to mitigate the consequences of a fall. It is therefore recommended that a detailed method statement is always prepared for such works.

Roof work includes not only the original construction of the structure but also maintenance such as replacing sheets, tiles, chimney repairs and gutter cleaning.

SAFE ACCESS

Suitable equipment must be provided to give safe access to the roof, which may include:

- Ladders. - Ladders should be placed at an angle of 75 degrees to the horizontal, i.e. 1 metre out for every 4 metres in height. They must be long enough for the job; extending to a sufficient height above the landing place to provide a safe handhold (a distance of 1.05 metres is recommended unless there is an alternative handhold). A ladder should be secured as near as practicable to its upper resting place or, where this is not possible, at or near its base. Care must be taken that the support for the top of the ladder is strong enough to withstand the thrust imposed.

- Tower scaffolds. - The height of a tower's working platform in relation to the width at the base is critical - as tower structures perform in different ways in tests and calculations. For this purpose you should refer to the supplier's assembly instructions which will detail the quantities of material required for each height of tower along with the stabiliser requirements. However, as a general rule, stabilisers or outriggers will be required once a tower has been built beyond its first frame level. The recommended maximum free-standing height for mobile towers is 9.6 metres.

- Independent scaffolds. - In addition to providing access and a working platform around the edge of a roof, scaffolding may also be used to prevent falls of persons and materials from the edge of a roof and provide a storage area for materials. Scaffolds must only be erected by a qualified scaffolder.

- Mobile work platforms. - Mobile work platforms may be useful where the expense and risks involved in erecting scaffolding might not be warranted. Power-operated mast working platforms may be suitable for some operations, such as fixing cladding panels. All personnel using this equipment must be qualified or deemed competent by their employer.

SAFE PLACE OF WORK

Appropriate precautions against falls will be determined by the type of roof and the nature of the work to be carried out.

Flat Roofs

Roofs with a pitch of less than 10 degrees may be considered to be flat. Toe boards, at least 150mm high, and a main guardrail, at least 950mm above roof level, are required where a person could fall a distance liable to cause personal injury. Additionally, either an intermediate guardrail or other rigid barrier must be fitted so that there is no unprotected gap of more than 470mm in height in the means of protection against a fall.

Where it is necessary for a person to kneel or crouch near the edge of a flat roof for work of a very short duration, and it is not considered reasonably practicable to erect edge protection, safety harnesses must be provided and used.

On a large roof, where work does not have to be carried out at or near the edge, a simple barrier, consisting of crossed scaffold tubes supporting a tubing guardrail, may be used to limit the extent of the working area. Such barriers should be positioned at least 2 metres from the edge and work should be closely supervised to ensure that persons do not go outside the designated area.

All openings in roofs must be protected by guardrails, barriers, etc. and toe boards, or by substantial covers, which must be either fixed or suitably marked to indicate the presence of a hole below. It is strongly recommended that covers are both fixed and marked.

Non-fragile roofs often contain fragile components, such as rooflights. These are to be covered or protected and the approach to them is to be signed.

Non-Fragile Sloping Roofs

On sloping roofs, unless suitable precautions are taken, there are dangers of persons falling from the perimeter edge; either whilst working there, or due to slipping down the roof and falling through the roof at the working edge. Protection can be provided by:

- Barriers and platforms. - Barriers must be high enough and strong enough to stop a person who is rolling or sliding down the roof slope. Platforms must be so positioned that they will stop a fall from the roof. The need for a barrier at the gable end must also be considered.

- Roof ladders and crawling boards. - On most sloping roofs suitable roof ladders or crawling boards are essential. For minor maintenance work or inspection, where work is of short duration and edge protection is not provided, roof ladders should always be used. It will be necessary to use roof ladders or crawling boards where:
  - Roof rafters or truss rafters are spread at greater centres than 420mm, or the spacing of the tile battens is such that a person could fall between them;
  - The strength of the battens is insufficient to carry a person's weight;
  - The projection of the battens is insufficient.

  Roof ladders or crawling boards should be purpose-made for the job and should not be made up from odd timber on site. They should be strong enough to support persons when spanning across the supports for the roof covering and be secured or so positioned as to prevent movement. The anchorage at the top of the ladder should not rely on the ridge capping, which may break away from the ridge or, in the case of half-round ridge tiles, prevent an anchor board from getting a good grip. The anchorage should, wherever possible, bear on the opposite slope by means of a properly designed and manufactured ridge iron, or be secured by other means such as a rope. Eaves gutters of the half-round or ogee type, normally used on houses, should never be used as a footing or to support a roof ladder as they are not strong enough.

- Battens. - As an alternative to roof ladders; timber battens, used for slated and tiled roofs, can provide a reasonably secure foothold if they are in good condition and are fixed to rafters which are not more than 420mm apart. The battens should be at least of the quality specified in BS 4471 Part 2 and should be not less than 19mm thick by 32mm wide. The age and possible strength loss of battens exposed during re-roofing work should be investigated. The security of foothold afforded by battens also depends on their projection above felting or rafters.

- Working platforms. - In some cases, a working platform situated on the roof and fitted with guardrails and toe boards may be used as an alternative to a barrier or platform at the roof edge. This applies particularly where the steepness of the slope or the type of surface could give rise to an insecure foothold. Proprietary systems are available to provide working platforms for chimney work, etc.

SAFETY HARNESSES AND NETS

The aim must always be to provide a safe place of work but, in roof work, this may not always be practical. In such cases the use of safety harnesses may be appropriate, provided suitable anchorage points capable of withstanding any anticipated shock loads are available. Inertia controlled reels, which allow greater freedom of movement without excessive slackness in the rope, are available, as are devices designed to absorb the shock imposed by a fall. Similarly, safety nets can provide a potential solution to many of the problems and should be the method adopted whenever practicable. The advice of manufacturers should be sought on the suitability of any particular net for the purpose for which it is to be used.

LIFTING APPLIANCES

Where a small lifting appliance, such as a gin wheel, inclined hoist or scaffold crane is mounted near the edge of a roof, suitable guardrails and toe boards must be provided to protect those using the appliance. Ideally, this protection should be kept in place when materials are being raised or lowered but, if it has to be removed, any person who needs to approach the edge, e.g. for signalling, or to assist in moving the load, should wear a safety harness attached to a suitable anchorage.

WEATHER CONDITIONS

The effects of adverse weather conditions must be anticipated and suitable precautions taken. Rain, ice or snow can obviously increase the risk of slipping and a roof should be inspected for such hazards each day, before work is permitted to start. Windy conditions can also be dangerous, particularly when carrying sheeting or roofing felt.

STORAGE OF MATERIALS

If materials need to be stored at a high level, they should be stored on a firm, level surface, capable of carrying the load.

Care should be taken not to overload the storage platform, which should be fitted with physical safeguards such as guardrails, toe boards, brickguards or other similar precautions. It may also be necessary to lay sheeting or boarding to prevent material falling through gaps in the platform.

Priority must be given to preventing materials or tools falling in the first place. After all steps have been taken to achieve this, action must be taken to prevent people being struck by any materials which do fall. This is particularly important where members of the public pass close to or below roof work.

Birdcage scaffolds and debris netting can both be used to retain falling materials. Whatever system is chosen, it should be capable of retaining whatever is likely to fall. If material is stacked on a scaffold platform above the height of the toe board, proprietary brickguards will be needed to prevent material falling onto other workers or the public below. Where the public pass below or near to the scaffold then scaffold fans, tunnels or similar arrangements may be required.

Safety nets overlaid with an appropriate fine mesh debris cover can also protect those who have to work or pass below. Consideration should be given to the type of materials likely to fall, e.g. fixings or tools, when selecting the overlay material. Safety nets have the additional advantage that materials are contained by the net and do not bounce.

Where it is not possible to eliminate the risk of materials falling or being ejected, the area below roof workers should be fenced off or at least demarcated. Only authorised people should enter and, even then, their access should be controlled to avoid times when there is a risk of them being struck.

DISPOSAL OF WASTE MATERIALS

The practice of throwing materials from the roof or scaffold is strictly prohibited. Waste materials such as old slates, tiles, etc. should never be thrown from the roof or scaffold. They should be lowered in skips or baskets, designed for the purpose, which will not spill material if snagged. Alternatively, enclosed debris chutes can be used. Chutes should be closed off to prevent their use when the skip below has been removed. Skips should be covered where necessary to protect the public from dust and flying materials.

PROTECTION OF THE PUBLIC

Members of the public must be protected from the hazard of any falling material during roof work operations. This may entail the provision of any or all of the systems described above. Barriers at ground level may also be necessary and particularly stringent precautions should be taken where children are at risk.

TRAINING FOR ROOF WORKERS

Employers need to be sure of their employees' abilities before setting them to work and provide necessary training where it is required. They will need training on the risks they will encounter (such as recognising fragile materials) and safe systems of work to control them. They may also need training in setting up and using equipment they are required to use.

GUIDANCE NOTE	SAFETY HARNESSES AND BELTS	Code: G120	Issue: A

SAFETY HARNESSES AND BELTS

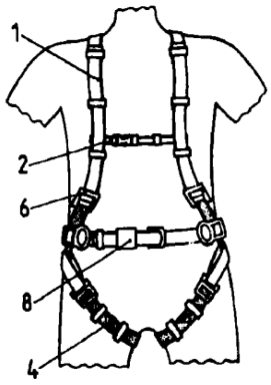
The main reason for the use of safety harnesses is to limit the distance of any fall and thereby minimise the risk of injury. They will also be used to facilitate the rescue of persons working in confined spaces, such as manholes, etc.

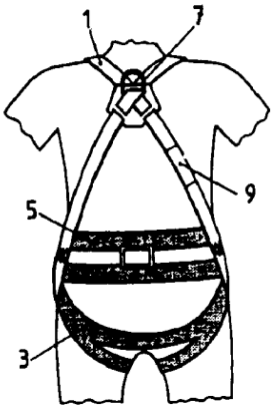
Safety belts are not suitable for arresting a fall; they are only suitable as a restraint to prevent access to a danger area.

Safety belts and harnesses provide valuable protection but they are not a substitute for effective fall prevention measures. **It should be clearly understood that, where practicable, proper working platforms, with guardrails and toe boards, must be provided.** Where the provision of working platforms or the use of safety nets is impracticable, safety harnesses or belts must be provided and used. Instruction and training must be given in the proper fitting, adjustment and use of harnesses and belts.

Types of Harnesses and Belts

This comprises straps, fittings, buckles, etc. suitably arranged to support the whole body of a person and to restrain the wearer during a fall and after the arrest of a fall. The harness should be fitted with a lanyard that will limit the fall to a maximum of 2 metres. All lanyards must be fitted with a suitable energy absorber to further minimise the risk of injury during a fall arrest.





1. Shoulder strap.
2. Secondary strap.
3. Sit strap (primary strap).
4. Thigh strap.
5. Back support for work positioning.
6. Adjustment element.
7. Fall arrest attachment element.
8. Buckle.
9. Marking.

Safety Belts and Chest Harnesses

General purpose belts and chest harnesses are used in situations where short duration work is necessary in areas where the provision of fall prevention measures would be impracticable. Belts and harnesses should be fitted with a line of the appropriate length to prevent access to the danger area.

Pole Belts

Pole belts comprise an adjustable body belt combined with a pole strap that may be integral or detachable by means of suitable snap hooks and rings. The user should be able to alter the length of the pole strap without uncoiling it, permitting movement within 600mm of the anchorage.

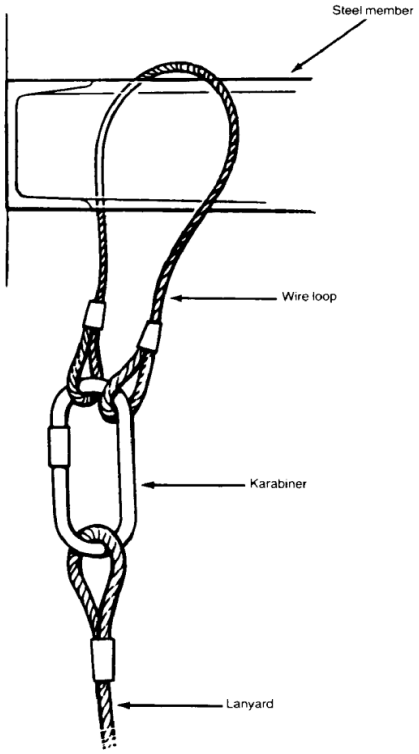
Use of Belts and Harnesses

It is of the utmost importance that whenever a safety belt or harness is provided there is also an effective means of fixing it to the structure at all times protection is required. All too often a belt or harness is provided in the hope that the wearer may find somewhere to attach it. It is also vital that the fixing point for a harness is strong enough to withstand the snatch load of a fall. The use of two lanyards will sometimes be necessary to ensure constant attachment whilst moving.

The distance of fall should be as small as is possible and should not exceed the dimensions specified above. To that end, the harness lanyard should be fixed to the structure or fixing point as high as practicable above the working position.

It is vital that the safety harness and the attendant lanyard are not damaged during use. The practice of fastening the lanyard around small sectioned structural steel or other sharp objects and hooking the karabiner back on to the lanyard may cause failure. As an alternative, it is recommended that a tested loop of at least 8mm diameter steel wire rope, with properly made eyes, be used. The wire loop should be wrapped around the steel and the harness or belt attached to the loop, maintaining the maximum falling distances previously outlined.

As an alternative, anchorage may be provided by use of special proprietary hooks that are available with openings to accommodate metal sections up to 50mm.



FALL ARREST DEVICES

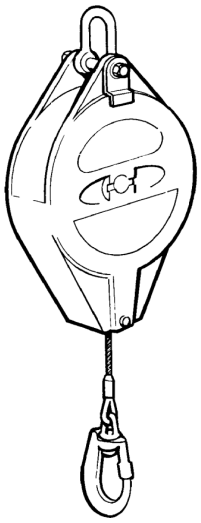
These mechanical devices, when used in conjunction with a safety harness, permit greater freedom of movement. These devices have two main features - they extend the area over which the user may work safely and they restrict the drop in the event of a fall, thereby reducing the load imposed upon the body on sudden arrest.

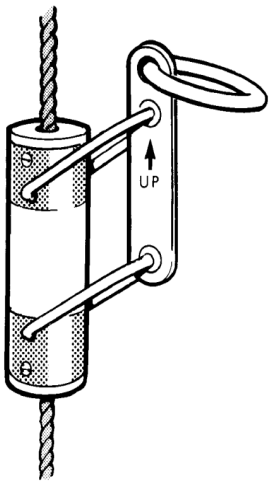
There are two main types, which may be velocity-sensing or otherwise automatically operated.

Guided Type Fall Arresters

BS EN 353 covers these. The system consists of a flexible or rigid anchorage line, a self-locking guide type fall arrester that is attached to the anchorage line and a lanyard that is attached to the fall arrester. An example is illustrated below.

The safety harness is attached to a self-reeling cable forming part of a block in which there is an arrester device. In use, the arrester device is secured to a suitable anchorage point and the self-reeling cable is fastened to the safety harness; the wearer is then free to move to any position permitted by the self-reeling cable. If the cable is pulled rapidly away from the block the locking device in the block is brought into operation, thereby preventing the fall developing.





The anchorage line passes through the device which is connected to the harness. Whilst allowing free movement up and down the anchorage line, in the event of a fall, the arrester clamps on to the anchorage line, automatically limiting the fall.

Use of Fall Arrest Devices

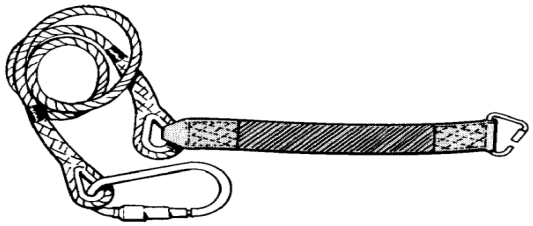
The following precautions must be observed when using fall arrest devices:

- The correct type of rail or cable for the device must be used for the anchorage line.
- The attachment point and attachment structures must be adequate to hold the user in the event of a fall.
- Before each occasion of use, devices should be tested on the anchorage line by simply lifting the device and letting go. If it does not lock at once it must be immediately withdrawn from service for inspection, overhaul and rectification. For velocity-sensing devices, e.g. sala blocks, the end of the anchorage line should be jerked to simulate a fall; this will lock the device. Should the device not lock, it must be immediately withdrawn from service for investigation.
- Instructions on safe use, which must be provided by manufacturers, must be given to users.
- Regular inspection and maintenance of the equipment must be carried out in accordance with the manufacturer's instructions.
- Equipment must be stored safely in accordance with the manufacturer's instructions.
- In the event that the device is subjected to shock loading, action must be taken in accordance with the manufacturer's instructions. Usually the device must be returned to the manufacturer for inspection and overhaul.

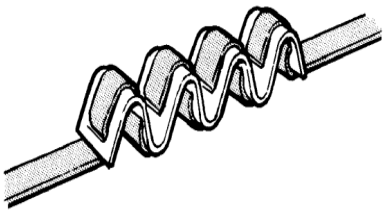
ENERGY ABSORBERS

Energy absorbers have been developed to reduce the possibility of injury to the body in the event of a fall.

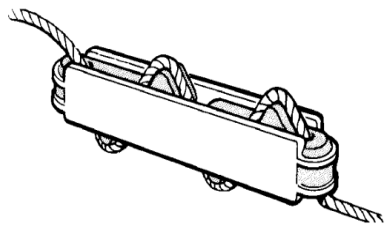
These devices, installed between the harness and the anchorage point, allow the fall to be slowed down, thus absorbing energy and reducing the final loading on the body. BS EN 355 covers these. Various types are illustrated below:



Example 1
A pack containing a strip of 350 lbs nylon tear web, parallel with a main load-bearing web, together linking the nylon lanyard to the safety harness. In the event of a fall, the tear web absorbs the shock as it pulls apart



Example 2
A corrugated curved stay of metal designed to reduce the shock by straightening out under a shock load.



Example 3
A simple rubber labyrinth through which the anchorage rope is threaded

HARNESS AND LANYARD INSPECTIONS

Lanyards should be indelibly and permanently marked in accordance with BS EN 365. They must be examined at least annually or as per manufacturers' instructions (a certificate will normally be issued to provide evidence) and be subject to an inspection regime. This should include:

- Serial numbers, which should be recorded in a register and should be marked on the lanyard in a suitable place, not in marker ink on a load-bearing strap. There should be an area where the number and the date of the last/next inspection can be placed.
- Frequency of inspection, which will be dependant upon the use to which the equipment is put, e.g. work involving chemicals, heat, friction, acids/alkalis, grit blasting, etc.
- Type of inspections carried out - pre-use checks, detailed inspection or interim inspection.
  Pre-use checks should consist of:
  - A thorough visual inspection of the entire equipment and all fittings, in good light and will normally take a few minutes.
  - A tactile inspection of the webbing and stitching by running it slowly through the hands to identify any broken, softened or hardened fibres that would be indicative of chemical attack or structural weakening. (Not necessarily recorded unless the risk assessment indicates the requirement.)

  Detailed inspections should be conducted:
  - At least every 6 months but as laid down by the duty holders inspection regime dependent on use, (quarterly for steel erection, demolition, scaffolding, steel skeletal masts or towers with edge protrusions).
  - By a competent person and recorded in a register.

  Interim Inspections should be conducted:
  - Between a user check and a detailed inspection if the finding of a risk assessment has identified a risk that could result in significant deterioration. These should be recorded in a register.
- Who will carry out the inspection (identification and competence).
- Action to be taken on finding a defective lanyard.
- User training.
- Availability of manufacturers' instructions.

Lanyards should be withdrawn from use and passed to a competent person for detailed inspection to decide whether they should continue in use or be destroyed if:

- There is no evidence that a lanyard has been regularly inspected by a competent person.
- Identification is not evident.
- A lanyard is still in use and marked with the old British standard.
- After a pre-use check or interim inspection, a lanyard is thought to be defective.
- There is any doubt about its safety.

Examples of damage/defects that have the potential to result in degradation and/or weakening of the lanyard/harness:

- cuts of 1 mm or more at the edges of webbing lanyards (e.g. where the lanyard may have been choke-hitched around steelwork);
- A knot in the lanyard, other than those intended by the manufacturer.
- Surface abrasion across the face of the webbing and at the webbing loops, particularly if localised.
- Abrasions on edges, particularly if localised.
- Cuts in webbing rope or stitching.
- Chemical attack, evidenced by colour changes in webbing, hardening/softening of fibres.
- Heat or friction damage, evidenced by a glazed appearance to the webbing.
- Damaged or deformed fittings.
- UV degradation, evidenced by a powdery surface and possible change of colour or fading, (hard to detect or determine).
- Partial deployment of energy absorber.
- Contamination with grit, sand or dirt.

GUIDANCE NOTE	LIFTING ACCESSORIES	Code: G202	Issue: A

INTRODUCTION

By its nature, lifting must be regarded as a hazardous operation. It is important that the maximum attention is paid to the correct use and maintenance of lifting accessories. This is achieved by:

- The purchase of equipment conforming to British Standards.
- Careful testing and inspection of equipment after manufacture.
- Detailed planning and the correct use of accessories.
- Correct storage of equipment.
- Regular and careful inspection and maintenance of the accessories.

The Lifting Operations and Lifting Equipment Regulations (LOLER) cover lifting accessories. Accessories for lifting may include single items or an assembly of items, such as slings, shackles, eyebolts, clamps, lifting magnets, vacuum lifters and lifting beams.

STATUTORY INSPECTIONS

All lifting accessories are to be thoroughly examined by a competent person before first use and then every 6 months or more frequently, in line with a scheme of examination, should the operating conditions require it. A report of these examinations is to be made by the competent person who carries out the examination and should be kept for 2 years by the employer. Accessories are also to be visually inspected prior to use.

MARKING OF EQUIPMENT

All lifting accessories are to have some form of marking on them, in order to identify them and to enable the inspections/examinations to be recorded in the registers and certificates. This marking is to include the safe working load (SWL) for that particular accessory.

Accessories used for lifting persons must be marked as such and those that must not be used for lifting persons, but could be used in error, must be appropriately and clearly marked.

Where the weight of an accessory is significant it should be clearly marked with its weight.

Normally the SWL marked on a multi-leg sling also gives the angle for that load. Any alteration from the angle, as given, will alter the SWL of the sling. Therefore, the table of SWLs, supplied by the manufacturer, is to be consulted.

Metric units (tonnes) are normally recognised by the use of a “t”. Imperial units are normally expressed in tons (T) and hundredweights (cwt).

CHAIN SLINGS

Due to the large number of grades of chain available, a given diameter will give rise to differing SWLs. Therefore, it is imperative that reference be made to the manufacturer’s SWL, as marked.

Repairs

Any chain which is either suspect or in need of repair should be returned to the supplier. Under no circumstances are repairs to be carried out on site.

Defects

The most common defect is stretching of the chain including the links, rings or hooks. Other regular defects are through abrasion, corrosion and the chain being used against sharp edges. Should any defect be seen in a chain it is to be withdrawn from service and examined by a competent person.

WIRE ROPE SLINGS

Wire rope is manufactured from a number of single wires, twisted together to form a strand. The strands are then twisted to form the rope. The SWL of wire rope is determined by its guaranteed breaking load. In all cases, the manufacturer's SWL is not to be exceeded.

Defects

Efficient examination of wire rope slings requires considerable experience and sound judgement. The following are always considered:

- Kinks. - Usually caused by the rope being bent around sharp bends, which can give rise to serious weakening of the rope.
- Wear. - A wire rope becomes unserviceable if wear results in flattening that gives a 10% reduction in the rope's diameter.
- Broken wires. - A rope is to be taken out of service if the number of visible broken wires in any ten diameters' length exceeds 5% of the total number of wires in the rope. Broken wires are dangerous to handle. They should be removed by bending backwards and forwards until they break off as cutting them leaves sharp edges.

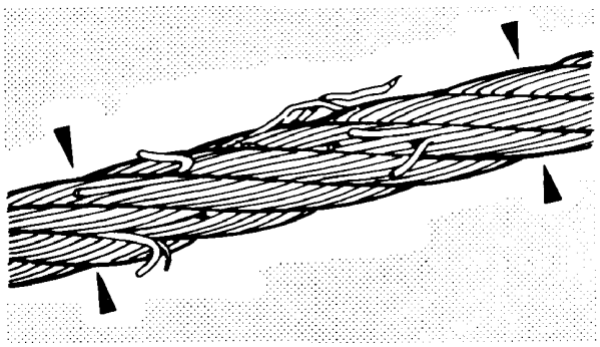


Figure 1 - Wire rope showing broken strands.

FIBRE ROPE SLINGS

Only properly manufactured fibre rope slings are to be used. Lengths of rope found on site are not to be used for slinging purposes.

The strength and other properties of a rope will vary considerably with the material from which it is made. The manufacturer or supplier is to be consulted to ensure that the rope is suitable for the purpose.

Under no circumstances are knotted slings to be used; this reduces their strength by over 50%.

All fibre ropes are very prone to mechanical damage; they are to be checked before each use and treated with care.

Natural fibre ropes are subject to rotting and chemical damage. Man-made fibre ropes have varying properties with regard to chemical exposure and may degrade on prolonged exposure to sunlight. The manufacturer's instructions are always to be followed.

FLAT LIFTING SLINGS

Flat lifting slings give a wide area to bear onto the load, reducing the risk of damage to the load. There are three main types in use:

- Woven man-made material with sewn-in end fittings.
- Woven wire mesh, normally covered with a plastic material.
- Plaited or panelled wire rope.

Slings of woven material are to be checked for cuts and abrasions. Any blistering of plastic covering is a sign of damage underneath.

Slings are to be protected from sharp edges by padding. All lifts are to be vertical, as side pull tends to overload the edge of the sling and cause tearing.

HOOKS

Every hook used for the raising or lowering of a load is to be either fitted with an efficient device to prevent the load becoming displaced or be of such a shape as to avoid, as far as is practicable, the risk of displacement of the load.

There are three basic types of hook that meet these criteria. These are illustrated in figure 2 overleaf.

Loads are only to be applied to hooks at the place specifically designed to take them; that is the bed of the hook. Loading the hook at any other place will result in the hook becoming overstressed, causing the hook to open or break.

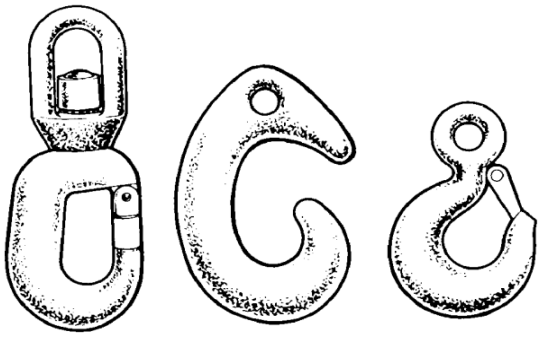


Figure 2. - Types of hook - left to right: swivel hook, "C" type eyehook, with safety catch.

EYEBOLTS

There are three types of eyebolt. These are illustrated in figure 3:

- Dynamo eyebolt. - This has a large eye and a relatively small collar. It is designed for vertical lifting only.
- Collar eyebolt. - This has a smaller eye with a large collar. It can be used for angular loads in the plane of the eye. The collar must be tightened down on its seating to obtain its full strength.
- Collar eyebolt with link. - This will take a higher angular force than the others and allows the pull to be in any direction.

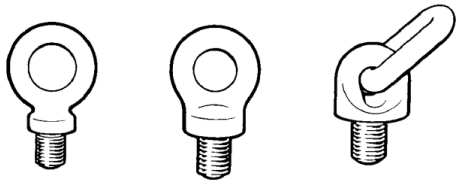


Figure 3. - Types of eyebolt: left to right: dynamo, collar, collar with link.

SHACKLES

Shackles are widely used for making connections in slings. They are to match the grade of chain in use.

The pin is separate, however, and only the pin supplied with the shackle is to be used. Under no circumstances are pins from other shackles to be used.

GUIDANCE NOTE	PALLETS	Code: G203	Issue: A

INTRODUCTION

Pallets are manufactured from a variety of materials; timber, plastic, paper and metal, and are widely used for the storage and transit of goods. These notes give guidance to those responsible for the design, manufacture, purchase and use of pallets. They indicate some of the considerations which should be taken into account in the design of pallets and also make recommendations for the inspection of both new and used pallets and their use.

GENERAL

Pallets are commonly found in a wide range of industries and services, forming an essential part of many mechanical handling systems in factories, distribution warehouses and the like. Accidents directly attributable to pallets usually arise from the following circumstances:

- Poor design.
- Poor construction.
- Inferior materials.
- The use of a pallet which is unsuitable for a particular load, handling or storage method, e.g. pallets taken at random from a “mixed bag” of used pallets for which the original specification is not known.
- Handling problems may ensue if the smaller Europallets (800mm x 1200mm) are mixed with UK pallets (1200mm x 1000mm) in racking systems, as the smaller pallet may fall from the rack beams or be displaced by the larger pallet.
- The continued use of a damaged pallet.
- Bad handling.
- Use in an unsuitable environment.

The majority of pallets are designed for the carriage of a particular class or type of goods and are intended to be handled or stored by a particular method. A pallet designed for the carriage, say, of cartons of cornflakes handled by forklift truck and stored singly in racking, is unlikely to be suitable for goods such as cans of paint, lifting by bar sling or multiple stacking. Furthermore, it should be noted that a pallet designed specifically to carry evenly distributed loads, such as cartons of cornflakes, will not be strong enough to carry concentrated loads such as an electric motor of the same weight.

The design parameters should ensure that a pallet is of adequate strength for the purpose intended, particularly when a variety of types of goods, or handling and storage methods is contemplated.

DESIGN CONSIDERATIONS

Most manufacturers produce basic designs for general duties. However, user requirements can differ widely and it is probable that these basic designs will not satisfy the requirements of certain individual customers. In these circumstances consultation between manufacturer and user is essential to ensure that the pallet construction is suitable for the intended usage. It is recommended that the pallet design should satisfy, where possible, the requirements of BS ISO 6780 and BS ISO 8611.

In order that the most suitable pallet can be produced for a particular demand, the designer needs to know the proposed use of the pallet, including:

- The type of loads to be carried:
  - Are they solid, liquid, powder, packed in drums, sacks, cartons, etc?
  - Have the goods any special characteristics likely to affect the pallets, such as corrosive properties?
- In what environment will the pallets be used?
  - In cold store, outdoors, indoors, chemical works, drying rooms, etc?
  - In abnormal temperature or humidity conditions?
- The weight and distribution of the goods to be carried on the pallet:
  - Will the weight of the goods be evenly distributed over the entire surface area of the pallet, or will they exert concentrated loads?
  - How are the goods to be placed on the pallet?
  - Is one way more effective than another?
  - Will the most effective way always be used?
  - Is pallet surface friction alone adequate for the safe transportation of goods?
- Moving of pallets:
  - By pallet truck, forklift truck, cranes with fork attachments, bar slings, or automated stacking equipment?
  - Will conveyors be used?
  - Is two-way or four-way entry required?
  - Will the pallets be lifted under their baseboards, e.g. as in storage and retrieval machines?
- Height and weight of loaded pallets to be stacked:
  - Will the payload distort over time making the stack unstable? (When pallets are stacked, consideration must be given to the load on the bottom pallet and the load spreading capacity of the baseboards of each pallet.)
- Use of pallet racking:
  - What type, e.g. shelf, beam, drive in, etc. will be used and are pallet support bars fitted?
  - What are the long-term behavioural properties of the materials of construction in addition to the bending stresses exerted on the pallet by the racking method of storage? (The design and manufacturing tolerances will be much tighter than for general usage pallets.)
- Are the pallets to be non-returnable/disposable or are they intended to be reusable, durable equipment?
- What are the dimensions of the vehicles or containers that will carry the pallets? (Where possible, pallet sizes should follow those recommended in BS ISO 6780.)

PALLET MANAGEMENT PLANNING

Problems may occur because the user selects a pallet at random from a pallet store on the premises with little consideration of the duties the pallet has to perform. To promote both effective and safe usage of pallets the following recommendations should be considered:

- Pallets should be loaded to an established pattern designed to achieve maximum stability and safety within the rated load of the pallet. Loads should be applied gradually and, unless the pallet has been specifically designed for point loading, should, as far as possible, be uniformly distributed over the deck area.
- As a general guide, the height of the load should not exceed the longest base dimension of the pallet. Shrink- or stretch-wrapping the load usually provides greater security, minimising the possibility of movement of the goods in transit. With these techniques it is frequently possible to safely transport loads taller than the longest base dimension of the pallet, e.g. palletised loads approximately up to the internal height of closed vehicles or freight containers.
- Special attention is required when transporting plastic pallets by forklift truck as they have extremely slippery surfaces and are potentially unstable on the tines of forklift trucks. Extra measures may be required to secure the goods to the pallets when being transported and to ensure the stability of empty plastic pallet stacks.
- If palletised loads are to be stacked directly on top of each other a firm base on the floor and on top of the preceding pallet load should be provided. Stacks should not be more than the manufacturer's recommended height. Dependent on the height, strength and stability of the unit loads and the ability of the operator to see clearly, taller stacks may only be built following detailed consultation with the manufacturer or other competent authority. However, the maximum permissible height should not exceed six times the narrowest dimension of the bottom pallet, provided that the block stacking pattern and the compression characteristics of the payload have been given careful consideration and that the pallet itself is designed to meet the stacking height required.
- Stacks should be checked periodically, as stability depends on the type and shape of the load and on prevailing humidity and temperature conditions. Corrective measures should be taken where necessary.
- The use of pallets in conjunction with racking, while reducing the compression hazard to the load, can cause additional stresses on the pallet. Loaded pallets should not be stored in racking unless they are suitably designed and constructed for the type of racking concerned.
- When pallets are used in storage and retrieval warehouses consideration must be given to the additional dynamic stresses induced in pallet support members by high acceleration and deceleration forces.
- The handling layout should be carefully considered to avoid tight corners, awkwardly placed doors, pillars and walls, uneven surfaces, change of gradients, etc. The use of a one-way traffic system and personnel guardrails should be considered for racking areas (see the Health and Safety Executive (HSE) guidance on workplace transport). When pallets are stacked in block formation adequate clearances should be allowed at the side and rear of each individual stack.
- An effective pallet damage inspection and outsorting routine should be established, paying particular attention to structurally critical components, together with the provision of training to promote safe methods of working.

PALLET USE AND MAINTENANCE

- Pallets should be examined for damage by the user upon delivery. Where non-permitted damage of the pallet is found, i.e. damage affecting the structural integrity of the pallet, it should not be used. Damaged pallets should be isolated and identified as damaged, and withdrawn for repair or disposal. Where repairs are possible these should only be carried out by the manufacturer, appointed agent or specialist pallet repairers/recyclers. Where this is not possible, repairs should be undertaken in accordance with a procedure agreed with the manufacturer.
- All pallets should be inspected every time they are used to ensure that they are in a safe condition.
- Disposable pallets, i.e. pallets designed for one delivery only, should be clearly marked to this effect and extreme caution should be exercised if reuse is considered.
- Empty pallets should be handled by appropriate means and not dragged or thrown down. They should not be handled by wedging the platform of a sack barrow between the top and bottom deck boards.
- Care should be exercised when using strapping to secure loads to pallets, as damage may arise if excessive tension and/or incorrect strap positions are used.
- If pallet trucks are used, care should be taken to ensure that the small finger wheels do not cause damage to the base boards. Chamfered edges to the top of the base boards will assist entry of the pallet truck finger wheels. Use of pallets meeting base window requirements of BS ISO 6780 together with trucks meeting BS ISO 509 will normally avoid such damage.
- Pallets handled by a crane should only be lifted by suitable fork attachments or, in the case of wing pallets, by bar slings with spreaders.
- When pallets are moved by conveyor, always ensure that the conveyor roller spacing is less than the width of pallet deck members to avoid damage by jamming.
- The forks of a handling device should extend into the pallet at least 75% of the dimension which is parallel to the forks.
- Only authorised and trained personnel should operate forklift trucks. Forklift truck operators should receive instructions on the correct method of handling pallets.

PALLET INSPECTION

The following checklist gives a guide for the basis of periodic inspection. This list may, of course, be extended to take account of special local and environmental conditions.

It is vital that everyone concerned understands that the proper repair of a pallet restores it to its original specification. This will require the use of compatible materials of suitable quality, correct dimensions and appropriate fastening techniques, e.g. timber pallet nails should be supplied in accordance with BS ISO 12777-1.

Timber Pallets

- In four-way perimeter base pallets, is every base board fastened at each end with two or more nails of correct length and diameter with adequate edge distance?
- Are the stringer boards made of sound timber and are there excessive knots?
- Are the stringer boards of equal thickness, as stipulated in the purchaser's specifications?
- Are the deck boards, stringer boards and base boards to the required thickness and width of the purchaser's specifications?
- Are the deck boards made of sound timber or are there excessive knots?
- Are the base boards split at their fastened end?
- Are there damaged bearers or blocks?
- Are there projecting nails or nails pulled through deck boards?
- Are there edge splits in any board members?
- Are there loose joints permitting racking out of square (diamonding)?
- Is the pallet clean and free from contamination?

Plastic Pallets

When used in cold temperatures and handled roughly they are susceptible to brittle fracture. Checks are required to determine that plastic pallets are free from cracks or other mechanical damage:

- Is the deck free from damage due to excessive heat/cold and chemical spillage? (If a pallet shows signs of white dusty surface deposits it should be rejected.)
- Is the deck or base worn?
- Are the deck supports or bearers worn, cracked or permanently deformed?
- If the supports are hollow are they free from trapped debris and damage?
- Has degradation occurred due to ultraviolet light (sunlight)? (If the pallets have become faded advice should be sought from the manufacturers regarding their continued use.)
- Has the pallet permanently distorted during use?

Pressed Wood Pallets

- Is the pallet free from cracking, flaking and/or wear?
- Are there signs of water absorption denoted by local swelling or blistering?
- Is the pallet free from damage due to excessive heat/cold or chemical spillage?
- If the base supports are hollow are they free from debris and damage, and are the drainage holes (if provided) clear?
- Pressed wood or chipboard pallets for external use should, where possible, meet the moisture-resistance requirements of BS 5669 Parts 1 and 2: 1989 or BS ISO 8611: 1991.

Corrugated Cardboard Pallets

- Is the pallet free from indentations?
- Is the deck free from damage due to excessive heat/cold and chemical spillage?
- Is the pallet free from moisture damage?
- Is the deck or base worn?
- Are the base supports/bearers worn, torn, cracked or permanently deformed?
- If the supports are hollow are they free from debris and damage?
- Has the pallet lost its rigidity?
- Are loose joints evident?

Metal Pallets

- Is the pallet free from corrosion and weld cracking?
- Is the deck free from damage due to chemical spillage?
- Is the deck or base worn?
- Are the base supports/bearers worn, cracked or permanently deformed?
- If the supports are hollow are they free from debris and damage?
- Is the paint/protective finish in a satisfactory condition?
- Is the pallet free from distortion?

GUIDANCE NOTE	FORKLIFT TRUCKS - LPG & ELECTRIC	Code: G207	Issue: A

MACHINE CHARACTERISTICS

Machine stability is to be maintained at all times. Therefore, selection of the correct machine is of paramount importance.

Manufacturers of these machines ensure that their products are designed and tested to be stable when handling specific loads. The manufacturers or suppliers are to be consulted about the suitability of the machine to do the required task.

The safe working load (SWL), quoted by the manufacturer, is the load the machine can handle with the mast in the vertical position and stationary. When the mast is tipped forward or the machine is moving the SWL is reduced. This situation is further aggravated if the mast is raised.

ATTACHMENTS

There are a variety of attachments available for forklift trucks, which increase their versatility. However, the addition of attachments may adversely affect the stability of the machine. Therefore, only attachments supplied by the manufacturer are to be used and only in accordance with the manufacturer's instructions.

SITE CONDITIONS

The best operating conditions possible are to be provided, to assist the stability of the machine. A properly constructed access is to be provided, where possible. It should be level and firm, having no camber, and be free from any hazards.

LOAD HANDLING

Forklifts are only stable within the limits laid down by the manufacturer. These limits, when transporting a load, depend on the forks being fully "home" under the load, in order to keep the centre of gravity as near as possible under the axis.

Before moving, the forks need to be raised from the ground. For maximum stability they should be raised by no more than approximately 150mm.

When negotiating inclines the forks are to be raised and the mast tilted back to clear the slope of the ground. The load is to be kept as close to the ground as possible.

Handling an awkward load requires great care. A banksman is to work in association with the driver while awkward loads are being handled.

STACKING

Stacking areas are to be clearly designated and built on firm, level ground, with good drainage. There is to be adequate clearance between the stack and any structure, both to allow the forklift access and to avoid putting excess pressure on the foundations of the structure.

To ensure the stability of the stack the following is to apply:

- The stack height is to be no more than three times its minimum base dimension.
- Materials are to be interlocked.
- Wedges are to be used, where necessary, to prevent sideways movement.
- Components at the bottom of the stack are to be capable of withstanding the weight of the stack.
- Items are not to protrude from the stack and aisles are to be kept clear.

OPERATING

Drivers

The minimum qualifications for a forklift driver are to:

- Be over the minimum school-leaving age; except in docks, where drivers must be aged at least 18 years. In practice, it is not recommended that young persons under the age of 18 years be authorised to drive forklifts, unless under the close supervision of a competent person.
- Hold a current driving licence if the forklift is to be operated on the public highway.
- Be medically fit.
- Hold a recognised operator's certificate for forklift trucks.

Operating Procedures

All drivers are to ensure that they:

- Wear the required protective clothing, e.g. safety helmet, safety footwear, ear defenders, etc.
- Operate at a safe speed consistent with the site conditions.
- Are alert to the presence of persons and vehicles or machinery within their operating area.
- Take particular care when moving off from a stationary position.
- Ensure the forklift is safe before vacating it by:
  - Stopping the engine;
  - Disengaging the gears;
  - Applying the brakes;
  - Leaving it on level ground;
  - Resting the forks on the ground;
  - Removing the key.
- Never carry passengers.
- Climb in and out of the machine using the steps and handholds provided.
- Never permit unauthorised personnel to operate their machine.
- Never operate the controls from outside of the machine.
- Never attempt to lift loads beyond the rated capacity of the machine.
- Never raise the load whilst travelling.
- Always lift the load with the forks tilted back.
- Ensure that the forks are correctly spaced for the load and are fully under the load.
- Travel with the load at the lowest possible level with the forks tilted back.
- Avoid sudden movements of the forklift.
- Ensure the load is stable and secure.
- Never use a defective machine.

TRAINING

The training of the operators should include as a minimum:

- How to safely mount and operate the fork-lift truck within the limits set by the manufacturer.
- The regular routine inspections and tests to be performed on the truck and its fitments.
- The proper and effective use of the controls, including safe driving, turning and maneuvering of the truck, both empty and laden.
- The safe way to use the lifting capabilities of the fork-lift truck and any expected fitments normally used, including the correct procedure for stacking loads, where necessary, and lifting operations to and from other vehicles.

INSPECTIONS AND EXAMINATIONS

Any chains associated with the forklift are to be inspected every 6 months by a competent person and a certificate is to be issued for the chains. A copy of this certificate is to be available on site.

The forklift is to be inspected by the operator prior to work commencing for the day. They are to check:

- Battery level - top up if necessary.
- Tyres - for damage, wear and pressure.
- Fork locating or retaining pins.
- Brakes.
- Overhead guard and load backrest.
- Steering.
- Horn and lights.
- Lift mechanism.
- For leakage of hydraulic oil, etc.

The above is to be recorded every 7 days by the operator or other competent person in a record of inspection.

MAINTENANCE

Maintenance is to be carried out in accordance with the manufacturer's instructions and is to be recorded.

CHARGING OF BATTERY-OPERATED FORKLIFTS

Charging is to be carried out following the manufacturer's instructions, in a well-ventilated area. Smoking shall be prohibited in the charging area.

REFUELLING OF LPG FORKLIFTS

Gas cylinders are to be changed in a well-ventilated area. Operators shall ensure that the valve on the used gas bottle is fully closed prior to its removal. When the new bottle is in place the operator shall check thoroughly for any leaks.

Naked lights are prohibited in the area when a gas bottle is being changed.

ROLLING OVER OF MOBILE WORK EQUIPMENT

Drivers need protection from the risks associated against the forklift truck rolling over and from being hit by falling materials. Roll over protection systems (ROPS) and seat restraints (seat belts) should be fitted to all forklifts having a seated operator.

The correct use of the seat restraint is an essential part of the ROPS and is designed to hold the driver in position when the vehicle tips over. A ROPS bar on its own will not adequately protect the driver in the event of a roll-over. Drivers will instinctively try to jump clear of the vehicle as it tips, but often this is only partially successful and they may suffer serious injuries from being trapped by the vehicle as it comes to rest. It is safer to be held in by the seat restraint within the area protected by ROPS.

GUIDANCE NOTE	CRANES	Code: G217	Issue: A

INTRODUCTION

All operations involving cranes must comply with the Management of Health and Safety Regulations and the Provision and Use of Work Equipment Regulations (PUWER).

CRANE SELECTION

Each type of crane has certain features and consideration must be given to the most suitable type for the job. In selecting a crane it is important to know the weight of the load, the operating radius and lift height required. Types of crane include:

- Mobile. - Most suitable where the job is of short duration and good mobility is required. They are quick to install on site and are easy to relocate.
- Crawler. - Best in off-road conditions, where ground conditions are not suitable for wheeled cranes. They do require a firm surface to operate from. Transporting and rigging normally takes longer than mobile cranes.
- Tower. - Most suitable for handling relatively light loads to extremes of height and reach. Particularly suitable where standing space is short and work is of long duration.
- Derrick. - Suitable for handling relatively heavy loads at long radii and where the length of work justifies their erection.

RECEIVING AND ERECTING A CRANE ON SITE

Before the crane becomes operational it is necessary to check the following:

- The crane has been erected by competent personnel who have the necessary training and experience. Written procedures for each type of crane, incorporating the manufacturer's instructions, should be drawn up prior to installation and should be available on site.
- The crane has had a thorough examination, which may include a test within the last 12 months.
- The record of weekly inspections of the crane.
- The lifting equipment is suitable for the task and the relevant certificates are available.
- The crane complies with the requirements of the job assessment.
- The safe load indicator and load radius indicator are working and are set correctly for the crane as rigged.
- A thorough examination of the crane has been undertaken, after its erection, by a competent person who is sufficiently independent and impartial and has not been involved in the erection process.

SITING

There is to be a minimum clearance of 600mm between any slewing parts of a crane and any fixed installation, to prevent persons from becoming trapped. If this is not possible, access to these points must be blocked off.

The foundation for the crane is important. The crane supplier should stipulate the requirements.

A check is to be carried out to ensure that there are no overhead power lines within the area of operation and that there is sufficient clearance from other lines outside the immediate area.

WORK AREA CONTROL

Access to the work area during lifting operations is to be restricted to those involved with the work in hand. The work area is to be delineated and, if appropriate, process plant, etc. are to be isolated.

LOAD HANDLING

All lifting operations and lifting equipment must be selected, planned and supervised by a competent person. Anyone who is planning a lifting operation must consider the suitability and stability of both the lifting equipment and the load it is to lift.

Loads are not to be lifted until directed by the banksman to avoid fingers being trapped between the load and the slings. The load is to be lifted a short way to enable the slinging of the load to be checked. Where necessary, large objects, or objects with a large surface area, are to have a tail rope to assist with the control of the load.

Loads are to be lifted gently, with no snatching. They are not to be pulled or dragged and are not to pass over the heads of persons.

Loads are never to be left suspended with the crane unmanned.

CHECKS AND INSPECTIONS

All cranes should be checked before use to identify wear and tear and malfunction of safety related equipment. Operators should be trained to recognise defects in the equipment and should be encouraged to visually inspect the equipment before it is used each day.

The operator should be able to identify:

- damage to shackles and chains, etc.
- distortions to shackles and chains, etc.
- environmental damage: rust, corrosion, etc.

The Lifting Operations Lifting Equipment Regulations (LOLER) requires that cranes are regularly examined and inspected for any defects before it is put into use for the first time. The examination must be performed by a competent person, which is usually an independent accredited inspection body; most engineering insurance companies offer these services. The examination may entail inspection and/or testing, dependant on the crane and its use.

The competent person should have appropriate practical and theoretical knowledge of the crane so that they are able to detect defects or weaknesses. The person should also be able to assess the importance of any defects or weaknesses in relation to the continued safety of the crane.

Cranes that are exposed to conditions which are likely to cause deterioration should be thoroughly examined for any defect at the following intervals:

- after assembly and before being put into service at a new site or in a new location, to ensure that it has been installed correctly and is safe to operate.
- at least every 12 months for other lifting equipment.
- in accordance with an examination scheme.

As an alternative to thorough examinations at the prescribed statutory intervals, a competent person may devise an examination scheme. The scheme may specify periods which are different from the statutory intervals, but this examination scheme must be based on a rigorous assessment of the risks. An examination scheme may be particularly appropriate for equipment that is used infrequently for light loads. Records of examinations and checks must be kept. Copies of certificates of training for competent persons and operators must be kept on site.

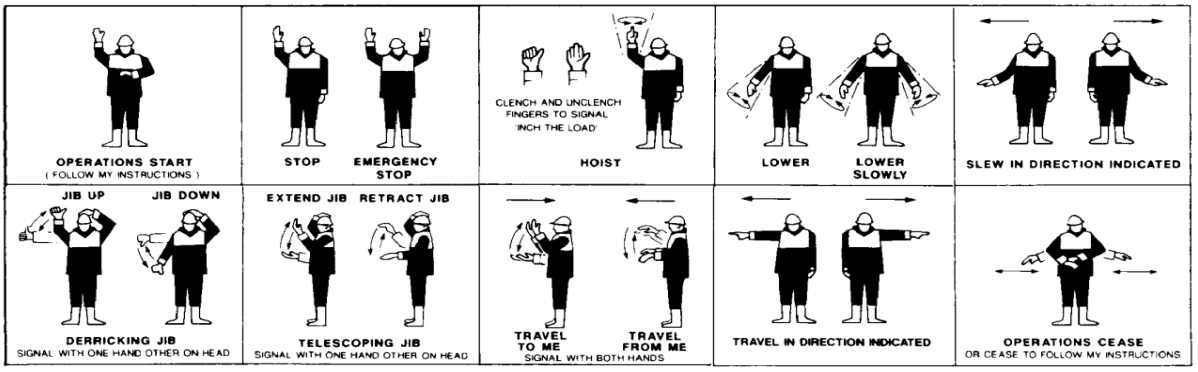
MAINTENANCE

A properly planned maintenance system should be established and used. Regular maintenance and servicing is to be carried out by a competent person, in accordance with the manufacturer's instructions and specified intervals. Records of maintenance, including any parts that have been replaced, are to be kept and are to be available for inspection on request. In general, the original manufacturer's parts should be used. Where parts are sourced from other suppliers, a competent engineer should assess that the parts meet the original manufacturer's specification and are fit for purpose. Any parts replaced should be installed in accordance with the manufacturer's instructions.

SIGNALS

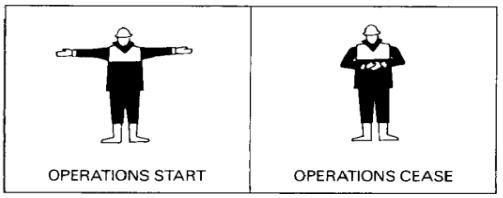
The crane driver and the banksman are to ensure that the signals given are clearly understood.

The following signals are recommended by the Building Employers' Confederation.

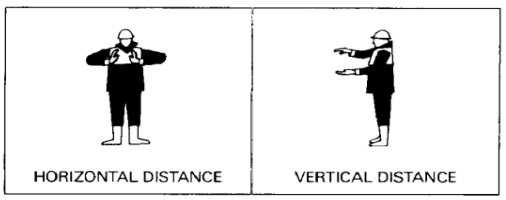


The series of crane signals recommended by BS 7121. The signaller should stand in a secure position where he can see the load and can be clearly seen by the crane driver. If at all possible he should face the driver. Each signal should be precise.

Note The signals specified in the *Health and Safety (Safety Signs and Signals) Regulations 1996* differ from the above in the following respects:



Signals which differ



New signals

GUIDANCE NOTE	PALLET TRUCKS	Code: G218	Issue: A

INTRODUCTION

Frequent and heavy lifting and handling can cause back injuries. Manual handling accidents account for more than a third of all accidents reported each year to the enforcing authorities. The vast majority of reported manual handling accidents result in an over-three-day injury, most commonly a sprain or strain, often of the back. But using lifting and handling aids can remove or reduce that risk and keep workers healthy and at work. Pallet trucks are just one type of handling aid which when used and maintained correctly can help prevent injury.

HAZARDS

The main hazards associated with pallet trucks are injuries caused by pushing/pulling over uneven surfaces and the pallet and its contents falling from the pallet truck. Additionally, there are hazards associated with striking or being struck by a pallet truck.

CONTROL MEASURES

Always wear good quality safety shoes, (steel toe caps) and industrial work gloves. Regular inspections should be carried out to ensure that all bolts, pins and securing devices are correctly in place and in good condition. Check for signs of cracked welds, bent or loose pins or other signs of structural damage. Do not use if any of these conditions exist. A record of these inspections should be maintained. An example of a LOLER inspection report form can be found within section G of the health and safety policy. Ensure repairs are carried out by qualified persons only. Ensure the machine is properly maintained at all times.

The forks should be lowered to their lowest position when not in use, and ensure it is left where it cannot become a hazard to others. If necessary, the wheels must be chocked to prevent it from moving and possibly becoming a hazard.

The load should be evenly distributed on the forks and is perfectly stable before attempting to raise. Never exceed the load for which the machine was designed. If the load capacity and other warning labels become defaced or illegible, have them replaced. Do not leave load on pallet truck for lengthy periods. Rapid loading of the truck, i.e.; dropping heavy loads directly onto forks should be avoided. The pallet truck should not be used as a vehicle jack, and never use the truck to transport persons, or use as a scooter.

Do not allow any person to operate the machine unless they are completely familiar with all aspects of operation. The pallet truck should not be used on rough terrain, floor requirements are, smooth, non slip, hard, level and without obstacles. If pallets have to be moved over uneven surfaces then a specialised pallet truck with pneumatic wheels should be employed. Lifting equipment fitted with pneumatic tyres should not be used to lift loads unless the tyres are inflated to the correct pressure. The truck must not be altered or modified in any way.

PERSONAL PROTECTIVE EQUIPMENT

No additional specialist PPE is required.

REFERENCE

Regulations/ACoPs:

Lifting Operations and Lighting Equipment Regulations
Approved Code of Practice and Guidance [LOLER], L113
Provision and Use of Work Equipment Regulations
Approved Code of Practice and Guidance [PUWER], L22

HSE Guidance:

Manual pallet trucks, Construction Occupational Health case study COH06

Other:

Clarke Strongarm Pallet Truck PTE550 operation and maintenance instructions

GUIDANCE NOTE	GANTRY CRANES	Code: G219	Issue: A

DESCRIPTION

Gantry cranes are a type of crane which lifts objects with the use of a hoist which is fitted in a trolley and can move horizontally on a rail or pair of rails fitted under a beam. An overhead travelling crane, also known as an overhead crane or as a suspended crane, has the ends of the supporting beam resting on wheels running on rails at high level, usually on the parallel side walls of a factory or similar large industrial building, so that the whole crane can move the length of the building while the hoist can be moved to and fro across the width of the building. A gantry crane or portal crane has a similar mechanism supported by uprights, usually with wheels at the foot of the uprights allowing the whole crane to traverse.

Some gantry cranes also run on rubber tyres so that tracks are not needed, and small gantry cranes can be used in workshops, for example for lifting engines out of vehicles. Each different type of crane will have its own manufacturer's information and importantly, a Safe Working Load (SWL) which must not be exceeded.

KEY POINTS

A written safe system of work for the use and maintenance of gantry cranes should be prepared and implemented.

Lifting operations including their supervision should be properly considered and planned. This should be done by a person who has adequate experience and competence.

The person planning any lift should:

- Ensure that the crane to be used is appropriate for the intended lift, especially that it has sufficient lifting height and capacity
- Ensure that suitable lifting tackle is selected and available for the operation
- Decide on the best route for the load, so that there is adequate clearance between the load and any other object, and risks to people are minimized
- Ensure that one person is given full responsibility for controlling the lifting operation
- Check that the crane operator has an unimpeded view of the operation or that there is a competent signaller (who may also be the slinger) who has such a view with a suitable system of communication between the signaller and operator
- Ensure non-vertical lifts are not permitted as gantry type cranes are not usually designed for this type of loading.
- The circumstances in which gantry cranes are used can change over a period of time, so lifting operations should be periodically re-assessed to ensure that the work demanded of the crane is still within its capabilities.

MAINTENANCE

Regular inspection, monitoring and maintenance should be carried out. Note should be taken of the manufacturer's instructions for maintenance. The user should not rely on statutory examinations to identify all defects nor the need to replace worn or badly functioning components. The frequency of such maintenance can be linked to previous experience based on a proper system of records. Maintenance personnel should be properly trained in all essential aspects of maintaining the crane in their charge.

Cranes which are being operated in a hostile environment (e.g. corrosive or abrasive atmospheres), will require critical components (e.g. hoist rope), to be assessed at more frequent intervals.

Following crane maintenance, the correct functioning of the crane, its controls and safety devices should be checked. Particular attention should be paid to ensuring that the correct electrical connections have been made so as to eliminate subsequent unexpected motions (e.g. hoisting on the lowering button circuit which would nullify over hoist protection).

Maintenance workers often have to work in areas which are not normally approached during routine operation of cranes and particular attention should be given to the protection of exposed live electrical conductors and the secure fencing of moving dangerous parts of machinery on crane bridges, (e.g. gears, couplings and long travel shafts). Guards should be properly replaced after maintenance work has been completed. Maintenance staff should not leave loose components lying on crane bridges (e.g. nuts, bolts etc) which can fall to the ground.

STATUTORY INSPECTIONS

Lifting equipment must be marked with its SWL. This can be stamped into the equipment or form part of a plate or chart for safe use. Information should also be provided on any configurations or combinations where the SWL may differ. Where it is not possible to mark SWL, e.g. on small items, a colour coding or labelling system should be used to clearly indicate SWL.

A thorough examination of the crane must be carried out by a competent person (usually an external inspection body) every 12 months. Lifting accessories such as chains, slings, shackles, eye bolts etc must be examined every 6 months

TRAINING AND COMPETENCE

When selecting crane operators it must be ensured that they are physically capable of carrying out their intended duties. They will need to be physically fit and have good eyesight and hearing.

The amount of training needed depends on the complexity of the equipment and load types. In general, training should be carefully considered and tailored to the needs of the operator and job. Generally this will be achieved through an accredited training provider. Additional training may be needed in the proper use of lifting tackle, estimation of loads, operation of controls and the means of communication.

SIGNIFICANT RISKS

Overload - The SWL of both the crane and lifting gear must not be exceeded and issues such as the possible snagging of the load or tackle must be considered as part of the planning for the lift.

Sudden movement of the load - The operator must be competent to judge the load and ensure that lifting gear is correctly attached to lifting points or that slings are not liable to slip. Where slings are used to lift a load then the potential for abrasion or cutting from sharp edges must be considered. Any sudden movement of a load could cause overloading on all or parts of the lifting tackle.

Crushing - This can occur when the load is dropped through overloading but can also occur when the load is being moved trapping a person between the load and a fixed object. Fingers hands and arms can be trapped between the load and the lifting tackle as the lift begins.

Impact - This can occur when the load is in motion particularly where people may not be aware of the presence of the moving load. A sudden stopping of the load could also cause the load to swing which again could cause an impact injury.

ELEMENTARY PRECAUTIONS

- Always ensure that operatives are appropriately trained.
- Ensure that a plan is in place for all lifts
- Ensure all lifting equipment has in date certificates of thorough examination
- Exclude personnel from the lifting area (where appropriate use physical barriers)
- Wherever possible use tested lifting points on loads
- Check the stability of the load before the lift begins
- Ensure there is no loose items on the load that could fall off during the lift
- Avoid working under suspended load
- Ensure a safe system of work is in place for the maintenance of the equipment
- Any work at height must be adequately risk assessed and appropriate protective measures put in place

REFERENCES

L113 Lifting Operations and Lifting Equipment Operations Safe Use of Lifting Equipment ACoP and Guide
Guidance Note G202 Lifting Accessories

GUIDANCE NOTE	WORK EQUIPMENT (CONSTRUCTION)	Code: G302	Issue: A

INTRODUCTION

The term “work equipment” covers almost any equipment used at work. It covers machinery, appliances, apparatus or tools and any assembly of components.

The proper selection and maintenance of any work equipment and the provision of information; instruction and training in their use are requirements of the Provision and Use of Work Equipment Regulations (PUWER). Employers and the self employed must ensure that:

- Any equipment provided is suitable for its intended use allowing for the conditions it will be used in. This includes borrowed, hired or second hand equipment.
- Equipment is maintained in good working order and in a good state of repair.
- Only authorised competent persons undertake repairs, modifications, maintenance or servicing ensuring maintenance records are kept up to date.
- Where applicable inspections / testing is carried out at appropriate intervals to ensure it remains in good order.
- Where equipment involves a specific risk it will be restricted to only those given the task to operate it.
- Equipment is installed, located and used in such a way that operatives or others nearby are not exposed to risks such as by the movement of parts of the machine or by emissions from the machine.
- A suitable and sufficient risk assessment must be undertaken for each piece of equipment taking into consideration site specific conditions.
- Those involved with the maintenance or supervision of work equipment are provided with sufficient information, instruction and training, and, specific written instructions where appropriate.
- All reasonably practicable measures are taken through the use of guards, interlocks and other protective devices to prevent access to dangerous parts, moving parts or other hazards that could cause injury.
- Where equipment contains hot or cold equipment, articles or substances that may present a risk of injury, then sufficient protection will be provided.
- Suitable controls are fitted including suitably located and clearly indicated emergency stop controls.
- Appropriate isolation controls are available that will isolate the machine from all sources of energy.

RISK ASSESSMENT

When considering low risk work equipment the application of common sense will be sufficient and a detailed assessment will not be required. For more complex equipment such as that used in construction or manufacturing a more in depth assessment will be needed. Assessments will need to cover the whole life of the machine i.e. from installation / assembly / transportation through its operation and cleaning / maintenance to de-commissioning / dismantling.

Those who carry out risk assessments will need to be trained and in cases of complex machinery, will also need to have an understanding of the machine and its processes. The list overleaf shows some of the hazards that must be considered when assessments are carried on more complex machinery:

1	Entanglement	9	High pressure	17	Stability
2	Friction / Abrasion	10	Electricity	18	Slip / trip / falls
3	Cutting	11	Noise	19	Controls
4	Drawing in / trap	12	Hot / cold	20	Control system
5	Shear	13	Vibration	21	Ergonomic
6	Impact	14	Radiation	22	Human error
7	Stabbing / puncture	15	Substances	23	
8	Ejection of material	16	Lighting	24	

In all cases the manufacturer's instructions / operator's handbook must be readily available for ease of reference. This should also provide substantial help when carrying out the risk assessment.

DRIVERS, OPERATORS AND BANKSMEN

All drivers, operators and banksmen shall be competent to perform their duties. No person under the age of 18 years is permitted to operate work equipment, unless they are under the close instruction / supervision of a competent person.

In the construction industry competence to operate equipment and machinery is normally achieved through a nationally recognised training scheme and operatives are usually issued with a license that is valid for 5 years. Employers and the self-employed must:

- Ensure that operatives are properly trained to operate equipment and machinery and where appropriate issue an authorisation or permit to operate.
- Have adequate arrangements in place for complying with training requirements imposed by Health and Safety legislation. This should include checks of training certificates / equipment licenses particularly if there is doubt about their authenticity.
- Not allow any person to operate equipment unless they are competent to do so.

MAINTENANCE

A competent person shall maintain all items of work equipment in accordance with the manufacturer's instructions. Regular checks and maintenance must be carried out on:

- Critical controls
- Guards and safety/warning devices
- Visibility aids (mirrors, glass screens, lights etc)
- Roll over protection systems
- Seat belts

Operators shall report all defects to their supervisor immediately upon discovery. Work equipment which has defects likely to affect the safety of its operations shall not be used. All defects should be entered into a defect book.

Repairs will be carried out as and when necessary and are only to be undertaken by a competent person. Records of repairs carried out should be kept with the equipments documentation to develop a history of the equipment.

WORK EQUIPMENT OPERATION

Prior to operating an item of work equipment, the operator shall be properly trained and instructed as to the:

- Safe working load (SWL) of that item of equipment
- The correct loading and unloading techniques
- The dangers associated with the overloading of the equipment.
- The traffic management plan including the control of reversing and slewing.

Passengers shall not be carried on any item of work equipment, unless it has been designed and fitted with seating for passengers and appropriate restraint devices where applicable.

Work equipment shall be parked on firm, level ground, with the engine stopped, the brakes on and any load or attachment lowered to the ground. When left unattended, all items of work equipment are to be locked and the keys are to be removed.

GENERAL HAZARDS

- The operation of mechanical equipment in the vicinity of overhead or underground services shall only be carried out in accordance with the systems detailed in the guidance notes regarding underground and overhead services (J207).
- Noise from work equipment shall be reduced at source, where possible. Reference shall be made to the guidance notes regarding noise at work (B200).
- All persons not involved with the activity shall keep away from areas where work equipment is operating. Traffic / pedestrian controls must be in place.
- Due to the restriction of the operator's field of visibility, the operator is to carefully check around the machine for obstructions, prior to operations. Where the machine is being used in confined areas a banksman shall be used to ensure that the machine is not obstructed or that the machine's movements do not endanger persons.
- When used in adverse weather conditions, reduced visibility or at night, headlights shall be used and all persons working in the area of work equipment shall wear reflective jackets or waistcoats.
- Where the movement of machines creates a dust hazard, damping down of the area shall be carried out. If necessary, employees shall be issued with dust masks.
- Work equipment is to be parked in such a way that it does not cause an obstruction to other equipment, vehicles or pedestrians. If work equipment breaks down in a position that is likely to cause an obstruction, it shall be clearly marked with warning signs, diversionary cones or barriers and shall be illuminated during the hours of darkness.
- Work equipment required to operate on inclines or on uneven surfaces where the machine could roll over shall be fitted with roll-over protection structures and drivers' seat belts.
- When roll-over protection is fitted, seat belts must be worn by operators of mobile work equipment. This will keep the operator inside the confines of the safety cell provided by any roll-over protection scheme.
- Work equipment is, where possible, to be kept away from the sides of excavations. If this is not possible, the excavation shall be evacuated of personnel whilst work equipment is operating in the vicinity or passing by.

- When used in a confined space, adequate ventilation shall be provided to remove any build-up of exhaust gases or fumes.
- Safe means of access and egress shall be provided to all cabs. Operators shall mount and dismount work equipment using the access provided, i.e. not jump from machines.
- Every moving part of any prime mover, every part of transmission machinery and every dangerous part of any other machinery, whether driven by mechanical power or not, shall be securely guarded. Any guards removed for maintenance or repair shall be replaced before the machine is set in motion.
- The speed of the machine's operation is not to exceed the permitted speed on the site or the safe capabilities of the machine or operator.
- Drivers shall not remain in the machine whilst it is being loaded, unless it is fitted with a suitable overhead protective canopy.

GUIDANCE NOTE	PUWER - MACHINE GUARDING AND ERGONOMICS	Code: G303	Issue: A

INTRODUCTION

All machines shall, wherever practicable, have their moving parts adequately guarded. The guards shall be in accordance with the manufacturer's recommendations or shall be installed to ensure that moving parts, which may endanger the operator or any persons working near or around the machine, are not exposed. The guards shall conform to the current legislation.

TYPES OF GUARD

Fixed Guards

Fixed guards provide the highest level of protection and shall, therefore, be used wherever practicable.

Fixed guards shall enclose the exposed parts, allowing only sufficient room to introduce the workpiece to the machine. Fixed guards shall be adjustable, to permit different sizes of workpiece to be inserted in the machine. The space is to be kept as small as is practicable and the guard shall be secured prior to the machine being operated.

Fixed guards shall not be adjusted whilst the machine is in motion.

Interlocking Guards

These shall be used where it is possible for access to be gained to dangerous parts of machinery whilst they are in motion. The interlock guard shall be fitted to ensure that the machine stops immediately the guard is removed and cannot restart until such time as the guard has been securely replaced.

Trip Guards

Where the use of fixed or interlocking guards is not practicable, trip guards shall be used. These shall be so designed and fitted to ensure that persons cannot become trapped in moving machinery without coming into contact with the trip guard, which shall immediately stop the machine.

These shall be either wholly mechanical, set off by contact with the guard, or shall be by the use of photoelectric cells. In any case, they shall be designed and installed by a competent person.

Where the installation of these is not practicable, pressure-sensitive mats or two-handed operation of the machine shall be utilised.

Two-handed operation shall be installed in a manner that ensures that the operator is unable to start or run the machine without operating two switches, placed sufficiently far apart to ensure two-handed operation. Guarding shall be installed to prevent persons, other than the operator, coming into contact with the machine.

All guards shall be maintained in accordance with the manufacturer's instructions and current legislation.

All employees shall be fully instructed as to the requirements of the guards fitted to the machines they are required to operate and the methods of adjustment of those guards. Records shall be kept of all training given. Only persons trained and authorised to operate the machine shall be permitted to do so.

Note: In some cases, such as infrared, light beams or specialised guards, only those with the necessary specialised skills shall carry out the adjustments.

All defects in guarding shall be reported to the supervisor immediately and no machine shall be operated with defective or inadequate guarding.

NEW AND HIRED EQUIPMENT

All newly purchased or hired equipment shall be checked to ensure that the guards fitted meet the requirements as laid down in this procedure. If they fail to comply the supplier shall be contacted and shall be required to correct the defects, as required under the Provision and Use of Work Equipment Regulations (PUWER).

INSPECTIONS

All machines shall be inspected on a regular basis to ensure that the correct guarding is in place. This shall be inspected by the operator at the start of each shift, for obvious defects in the guards.

MACHINE LOCK-OFF

The purpose of a machine lock-off is to ensure that the machine or equipment is isolated from all potentially hazardous energy, and locked-off before employees perform any servicing or maintenance activities where the unexpected energisation, start-up or release of stored energy could cause injury.

IMPLEMENTING LOCK-OFF

To operate a successful lock-off procedure for plant inspection, cleaning, repair or maintenance, there are five simple steps that must be followed:

1. **Announce** the shut-down by informing the persons whose plant, machinery, or equipment has to be turned off or shut-down that a lock-out procedure is to be implemented.
2. **Shut-down** the machine using the normal shut-down procedures.
3. **Disconnect** all energy sources, e.g. electrical, pneumatic or hydraulic energy coming to the machine. Use energy isolating devices, such as a manually operated circuit breaker or an isolating switch to disconnect the energy sources.
4. **Apply** lock-off using lock-off devices such as padlocks fixed to isolating devices to ensure that power cannot be restored unexpectedly or accidentally while work is being carried out on the machine. Attach warning signage to indicate that persons are working on the machine.
5. **Verify** the isolation and lock-off and never assume that the isolation and lock-off has worked. Release / disperse any residual or stored energy such as energy capacitors. Operate the machine's controls to confirm that the machine has been isolated and cannot be re-energised. Return the controls to the neutral position. It is now safe to carry out the inspection, cleaning, repair or maintenance work on the machine.

RESTORING NORMAL OPERATION

After the work has been completed on the machine and the machine is ready for return to normal operating condition, the following five steps must be taken to ensure the machine is safely restored to operation:

1. **Check** to ensure that all tools have been removed from the machine and safety guards, if previously removed; have been replaced on the machine.
2. **Verify** that all personnel are safely clear of the machine.
3. **Announce** that the machine is about to be turned on.
4. **Reactivate** by removing the warning signage and lock-off devices and re-energise the machine.
5. **Inform** those personnel whose machine was shut-down that the machine is now ready for operation.

RESPONSIBILITY AND TRAINING

Employees whose work activities are affected by lock-off procedures shall be instructed in the safety significance of these procedures. Each new employee or employees transferred from other departments, whose work operations are or may be carried out in affected areas, shall be instructed in the purpose and use of the lock-off procedure.

Only authorised employees shall be trained in performing a lock-off and shall be permitted to perform lock-off on equipment. Each authorised employee will be issued their own padlock(s) with key(s). The key(s) for all padlock(s) issued to an authorised employee will remain with the authorised employee at all times during lock-out.

Only that authorised employee may remove their padlock(s). If for any reason the authorised employee is not available and the equipment must be re-energised only the site manager or supervisor can authorise the removal of the lock(s). When the authorised employee returns back to work they must be notified immediately by the site manager or supervisor that their lock has been removed.

ERGONOMICS

PROTECTION AGAINST SPECIFIC HAZARDS

Subject to the note below, work equipment must incorporate protection or steps must be taken to reduce the risk against certain specific hazards:

- Material falling from equipment;
- Material held in the equipment being unexpectedly thrown out;
- Parts of the equipment breaking off and being ejected out;
- Parts of the equipment coming apart;
- Overheating or fire;
- Explosion of equipment;
- Explosion of a substance in the equipment.

The risk assessment made under the Management of Health and Safety at Work Regulations shall identify any of the above hazards and assess the associated risks. Emphasis shall be placed on reducing the risks by minimising the chance of failure of work equipment and by mitigating the effect of any failures that occur.

Personal protective equipment may be appropriate where there is a need to provide further protection against risk. Training, supervision and provision of information also have important roles to play.

Note: protection against specific hazards in respect of any risk to a person's health or safety may be covered by measures as stated in specific regulations and as such would override PUWER.

HIGH OR VERY LOW TEMPERATURES

This organisation shall ensure that protection is provided where there is a risk of contact with accessible surfaces of hot or very cold work equipment. Engineering measures, such as insulation, screens or barriers, shall be adopted in preference to personal protective equipment.

CONTROLS AND CONTROL SYSTEMS

This organisation shall ensure that the following requirements are met for powered work equipment:

When starting or changing operating conditions:

- One or more controls shall be provided, where appropriate, to start equipment and starting shall only be possible by using a control;
- A change in operating conditions, e.g. speed or pressure, shall only be possible by use of a control;
- Controls shall be designed and/or positioned so as to prevent accidental operation and must not be capable of operating themselves due to gravity, vibration, etc.;
- The stop control, or controls, shall be readily accessible and bring the equipment to a safe condition, in a safe manner. It does not necessarily have to be instantaneous or to bring all moving parts to a halt.

Emergencies:

- An emergency stop control shall be provided if other safeguards are not adequate to prevent risk when some unplanned event occurs, e.g. someone becoming exposed to a hazard or a dangerous malfunction of the machine;
- Emergency stop controls, where appropriate, shall be provided at every control point and, where necessary, at other locations around the equipment so that action may be taken quickly. They shall be positioned so as to be easily reached and operated.

General:

- The intended purpose of each control shall be easily recognisable by wording or symbols and, where appropriate, by colour, shape and position;
- Normal operating controls shall not be placed where anyone using them might be placed at risk. So far as is reasonably practicable, controls shall be positioned so that the operators of the equipment are able to see that no other person is at risk from anything they set going. If this is not reasonably practicable a safe system of work shall be introduced to ensure the health and safety of others;
- Where appropriate, an audible, visual, or other suitable warning shall be given whenever work equipment is about to start. The warning shall allow sufficient time for those at risk to get clear or to prevent the equipment from starting.

Control Systems:

- This organisation shall ensure that failure of any part of a control system or its power supply shall lead to a "fail-safe" condition and not impede the operation of the "stop" or "emergency stop" controls.

GUIDANCE NOTE	LOCAL EXHAUST VENTILATION (LEV)	Code: G304	Issue: A

INTRODUCTION

Every year, thousands of people in Great Britain die of lung disease or get asthma because of airborne contaminants they have breathed in at work.
If your work produces:

- dust
- mist
- fumes
- gas
- vapour

There may be a risk to the health of your employees.

Many employers buy Local Exhaust Ventilation (LEV) to protect workers' health but it does not work. This may be because it is the wrong type or because it is not properly installed, used or maintained. This guidance should be used for buying the right LEV and using and maintaining it properly.

What is LEV?

LEV is a ventilation system that takes dusts, mists, gases, vapour or fumes out of the air so that they can't be breathed in. Properly designed LEV will:

- collect the air that contains the contaminants,
- make sure they are contained and taken away from people,
- clean the air (if necessary) and get rid of the contaminants safely.

What makes up an LEV system?

A typical LEV system will have:

- HOOD(S): to collect airborne contaminants at, or near, where they are created (the source).
- DUCTS: to carry the airborne contaminants away from the process.
- AIR CLEANER: to filter and clean the extracted air.
- FAN: must be the right size and type to deliver sufficient 'suck' to the hood.
- DISCHARGE: the safe release of cleaned, extracted air into the atmosphere.

HOW DO I MAKE SURE I GET THE RIGHT TYPE OF LEV?

When LEV does not work as well as it should, a common reason is that the hood does not catch or contain the contaminants effectively. It is important to match the hood to the source that you want to control.

A clear specification will help you get what you need, and avoid any misunderstandings with the LEV supplier. The specification should:

- Describe the process, the contaminant, its hazards and the sources to be controlled, and how stringent the control needs to be. The important chemical and flammable properties of substances and products appear in the Safety Data Sheet,
- require indicators to be fitted to show that the system is working properly,
- require the LEV to be easy to use, check, maintain and clean, taking account of other risks, e.g. accessibility, skin contamination, and waste removal and filter changing without spreading contamination,
- specify that the supplier provides training in how to use, check and maintain the LEV system,

WHAT THREE DOCUMENTS SHOULD THE SUPPLIER GIVE ME?

A User Manual which should include:

- a description of the system with diagrams;
- performance information from commissioning;
- a description of checks and maintenance and replacement schedules, including frequency;
- a detailed description of the specific statutory 'thorough examination and test' requirements and exposure targets;
- signs of wear and control failure;
- a description of how operators should use the system so it works effectively.

A Logbook which should include:

- schedules for regular checks and maintenance;
- records of regular checks, maintenance, replacements and repairs;
- the name of the person who made these checks.

A Commissioning Report that includes:

- diagrams and a description of the LEV, including test points;
- details of the LEV performance specification;
- results, such as pressures and velocities at stated points;
- calculations;
- written descriptions of the commissioning, the tests undertaken, and the outcome. Where necessary, this should include air sampling results;
- a description of how operators should use the system so it works effectively.

WHAT DO I NEED TO DO ONCE THE LEV IS INSTALLED?

The law says that you need to make sure it carries on working properly. You will need to regularly check and maintain the LEV over the year and have it 'thoroughly examined and tested'. To do this you will need the user manual, logbook and training. If you don't have any of these, ask your LEV supplier for them or get professional advice. The work needs to be done by competent people.

Checking and Maintenance

How often you check your LEV and how you do it will depend on how complicated the system is, how likely it is to fail, and the consequences if it does. Complicated LEV that will have serious consequences if it goes wrong needs more frequent checks and maintenance.
Checks and maintenance tend to cover four types of parts:

- moving parts that may wear, such as fan bearings or filter shakers;
- non-moving parts, such as hoods, ductwork and seals (which can suffer physical or chemical damage and wear);
- parts that deteriorate with use, such as filters or flexible ducting;
- items that need regular attention, such as filters that need replacing, or removing sludge from a wet scrubber.

If the LEV can become contaminated with toxic substances, you may need to use 'permits to work' and formal method statements when people work on the system.

Give people responsibilities for checks and maintenance.

If there is any obvious damage to the LEV or it clearly isn't working properly, employees should report this and you should have it repaired straight away.

What records do I need to keep?

In your logbook, keep a record of all LEV checks and maintenance to show that it has been done and that the LEV is working as well as it should be. This will also help you keep track of repairs and sort problems out before they get more serious. Keep the logbook for at least five years. You also need to keep thorough examination and test reports for at least five years.

What is the thorough examination and test?

Most LEV systems need a thorough examination and test once each year (legally, you are allowed 14 months between tests) to make sure it works well and continues to protect your employees. Some LEV systems (such as those controlling more critical or high-hazard processes) need more frequent thorough examination and testing. The COSHH Regulations require more frequent testing for some processes.

The examination and test needs to be done by a 'competent person'. It isn't normally something you can do yourself. You and your employees will need to co-operate with the examiner.

COMPETENCE

You must make sure that anyone who designs, selects, checks and maintains the LEV system and does the thorough examination and test is competent. They should have the knowledge, skills and experience to do the job properly.

What training for operators/supervisors/managers should I provide?

Training should cover the basics of:

- the harmful nature of the substances you use;
- how exposure may occur;
- how the LEV system works;
- methods of working that get the best out of the LEV;
- how to check the LEV is working;
- the consequences of the LEV failing;
- what to do if something goes wrong.

Keep training records for everyone. This includes refresher training. Changes to the work process mean that LEV may also need to change, and staff may need re-training.

GUIDANCE NOTE	MACHINE LOCK-OUT PROCEDURE	Code: G305	Issue: A

THE PURPOSE OF LOCK-OUT

This procedure establishes the requirements for the lock-out of energy isolating devices. It shall be used to ensure that the machine or equipment is isolated from all potentially hazardous energy, and locked-out before employees perform any servicing or maintenance activities where the unexpected energisation, start-up or release of stored energy could cause injury.

RESPONSIBILITY AND TRAINING

Employees whose work activities are affected by lock-out procedures shall be instructed in the safety significance of these procedures. Each new employee or employees transferred from other departments, whose work operations are or may be carried out in affected areas, shall be instructed in the purpose and use of the lock-out procedure.

Only authorised employees shall be trained in performing a lock-out and shall be permitted to perform lock-out on equipment. Each authorised employee will be issued their own padlock(s) with key(s). The key(s) for all padlock(s) issued to an authorised employee will remain with the authorised employee at all times during lock-out. Only that authorised employee may remove their padlock(s). If for any reason the authorised employee is not available and the equipment must be re-energised only the appointed manager or supervisor can authorise the removal of the lock(s). When the authorised employee returns back to work they must be notified immediately by the site manager or supervisor that their lock has been removed.

IMPLEMENTING LOCK-OUT

To operate a successful lock-out procedure for plant inspection, cleaning, repair or maintenance, there are five simple steps that must be followed:

1. **Announce** the shut-down by informing the persons whose plant, machinery, or equipment has to be turned off or shut-down that a lock-out procedure is to be implemented.
2. **Shut-down** the machine using the normal shut-down procedures.
3. **Disconnect** all energy sources, e.g. electrical, pneumatic or hydraulic energy coming to the machine. Use energy isolating devices, such as a manually operated circuit breaker or an isolating switch to disconnect the energy sources.
4. **Apply** lock-out using lock-out devices such as padlocks over the energy isolating devices to ensure that energy cannot be restored unexpectedly or accidentally while work is being carried out on the machine. Attach tags to indicate that persons are working on the machine.
5. **Verify** the isolation and lock-out and never assume that the isolation and lock-out has worked. Release any residual or stored energy such as energy capacitors. Operate the machine's controls to confirm that the machine has been isolated and cannot be re-energised. Return the controls to the neutral position. It is now safe to carry out the inspection, cleaning, repair or maintenance work on the machine.

RESTORING NORMAL OPERATION

After the work has been completed on the machine and the machine is ready for return to normal operating condition, the following five steps must be taken to ensure the machine is safely restored to operation:

1. **Check** to ensure that all tools have been removed from the machine and safety guards, if previously removed; have been replaced on the machine.
2. **Verify** that all personnel are safely clear of the machine.
3. **Announce** that the machine is about to be turned on.
4. **Reactivate** by removing the tags and lock-out devices and re-energise the machine.
5. **Inform** those personnel whose machine was shut-down that the machine is now ready for operation.

SPECIFIC EQUIPMENT LOCK-OUT FORMAT

Date:

Machine:

Location:

TYPE(S) AND MAGNITUDE(S) OF ENERGY AND HAZARDS:
JOB TITLE(S) OF AFFECTED EMPLOYEES AND HOW TO NOTIFY:
TYPE(S) AND LOCATION OF ENERGY ISOLATING MEANS:
TYPE(S) OF STORED ENERGY AND METHODS TO DISSIPATE OR RESTRAIN:
METHOD(S) SELECTED (E.G. LOCKS, TAGS, ADDITIONAL SAFETY MEASURES):
JOB TITLE(S) OF EMPLOYEES AUTHORISED FOR GROUP LOCK-OUT:

AUTHORISED EMPLOYEE LIST:

The following personnel have been designated as authorised employees. All personnel on this list have been trained to properly perform lock-out procedures.

NAME/JOB TITLE	**DATE OF TRAINING**
1.	
2.	
3.	
4.	
5.	

GUIDANCE NOTE	BENCH MOUNTED ABRASIVE WHEELS	Code: G403	Issue: A

INTRODUCTION

The Provision and Use of Work Equipment Regulations (PUWER) requires that all machinery is suitable for its intended use and is properly maintained. PUWER also requires that employees, including those using, mounting and managing the operation of abrasive wheels, are fully informed and properly trained in their safe use.

WHEEL CHARACTERISTICS

An abrasive wheel is usually defined as a wheel consisting of abrasive particles bonded together with various substances. There are two main types of bonding agent:

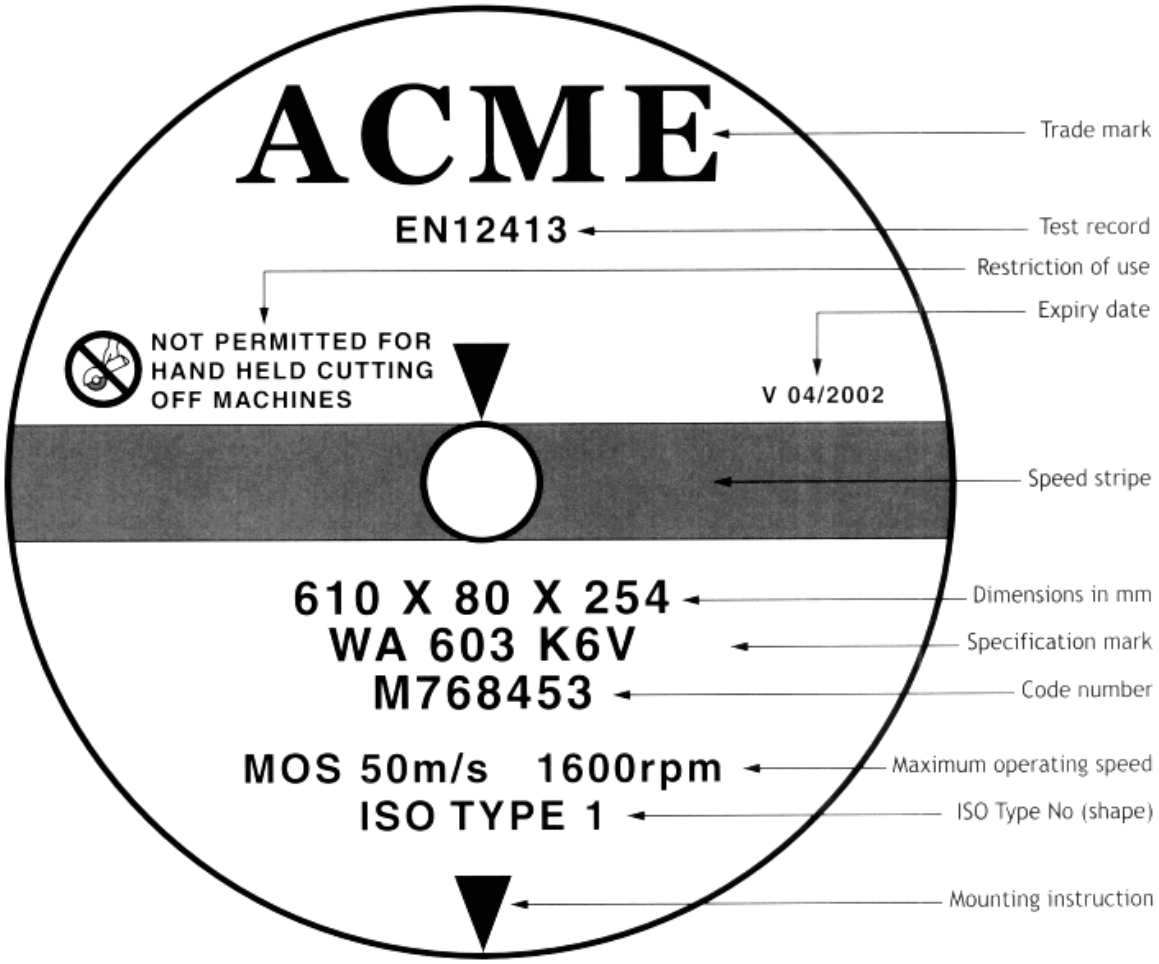
- Inorganic bonds. - Mainly vitrified, i.e. the wheel is generally fired in a furnace to give the bond a hard, strong but brittle structure. These wheels are used for precision grinding applications as they hold their shape, but require dressing.
- Organic bonds. - Not fired but cured at low temperature; the bonding agents are resinoid (B), rubber (R) and shellac (E). Such wheels are tough, shock-resistant and self-dressing, and are most suited to non-precision applications, e.g. fettling and cutting-off.

The following are the variable elements in abrasive wheel manufacture:

- Abrasive. - The type of abrasive used in wheel construction.
- Grain/grit size. - The particle size of abrasive grains. The range is expressed by number from 4, very coarse, to 1200, very fine.
- Grade. - The tenacity with which the bonding material holds the abrasive grain in a wheel. Wheels are graded as soft or hard, according to their degree of tenacity. The grade scale is expressed in letters from A, extremely soft, to Z, extremely hard.
- Structure. - The level of porosity in the wheel. The higher the number, the greater the level of porosity.
- Bond type. - The bonding material used in the wheel construction.

Advice on wheel selection should be obtained from the wheel manufacturer or supplier.

WHEEL MARKING



RESTRICTIONS OF USE

Annex A of BS EN 12413 - Safety Requirements for Bonded Abrasive Products, and BS ISO 525, specify how wheels should be marked to indicate specific restrictions for use. These are:

(a) RE1: Not permitted for hand-held and manually guided grinding.
(b) RE2: Not permitted for hand-held cutting-off machines (see figure above).
(c) RE3: Not suitable for wet grinding (see figure below).

(d) RE4: Only permitted for a totally enclosed working area.

(e) RE6: Not permitted for face grinding (see figure below).

All organic bonded wheels for hand-held applications will bear a use-by date of 3 years from the date of manufacture.

A code number should be marked on the wheel to indicate the source and manufacturing details of the wheel.

WHEEL SPEEDS

One of the main causes of an abrasive wheel "bursting" is overspeeding. To help prevent this, all grinding machines must be marked with the maximum operating speed of the spindle. Additionally, the maximum permissible speed in revolutions per minute (rpm) and metres per second (m/s), specified by manufacturers, should be marked on every abrasive wheel larger than 80mm in diameter, or on the blotter or identification label which is sometimes attached to it.

As it is not practicable to mark smaller wheels, the maximum permissible speed in rpm of wheels 80mm in diameter or less should be stated in a notice posted in a position where it can easily be read. For speeds of 50m/s and above, colour coded stripes will appear on the wheel.

Never operate abrasive wheels at speeds in excess of that marked on the wheel.

MOUNTING THE WHEEL

Prior to mounting an abrasive wheel onto a grinding machine it is to be cleaned with a brush and examined for any sign of damage. Any wheel which is shown to be damaged is not to be mounted and should be rejected.

Wheels are not to be mounted on machines for which they are not intended. The wheel should fit easily, but not loosely, onto the spindle. If it fits too tightly the heat generated during use may cause expansion in the spindle, thus cracking the wheel.

Worn spindle bearings are to be replaced or the wheel is likely to oscillate and hammer the workpiece and become damaged in the process.

In order to prevent the wheel coming off the spindle it should revolve in the opposite direction to the direction in which the securing nut is tightened.

Straight-sided wheels mounted onto fixed machines are to be mounted between suitable flanges that have a diameter of at least one-third of the total wheel diameter. The flanges are both to be of equal diameter and are to be recessed on the side next to the wheel, to ensure that clamping pressure is not exerted in the area of the centre hole. The driving flange is to be mounted on the spindle in a manner that does not allow the flange to revolve with the spindle. The flanges are to be of mild steel.

The nut holding the abrasive wheel between the flanges should be tightened only sufficiently to ensure that the flanges drive the wheel and do not slip. If the manufacturer's torque pressure is known, a torque spanner should be used to tighten the nut. If this is not available the nut should be tightened by hand pressure using a spanner.

Straight-sided cutting wheels larger than 230mm in diameter are to be fitted with washers of compressible material between the wheel and the flange.

Depressed-centre wheels are only to be mounted with the special flange assembly as illustrated in Figure 1 below. The following points are to be noted:

- When the adapter has been tightened there is to be a slight clearance between the wheel and the flange at (A). This is to ensure that any clamping pressure is exerted only at the centre of the wheel.
- The outer part of the face of the flange is to be tapered as shown. This permits the full width of the flange to support the wheel during grinding.

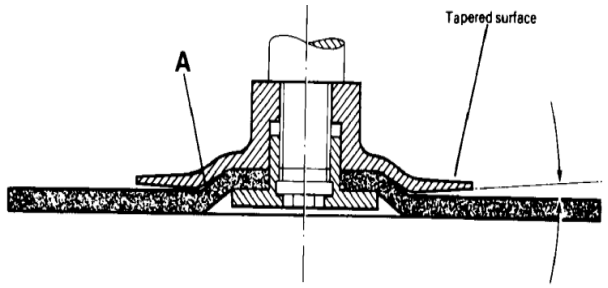


Fig. 1 FLANGE ASSEMBLY FOR A DEPRESSED-CENTRE WHEEL

Depressed-centre wheels are only to be mounted on machines designed for their use. They are never to be mounted on makeshift machines.

EYE PROTECTION

Fragments, flying particles and hot sparks are thrown off during grinding operations. These hazards are extremely dangerous to the eyes. Therefore, eye protection will be provided to guard against this hazard.

Eye protection provided will be in the form of either box goggles or face shields conforming to BS EN166 Grade 1 impact.

The eye protection provided is to be worn by all employees, whether grinding or not, who are exposed to the risks of eye injuries from grinding.

RESTS

Rests must be properly secured and adjusted, to ensure that they are as close as practicable to the wheel. If they are not correctly secured there is a risk that they might move and throw the operator's hand against the wheel. If the gap is too great the workpiece may become trapped between the wheel and the rest. If this happens, the operator's hand may come into contact with the wheel, or the wheel may be damaged, resulting in it bursting.

STORAGE OF ABRASIVE WHEELS

Abrasive wheels are to be stored in an area where the temperature is not excessively hot or cold, and in a dry atmosphere.

Straight-sided wheels, such as are used on bench mounted grinders, are to be stored on edge or on a spindle.

Thin wheels, such as cutting-off wheels, are to be stored flat on a horizontal surface to prevent warping.

TRAINING

There is no substitute for thorough practical training in all aspects of the mounting and use of abrasive wheels. Any training programme should cover at least the following:

- Hazards and risks arising from the use of abrasive wheels and the precautions to be observed.
- Methods of marking abrasive wheels with their type, size and maximum operating speed.
- How to store, handle and transport abrasive wheels.
- How to inspect and test abrasive wheels for damage.
- The functions of all the components used with abrasive wheels, such as flanges, blotters, bushes, nuts, etc.
- How to assemble abrasive wheels correctly to make sure they are properly balanced and fit to use.
- The proper method of dressing an abrasive wheel (removing dulled abrasive or other material from the cutting surface and/or removing material to correct any uneven wear of the wheel).
- The use of suitable personal protective equipment (PPE), e.g. eye protection.

It is recommended that a record of training in the safe mounting of abrasive wheels is kept, showing the trainee's name and date of training.

VENTILATION

Where the use of an abrasive wheel gives rise to dusts that are offensive or may be a hazard to health, or where the quantity of dust is excessive, all practicable measures shall be taken to minimise the hazard. Where practicable, exhaust ventilation shall be provided as near as possible to the source of the dust.

SUMMARY OF OPERATING PRECAUTIONS

Guards	Ensure the guard is in position and properly adjusted.
Work rests	Keep the rest as close as possible to the wheel.
Side grinding	Avoid grinding on the edge of straight-sided wheels.
Lubrication	Check that spindles do not become overheated through lack of lubrication.
Stopping wheel	Do not attempt to slow the wheel, allow it to stop naturally.
Cutting-off wheels	Avoid using warped wheels and avoid the tendency to twist the wheel or exert pressure on the sides of the wheel. Ensure that the workpiece is firmly secured or clamped.

REFERENCES

HS(G)17 - Safety in the Use of Abrasive Wheels.

GUIDANCE NOTE	SPRAY BOOTHS AND LOCAL EXHAUST VENTILATION	Code: G404	Issue: A

MAINTENANCE AND INSPECTION

Ventilation in spray booths and ovens prevents the exposure of people outside to the fume and vapour given off. It also helps control levels of spray, mist droplets, fume and vapour in the breathing zone of the sprayer.

Check spray booths and ovens regularly for leaks; maintain fans and motors. Spray booths and ovens should be thoroughly examined and tested by a competent person (either an insurance company engineering surveyor or a representative of the supplier) every 14 months to ensure that control of the exposure of those working outside and inside the booth is maintained.

Local exhaust ventilation (LEV) is one of the most common techniques used to control employees' exposure to airborne contaminants in the workplace. A local exhaust ventilation system will include one or more inlets (or "hoods"), such as a slot, booth or cabinet, placed around or close to the point of release of the substance. The hoods are connected, via ducting, to a fan or air mover. The extracted air is usually discharged to the outside atmosphere through a stack or returned to the workplace (in most cases, having first passed through an appropriate air cleaner to remove the contaminants).If a local exhaust ventilation system is to be effective at controlling the contaminants, it is important that the both is properly designed.

However, in many situations, LEV will be the most practicable solution. It is normally possible to design a system through which to control contaminants in most situations, including existing processes.

An LEV system will typically have five main components:

- one or more extraction inlet(s) (hoods)
- ductwork to move the contaminated air through the system
- a fan to provide the airflow
- air cleaners (not present on all systems)
- an exhaust stack or vent.

The good design of all parts of the system is vital if it is to control the contaminants at source and prevent them dispersing into the working environment. However, the most crucial component from the point of view of contaminant control is the hood. If this is poorly designed, then it is unlikely that all of the contaminants will be captured.

Before starting to design or choosing an extraction system, it is important to consider:

- the nature of the contaminant
- how it is generated
- other factors, such as the generation rate and air temperature.

The system can then be designed to deal with a specific problem.

There are three main types of extraction hood:

- partial enclosures, e.g. a spray booth or fume cupboard
- captor hoods, where the contaminant is generated outside the hood and so has to be drawn into the system
- receptor hoods, where the contaminant makes its own way into the hood due to its momentum or because it is hot.

Some other designs can also be applied to specific situations

Similarly, in body preparation areas, local exhaust ventilation for enclosures and tools should be checked and maintained regularly. A thorough examination and test is also required every 14 months to ensure that the control of exposure of those working outside and inside body preparation areas is maintained.

Equipment suppliers are legally obliged to provide adequate information about the use for which the article has been designed and tested and any conditions necessary to ensure the equipment is safe and without risks to health at all times thorough its operating life. HSE guidance on local exhaust ventilation recommends that, just like a car, all booths and rooms should be supplied with a user manual. If an employer doesn't have a user manual he or she should ask the supplier for one

The level of detail will depend upon the complexity of the spray booth/room. Typically, the user manual should cover the following and include a 'log book' or equivalent to record your findings:

- a description of the spraying enclosure, including a drawing;
- a regular maintenance schedule and description of checks. These are carried out to ensure the enclosure is operating as designed and commissioned. For example:
- daily checks -- record problems;
- weekly checks -- record problems;
- monthly checks -- record problems and actions;
- air quality tests for breathing apparatus supply -- these should be performed at least once every three months unless you have evidence to demonstrate that air quantity and quality are stable.

Maintenance:

- run time;
- filter replacement schedule;
- lights (e.g. replace failed bulbs, keep covers clean, consider fitting protective film to the lights which can be replaced on a regular basis);
- air supply -- filters and compressor;
- list of replacement parts (and part numbers);
- smoke tests:
- clearance time test;
- leakage test;
- instruction on how to use the enclosure safely;
- details of thorough examination and testing.

If you do not have a user manual for your spray booth/room, you need to obtain or develop one. You may need help from the supplier or other industry advisers.

Do not forget to maintain respiratory protective equipment (RPE); examine and, when appropriate, test it. Keep written records of equipment inspection and tests.

MONITORING VENTILATION RATES

Side-draught booths:

- For the spraying of highly flammable liquids the Health and Safety Executive (HSE) recommends a minimum air velocity of 0.7m/s at the working opening but this may need to be increased to 1.5m/s if particularly toxic materials are used. The figures should be interpreted to be the minimum mean velocities at the booth face.
- For open-fronted booths where vehicles are sprayed, measuring points should be regularly spaced at three heights with a minimum of one point horizontally for every metre in width of the booth.
- Where the operator works inside the booth, the plane of measurement should be where he or she works. The mean of the measurements should not be less than 0.5m/s with a minimum measured value of 0.4m/s.

Down-draught booths: (Vehicle spraying)

- Air speeds should be measured at 10 points around the vehicle, three on each side and two at each end, at 0.5 metres from the vehicle and at a height of 0.9 metres. The mean of these 10 values should be greater than or equal to 0.4m/s with a minimum measured value of 0.3m/s.
- For long booths used to spray heavy goods vehicles, measurements may be made at heights of 1.5 metres, 0.5 metres from the vehicle, two at each end and others at intervals between 1.5 metres and 2 metres along the sides. A mean value of not less than 0.4m/s and a minimum measured value of 0.3m/s should be achieved.

MAXIMISE THE EFFICIENCY OF THE BOOTH

- Provide means to indicate when dry filters need replacement. The air speed in the immediate vicinity of the sprayer in a dry filter spray booth is often the lowest in the booth because of the accumulation of spray deposits on the filter. Hence, the air speed tends to be slowest where it is most needed.
- Keep unnecessary equipment out of booths, e.g. large drums of paint can cause recirculation of contaminated air into the sprayer's breathing zone.
- Provide sufficient and suitable lighting in the booth to remove the temptation to spray outside it.
- Provide training in techniques of spray painting to help minimise the amount of overspray and bounce-back, to obtain the correct balance between air and liquid flow rates, and to ensure that the minimum pressure for good atomisation is always used.

THE SPRAYER'S SEVEN STEPS TO SAFE WORKING

- Remember that most airborne paint mist is invisible.
- All spray booths and rooms have a 'clearance time'. You need to know what it is.
- Always spray paint in a spray booth or spray room and not in the open workshop.
- Always make sure your booth runs under negative pressure (so any air leakage is inward).
- Always wear air-fed breathing apparatus during paint spraying.
- Keep your mask on during the clearance time (or leave the booth or room safely).
- Regularly check and maintain your booth and air-fed breathing apparatus.

MEASURING PAINT SPRAY BOOTH CLEARANCE TIME

This is a procedure for measuring the clearance time of a spray booth using a smoke machine. The clearance time should be checked just before the filters in the spray booth or room are changed to give a worst-case time. It is recommended that a clearance time test should also be included in the 14-month thorough maintenance examination of the booth or room; however, more frequent testing may be required.

The spray booth or room should be empty when measuring the clearance time. This is because the volume of materials will effectively reduce the volume of a booth or room and give a lower clearance time. In addition, the smoke generated is made of a glycol aerosol and may leave a greasy deposit on any materials in the booth/room.
The booth or room should be set up for normal spraying operations except with the ventilation deactivated and the lights on maximum to enable the smoke aerosol to be seen.

Ensure that the extraction system is turned off. There are two reasons for this:
in a booth with the ventilation running it would be very difficult to fill the room completely; and filling the booth with the extraction turned off will give a clearance time showing the worst case scenario ensuring the room is clear before anybody enters, or sprayers remove their RPE.

Fill the room with smoke, making sure to distribute smoke evenly throughout the room (an extension lead may be useful in allowing all areas of the room to be reached).
The room shall be regarded as full when the facing wall is no longer visible when viewed across the short axis of the room. Depending on the fog machine used, it may cut out and require time to reheat one or more times before this is achieved.
Switch on the ventilation system and start a timer.

During the smoke test the opportunity should be taken to do a visual inspection of the exterior of the booth and any associated ductwork to check for any leaking air.
The room shall be regarded as clear when smoke is no longer visible in any part of the room. A lamp (viewed from a narrow angle towards the beam of light) may be useful in judging this, though ensuring that the room is truly full at the start of the measurement is more important than precise judgement of when the smoke has cleared. The difference between clear by eye and clear using a lamp is typically 30 seconds longer.

Note the time at which the room is judged to be clear of smoke. This time should be rounded up to the next quarter minute. This should be put on a notice and displayed on the door or entrance of the booth or room, and all personnel who need to know should be informed.

Note: Appropriate RPE should be worn during the clearance time measurement; a disposable dust mask with a combination A/P3 filter should be sufficient. The smoke used is of low toxicity but may cause a slight irritation of the throat because of the high concentration, and it is not good practice to expose people to high smoke concentrations.

Smoke is most likely to linger and form eddies close to all the walls of a downdraft spray booth; in a room, the smoke will mix with the air and dilute evenly.

By disabling the extraction before filling the room with smoke a maximum clearance time is measured. As the extraction is usually running during normal spraying operations, the clearance time may be less than this but as a safety margin, it is important that the maximum time is observed.

GUIDANCE NOTE	PLASMA CUTTING EQUIPMENT	Code: G501	Issue: A

INTRODUCTION

Plasma cutting is a similar work process to welding; it is utilised for cutting a variety of metals. Cost-effectiveness and performance comparisons with other methods of cutting usually mean that plasma cutting is mostly employed for cutting stainless steel, non-ferrous metals, such as aluminium and copper, and thin mild steel.

A plasma torch may be either hand-held or machine directed, most commonly in a mechanised profile cutting machine. Dependant on the power utilised, plasma torches can cut material up to a maximum thickness of about 150mm. Although at such thicknesses cutting rates are usually slow.

Hand-held systems are generally of a lower power level and are utilised for cutting thinner materials, around 25mm thick.

Some plasma cutting torches can only be used dry, whilst others can also be used underwater. Underwater usage will have the effect of reducing the cutting ability for the material thickness and speed; it is however useful for reducing the severity of hazards presented.

Mechanised Plasma Cutting Machine

Mechanised plasma (profile) cutting machines employ a plasma torch to cut metal plates usually into different profiles (shapes). The torch is mounted on a gantry and is moved to horizontal axes over the plate which is supported on a grid or bed. The machine motion is usually comptor controlled. Machine sizes and the power of plasma torches span a very wide range.

Hazards Generated from Plasma Cutting

- Fumes
- Gases
- Noise
- Ultraviolet radiation

Plasma Gas

The pressurised gas which is passed through the plasma torch nozzle varies in composition. Hand-held torches mostly use air as the plasma gas, although nitrogen is commonly used for mechanised cutting. Oxygen, argon/hydrogen mixtures or argon/nitrogen mixtures are all also used. Carbon dioxide may be encountered but is rarely used.

Sometimes a second stream of gas can be used, which is used to cool the torch, acts as a shielding gas and combines with plasma gas to assist in slag removal. This second shielding gas is often the same as the plasma gas but may be different.

FUMES AND GASES

The hazards of fume depend upon the material being cut and any coatings it may have. The cutting of stainless steel is potentially the most hazardous as the fumes will contain chromium and nickel. Copper and its alloys are also commonly cut and can also produce a significant fume hazard.

Gases, particularly oxides of nitrogen, are a more significant hazard for hand-held cutting than for mechanised cutting, as the operator is in close proximity to the torch.

The type of plasma gas used can also influence levels of fume produced. The use of argon/hydrogen as the plasma gas generally results in lower levels of fume and ought to be considered. Nitrogen produces higher levels and air produces the most fumes.

If argon hydrogen can be used as the plasma gas this will help in reducing fumes considerably.

In most instances, a harmful level of exposure to fume, gases and noise are likely to remain, particularly with mechanised cutting, and control measures will be needed. The fumes produced, and many of the gases used in plasma cutting, are substances that are potentially hazardous to health. Please refer to the information regarding hazardous substances within Section H of this policy.

Where personal protective equipment (PPE) is required account should also be taken of the Personal Protective Equipment at Work Regulations.

NOISE

Dry Plasma cutting can generate high levels of noise with significant high frequency levels.

Working with or near to mechanised plasma cutting processes is likely to expose employees to noise levels above the exposure action levels set out within the Control of Noise at Work Regulations. These regulations set out a hierarchy of control measures for reducing exposure to noise, which requires the assessment of exposure to noise, information and instruction for workers, the reduction of the risks through control methods and, as a final option, the provision of PPE to protect the individual.

ULTRAVIOLET RADIATION

Exposure of the eyes to ultraviolet (UV) radiation can damage the cornea and produce pain and symptoms similar to that of sand in the eye. The effects on the skin range from redness, burning and accelerated ageing through to various types of skin cancer.

To prevent any effects from UV radiation when using plasma cutters operators should ensure they use goggles or other eye protection provided. These should be worn all the time the equipment is switched on. **If no eye protection is provided do not use the equipment.**

GENERAL CONTROL MEASURES

Grease from the metal should be removed from the metal where possible.

The plasma torch should be used on the lowest power possible. Avoiding the use of excessive power can reduce both the levels of noise and fume, and help to meet the legal requirements for controlling exposure. High levels of fume are often the result of too much power for the thickness of plate being cut. The workers head must be away from fumes.

The type of plasma gas used can also influence levels of fume produced.

The two principal methods of control which can be applied to plasma cutting are water baths and local exhaust ventilation (LEV). Prior to work the extraction system must be on and working.

Always check for gas leaks.

The grid or bed of a mechanised plasma cutting machine can be built within a water bath so that it can be flooded, thereby allowing cutting to be carried out underwater. Biocides and corrosion inhibitors should be added to the water baths. Dross should be removed frequently and the water changed regularly.

Cutting underwater is a particularly effective control measure. This is capable of reducing noise, reducing fumes and of reducing levels of nitrous oxides. These levels of reduction can normally be achieved by cutting beneath just 50mm of water. Further but less significant reductions can be achieved by additional submersion. However, even these levels of control may leave some residual risk from gases which should then be controlled by LEV around the torch.

Other advantages of underwater plasma cutting are a reduction in UV radiation and a reduction of thermal distortion, particularly of thinner plate.

Engineering Controls

- Only allow access to work areas for authorised staff.
- Locate work away from doors, windows and walk ways. This will help prevent draughts interfering with the effectiveness of the extraction system.

Local Exhaust Ventilation

The powerful arc of plasma cutting results in the most fumes being produced. Down draught high volume local exhaust should effectively control this during the cutting process.

Where the risk assessment reveals a need for control of exposure to fumes and gases when using hand-held plasma cutting, LEV should be employed. Systems similar in design and application to those employed during welding are most appropriate. Extraction should be placed very close to the source of fumes and gases and, with a long cut, will require frequent repositioning. Filter systems will not remove gases and the unit should exhaust to a safe place.

A manometer and pressure gauge should be fitted to display rate of extraction. Extracted air should be discharged to a safe place. There also needs to be source of clean air to replenish extracted air.

LEV must be maintained and inspected every 14 months to ensure effective operation. Checks are carried out on any damage, leaks and blockage of filters that may have occurred. Extraction rates must also be checked to ensure it meets the manufacturer's standard.

Clearly LEV will not reduce levels of noise and it would therefore be most appropriate for use with lower powered mechanised systems and hand-held cutting, where noise is not a significant risk.

The equipment must also give adequate protection against the levels of contamination encountered. It should also suit both the worker and the job to be done.

Respiratory Protective Equipment (RPE)

Where there is any residual risk, RPE will be required. Protection against fume can be provided by respirators designed to protect against particulates. For protection against gases, air-fed equipment will probably be needed.

Other Protective Equipment to be considered

- Ensure workers are using welding helmet, flame resistant overalls and protective gloves.
- Work clothing should be industrially laundered / or similar to prevent spread of contamination.
- Prior to work barrier skin creams should be worn to prevent the build up of contamination.
- After work skin creams should be used to replenish skin oils.

Remember: compressed air should not be used to remove dust from clothing.

Health Surveillance

Health monitoring should be considered as welding fumes can cause lung disease. Refer to section O for further health surveillance procedures.

Ref: ID HSE 668/22
HSE WL 15 - Arc -plasma cutting: fixed equipment

GUIDANCE NOTE	HAND TOOLS	Code: G701	Issue: A

GENERAL PRECAUTIONS

Quality

Buying cheap tools is a false economy. They do not last and can be dangerous. Hammers and chisels of inferior steel can chip or shatter when struck. Cheap punches, drifts and cold chisels quickly mushroom at the head. Cheap spanners and wrenches can open out or break. Knives of poor steel rapidly lose their edge; pressure is then necessary and the blade can easily snap. Similarly, blunt edges on hatchets and axes, and worn teeth on saws result in a loss of control.

Handles

Handles are necessary for ease of manipulation and for the protection of hands. They are to be of good quality plastic or well-seasoned durable hardwood, of smooth finish and firmly fixed. They are to be regularly checked for splits or cracks and wedged, where necessary, to keep them tight.

Cleanliness

Grease, moisture and dirt are to be regularly removed. All moving or adjustable parts are to be lightly oiled.

Cutting Edges

Cutting edges are to be kept sharp to allow accurate work and to avoid the hazards caused by excessive pressure.

Repair and Storage

All tools are to be regularly checked. They are to be thoroughly examined prior to storage and if worn or damaged they are to be repaired or replaced.

When not in use, tools are to be stored in boxes or racked.

Selection

Every tool has its proper application. The correct type, size and weight of tool should be selected for the job.

Electrical Risk

All metal tools are conductors of electricity. Where work takes place on or near live electrical apparatus, only properly insulated or non-conductive tools are to be used.

Sparking Risk

Special tools made of non-ferrous materials are to be used for work near highly flammable materials or explosive dust. Spark proof tools are to be regularly examined to ensure that no ferrous metals have become embedded in them.

INDIVIDUAL TOOLS

Cold Chisels

The cutting edges of cold chisels and bolsters are to be kept sharp. Resharpened chisels are to be suitably hardened and tempered to keep them in a safe working condition.

Chisel heads mushroom with use. Any mushrooming is to be ground off and the edge left with a slight taper to reduce the tendency to mushroom.

The correct type and size of chisel is to be used, along with a mallet of the right weight.

Chisels are to be held in a steady and relaxed grip. The depth of the cut is regulated by the angle that the chisel is held at. Cutting or chipping work should be carried out with the edge of the chisel pointing away from the operative.

The use of chisels can result in flying debris. Therefore, eye protection is always to be worn by the operative and any others who may be exposed to the danger of flying debris.

Files

Files are made of highly tempered steel, which will shatter if struck or if used as a lever.

The correct type and size of file is to be selected for the task. Handles are to be fitted to all sizes of files, to prevent damage to the operative's hands. The handles are to be in good condition and are to be regularly inspected. Files are to be kept free from oil and grease and not allowed to become rusty. The cutting surfaces of the file are to be cleaned regularly using a wire brush to prevent the teeth becoming clogged with waste material.

Hacksaws

The correct type of blade is to be selected to suit the material being cut. Teeth are to be set in the frame pointing forward and sufficient tension is to be applied to keep the blade rigid.

In use, strong steady strokes are to be made away from the operator and the full length of the blade used. Hard materials are to be cut slowly, to prevent the blade becoming overheated and blunt.

Hammers

Heads of hammers are to be firmly and accurately set on the handle. If the head works loose it is likely to fly off, possibly causing serious injury.

Heads are to be secured with the correct wedges and kept in shape by occasionally grinding the face. Heads that show signs of cracking are to be disposed of.

Handles are to be in good condition.

The correct type of hammer is to be used for the task.

Knives

Knives are to be kept sharp. The correct knife is to be selected for the task. When not in use, knives are to be kept sheathed, with the blade retracted or placed in slotted racks. Razor blades or Stanley blades are only to be used in the correct holders.

Pliers

Pliers are only to be used when there are no other tools suitable for the job.

All pliers are to be kept free from dust, grit and corrosion, with the moving parts lubricated. Rivets and bolts, holding pliers together, are to be sufficiently tight to ensure efficient working.

Punches

Punches are to be straight and heavy enough for the work. Point of centre punches are to be kept accurately ground. Pin punches and starting punches are to be kept squared. The tools are to be held firmly and are to be started with light taps.

Screwdrivers

Screwdrivers are one of the most commonly used tools and are regularly misused. They are not to be used as chisels, drifts or wedges. The screwdriver head is to be the correct size for the screw and its tip is to fit the slot.

The work is to be held firmly and a steady, even pressure exerted on the screw.

Screwdriver handles are not to be hammered as this can cause the handle to split. If the handle is designed for use with a rubber grip, that grip must be fitted. Serious puncture wounds can be sustained if screwdrivers are carried in the pocket.

Spanners and Wrenches

Only spanners of the right size are to be used. The length of the spanner is not to be adjusted by fitting an extension to it, as this will increase the likelihood of the spanner breaking. Spanners are to have square and undamaged jaws. Adjustable spanners and pipe wrenches will not withstand hammer blows. After use, all spanners and wrenches are to be cleaned and any moving parts oiled, before storing in a box or rack.

Woodworking Tools

The sharp edges of woodworking tools are to be kept sharp, to promote ease of working. Sharpening is to be carried out according to the type of tool. Chisels are always to be worked with mallets, as a hammer will split the handle. All sharp edged tools are to be racked with the edge downwards or are to have the edge protected.

Always select the correct type of saw for the task. Saw teeth are to be correctly set to avoid binding. When saws are not in use, the teeth are to be cleaned and the blade wiped with an oily cloth, to prevent corrosion.

Securing Hand Tools Whilst Working At Height

When working at height with tools it is recommended that tools are adequately secured in a securing holster or by buggy ties secured to an adequate stable anchor point. This will help prevent tools accidentally falling from height.

GUIDANCE NOTE	ELECTRICALLY OPERATED TOOLS	Code: G702	Issue: A

ELECTRICAL SAFETY

As far as possible all electrically operated tools used are to be of the reduced voltage of (110v). This is in order to reduce the risk of an operator receiving a lethal shock. Additional protection should be provided by the use of an earth leakage circuit breaker. All electric tools should be manufactured to BS 2769 or a similar European standard.

Checks are to be carried out to ensure that the power supply is within the operating range of the tool, as indicated on the tool plate. All plugs and sockets should conform to BS 4343 to help ensure that plugs cannot be connected to the incorrect supply.

All electrical tools are to be either double-insulated or earthed. The former is recommended.

GENERAL PRECAUTIONS

Chuck keys are to be kept on a clip attached to the cable, to avoid any temptation to improvise.

Whenever on-the-spot adjustments or changes in attachments need to be made, tools are to be disconnected from the mains supply. Use of the control switch on the tool is not sufficient. The plug is to be removed from the socket and should be visible to the operator while the adjustment is being carried out.

All attachments should be firmly affixed.

Guards are to be used and are to be kept in good condition. The relevant protective clothing such as goggles, dust masks, etc. is to be used.

INSPECTION AND MAINTENANCE

Each tool shall be clearly marked with a unique identification number to enable records to be kept of the inspections and maintenance carried out. Any tool without an identification number shall not be used until it has been inspected and recorded, and an identification number marked onto it.

All electrically operated tools shall be inspected prior to use for signs of faults in the wiring, switching, guarding, etc. Any defective equipment shall be taken out of use and a label - clearly identifying it as defective - shall be attached to the tool.

A competent person shall carry out maintenance on a regular basis and a register shall be kept of such inspections and maintenance.

The maintenance and inspection shall constitute the following:

- Once monthly, a check of the cable along its entire length is to be carried out.
- Once monthly, a check of the plug to ensure there are no signs of damage, the cable clamp is in the correct position and the fuse is of the correct value is to be carried out.
- Every 3 months, a check of the current carrying capacity of the earth wire is to be carried out. Double-insulated tools may not have an earth cable.
- Every 3 months, a check of the insulation-resistance is to be carried out and the value should be recorded.
- Every 3 months, if fitted, carbon brushes shall be checked and replaced if there is excessive sparking.

- Every 3 months, any motor shall be blown through with a jet of clean, dry air and any particles of debris shall be removed from the switch.
- Every 3 months, all parts shall be examined for wear and lubricated with the recommended lubricant.

INDIVIDUAL TOOLS

Hand-Held Saws

These are to be fitted with a spring-loaded guard that only uncovers the teeth when the tool is pressed against the work. A check is to be made to ensure that the guard moves freely.

Blades are to be inspected before use to ensure that no teeth are missing.

The work is to be clamped, leaving both hands free to control the saw. On the larger, portable stand models a riving knife is fitted to prevent the saw cut closing on the blade and the work kicking back. The riving knife is, therefore, to be kept clean and in good condition.

The work area is to be kept clear of all obstructions and debris.

Where the work gives rise to dust, respiratory protection shall be provided and worn.

Where the work results in particles being thrown off, eye protection shall be provided and worn.

Cutting Discs

See the guidance notes regarding cutting-off discs (G712).

Drills

The material is to be firmly secured so that it does not spin as the drill begins to bite.

Rotary hammer drills are to be fitted with a safety clutch to protect the operator and the tool, should the drill bit snag.

All drills are to be kept sharp and a punch mark is always to be made as a starter.

The common operating fault lies in trying to drill too large a hole in a single operation, causing the drill to bind and then stop. This results in damage to the tool and a possible wrist injury to the operative. Therefore, when a large hole is to be drilled, a pilot hole should be drilled first.

Drills are to be held firmly until the chuck has come to a stop.

NOISE

The use of portable electric tools can result in noise levels above the statutory exposure action values, in which case a planned programme of noise control must be put in place. See also the guidance notes regarding noise (B200).

GUIDANCE NOTE	COMPRESSORS AND PNEUMATIC TOOLS	Code: G707	Issue: A

COMPRESSORS

The compressor itself should always be under the supervision of a competent person, who should be responsible for ensuring that the guards for the V-belt and pulley drive are in place and that regular inspection of the necessary hoses and couplings takes place.

A check must be made to confirm that the oil feed to the airline is properly topped-up. Compressors require adequate ventilation and, therefore, special provision needs to be made when compressors have to be sited in confined spaces.

Air receivers must be marked with the manufacturer's name, their maximum allowable pressure, a serial number to identify the vessel and the date of manufacture of the vessel. They must also be fitted with a safety valve, pressure gauge, drain cock and manhole. A written scheme of examination must be prepared by a competent person in accordance with the Pressure Systems Safety Regulations and the owner or user must be provided with written reports of examination.

HOSES

All compressed air hoses must be the right size for the tool. Insufficient power will be supplied if the bore is too small. The length of hose should be kept as short as possible; it should be kept free from corrosive materials and leaks, and protected from interference by passing traffic. Hoses should be to BS ISO 2398 or BS EN ISO 5774.

If work is to be undertaken at some distance from the compressor the safest method of ensuring efficiency is to use large bore pipe most of the way, then fit a shut-off valve where the normal bore feed to the tool begins. Hoses must be kept clean when disconnected.

CONNECTIONS

All connections must be properly clamped. Loose connections can blow off causing the hose to whip back and cause injury. It is also dangerous to overtighten the connections because this can result in the hose being cut, causing unnecessary leakage and loss of power. Safety devices, which restrain connectors in the event of a blow off, are available. Alternatively, double-lock couplers may be used.

GENERAL PRECAUTIONS

Tools require clean air and proper lubrication. Therefore, in every airline there should be an efficient filter and lubricator. If any fault develops the main air supply should be shut-off and air cleared from the tool before any investigation takes place; otherwise a disconnected coupling may snake off and cause injury. Oil mist from the tool exhaust can cause at best offensive, at worst dangerous, atmospheres in confined spaces such as deep trenches, tunnels and headings. Good ventilation is essential in such cases.

All tools should be held firmly to prevent them from spinning and jumping, and firm pressure should be maintained in the same way when stopping and starting to ensure no damage can be caused to the operator's feet and hands. In cold weather pneumatic tools may freeze up. An anti-freeze lubricant in the regular oil fog lubricator fixed in the airline, usually on the compressor air outlet, may overcome the problem.

COMPRESSORS, AIR RECEIVERS AND PNEUMATIC TOOLS

The following points should be checked:

- That the V-belt and pulley drive is adequately guarded.
- That the air receiver is clearly marked with its safe working pressure and distinguishing number.
- That the air receiver is fitted with a safety valve, a pressure gauge, a drain cock and a manhole.
- That the air receiver has been examined as required by the Pressure Systems Safety Regulations.
- That, if an airline is used for blowing out, the activity is strictly controlled and the person using the airline, and other persons in the vicinity, are adequately protected, e.g. by goggles and respiratory protective equipment (RPE).
- That the joints in airlines are made with purpose-made connections.
- That the air supply to all tools is switched off when tools are left unattended or changed.

Compressed air is delivered at high pressure. If it enters the body it can rupture internal organs and cause death. Any form of horseplay should be expressly forbidden under all circumstances.

INDIVIDUAL PNEUMATIC TOOLS

Concrete Breakers

The retaining spring should always be securely in position to prevent the point dropping out and falling. It is essential that the point is kept properly sharpened, because a blunt end tends to skid in all directions. It is equally important that the end is properly heat-treated, because, over a period, the temper of the metal is reduced and the end can break off and severely damage the operator's feet. Operators must always wear steel toe capped safety footwear.

Rock Drills

It is extremely important that the operator adopts a secure foothold, well-balanced posture and uses both hands. Any other method of using the tool creates body hazards and the risk of losing your foothold.

Air Grinders

Air grinders must be fitted with effective governors and must be properly maintained; the speed of the tool should be regularly checked. Grinders must be fitted with protective guards and be clearly marked with their maximum rotating speed. Abrasive wheels larger than 55mm diameter must be marked with their maximum running speed.

The proper size and grade of wheel or disc must be fitted to suit the tool to be used. Employees mounting wheels or discs must be competent, properly trained and authorised to do so. Eye protection must be worn.

Tampers

These should always be used with both hands on the tool and the feet spaced apart. Foot injuries can be serious with this item of equipment. When held firmly the tool is not only better controlled but produces more useful work. Safety boots must always be worn.

Wood Borers

It is essential that the machine is picked up only by the handles, is firmly held against the job and the wood borer is only to be extracted and put down once the drill has stopped revolving. All clothing must be kept out of the way and loose clothing such as ties and scarves are forbidden.

NOISE

Exposure to excessive noise can result in permanent hearing damage or loss. Pneumatic tools can produce sufficient noise to result in such damage. All employees are required to wear ear protection when operating pneumatic tools. Further information is contained within the guidance notes regarding noise (B200).

VIBRATION

A number of pneumatic hand tools are associated with the incidence of vibration white finger (see the information regarding this in section O). Wherever possible, tools fitted with anti-vibration devices and insulation shall be used.

GUIDANCE NOTE	CUTTING-OFF DISCS	Code: G712	Issue: B

INTRODUCTION

The Provision and Use of Work Equipment Regulations (PUWER) requires that all machinery is suitable for its intended use and is properly maintained. PUWER also requires that employees, including those using, mounting and managing the operation of abrasive wheels, are fully informed and properly trained in their safe use.

WHEEL CHARACTERISTICS

An abrasive wheel is usually defined as a wheel consisting of abrasive particles bonded together with various substances. There are two main types of bonding agent:

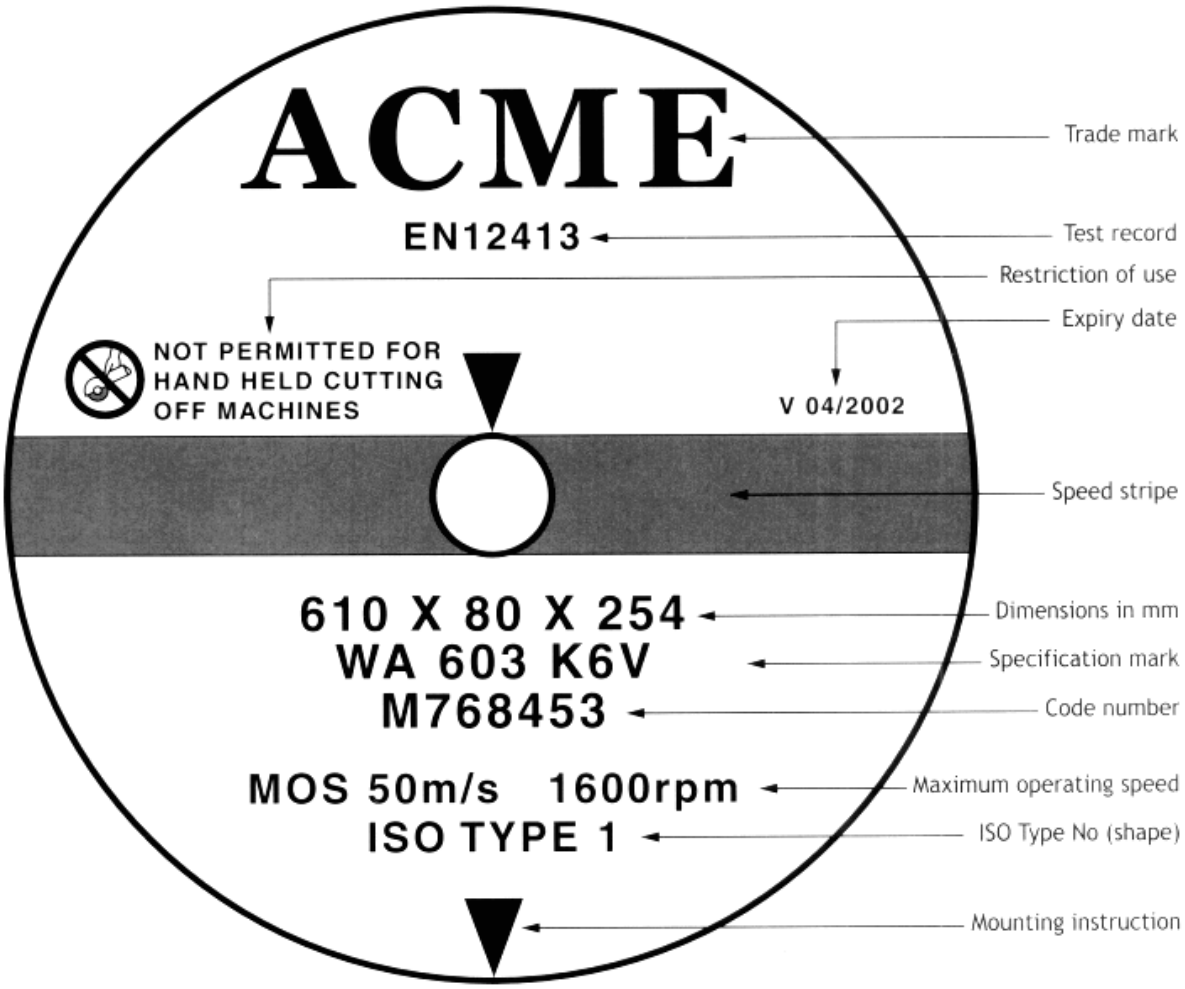
- Inorganic bonds. - Mainly vitrified, i.e. the wheel is generally fired in a furnace to give the bond a hard, strong but brittle structure. These wheels are used for precision grinding applications as they hold their shape, but require dressing.
- Organic bonds. - Not fired but cured at low temperature; the bonding agents are resinoid (B), rubber (R) and shellac (E). Such wheels are tough, shock-resistant and self-dressing, and are most suited to non-precision applications, e.g. fettling and cutting-off.

The following are the variable elements in abrasive wheel manufacture:

- Abrasive. - The type of abrasive used in wheel construction.
- Grain/grit size. - The particle size of abrasive grains. The range is expressed by number from 4, very coarse, to 1200, very fine.
- Grade. - The tenacity with which the bonding material holds the abrasive grain in a wheel. Wheels are graded as soft or hard, according to their degree of tenacity. The grade scale is expressed in letters from A, extremely soft, to Z, extremely hard.
- Structure. - The level of porosity in the wheel. The higher the number, the greater the level of porosity.
- Bond type. - The bonding material used in the wheel construction.

Advice on wheel selection should be obtained from the wheel manufacturer or supplier.

WHEEL MARKING



RESTRICTIONS OF USE

Annex A of BS EN 12413 - Safety Requirements for Bonded Abrasive Products, and BS ISO 525, specify how wheels should be marked to indicate specific restrictions for use. These are:

(a) RE1: Not permitted for hand-held and manually guided grinding.
(b) RE2: Not permitted for hand-held cutting-off machines (see figure above).
(c) RE3: Not suitable for wet grinding (see figure below);

(d) RE4: Only permitted for a totally enclosed working area.

(e) RE6: Not permitted for face grinding (see figure below).

All organic bonded wheels for hand-held applications will bear a use-by date of 3 years from the date of manufacture.

A code number should be marked on the wheel to indicate the source and manufacturing details of the wheel.

WHEEL SPEEDS

One of the main causes of an abrasive wheel "bursting" is overspeeding. To help prevent this, all grinding machines must be marked with the maximum operating speed of the spindle. Additionally, the maximum permissible speed in revolutions per minute (rpm) and metres per second (m/s), specified by manufacturers, should be marked on every abrasive wheel larger than 80mm in diameter, or on the blotter or identification label which is sometimes attached to it.

As it is not practicable to mark smaller wheels, the maximum permissible speed in rpm of wheels 80mm in diameter or less should be stated in a notice posted in a position where it can easily be read. For speeds of 50m/s and above, colour coded stripes will appear on the wheel.

Never operate abrasive wheels at speeds in excess of that marked on the wheel.

MOUNTING THE WHEEL

Prior to mounting an abrasive wheel onto a grinding machine it is to be cleaned with a brush and examined for any sign of damage. Any wheel which is shown to be damaged is not to be mounted and should be rejected.

Wheels are not to be mounted on machines for which they are not intended. The wheel should fit easily, but not loosely, onto the spindle. If it fits too tightly the heat generated during use may cause expansion in the spindle, thus cracking the wheel.

Worn spindle bearings are to be replaced or the wheel is likely to oscillate and hammer the workpiece and become damaged in the process.

In order to prevent the wheel coming off the spindle it should revolve in the opposite direction to the direction in which the securing nut is tightened.

Straight-sided wheels mounted onto fixed machines are to be mounted between suitable flanges that have a diameter of at least one-third of the total wheel diameter. The flanges are both to be of equal diameter and are to be recessed on the side next to the wheel, to ensure that clamping pressure is not exerted in the area of the centre hole. The driving flange is to be mounted on the spindle in a manner that does not allow the flange to revolve with the spindle. The flanges are to be of mild steel.

The nut holding the abrasive wheel between the flanges should be tightened only sufficiently to ensure that the flanges drive the wheel and do not slip. If the manufacturer's torque pressure is known, a torque spanner should be used to tighten the nut. If this is not available the nut should be tightened by hand pressure using a spanner.

Straight-sided cutting wheels larger than 230mm in diameter are to be fitted with washers of compressible material between the wheel and the flange.

Depressed-centre wheels are only to be mounted with the special flange assembly as illustrated in Figure 1 below. The following points are to be noted:

- When the adapter has been tightened there is to be a slight clearance between the wheel and the flange at (A). This is to ensure that any clamping pressure is exerted only at the centre of the wheel.
- The outer part of the face of the flange is to be tapered as shown. This permits the full width of the flange to support the wheel during grinding.

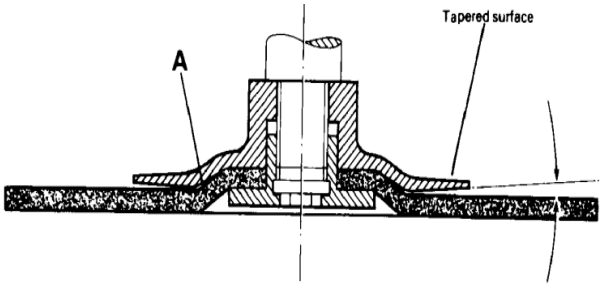


Fig. 1 FLANGE ASSEMBLY FOR A DEPRESSED-CENTRE WHEEL

Depressed-centre wheels are only to be mounted on machines designed for their use. They are never to be mounted on makeshift machines.

GUARDING

Guards are designed to be capable of containing fragments of wheel should it burst. This implies that they should be at all times securely fitted to the machine and adjusted where required. A typical guard is shown in Figure 2.

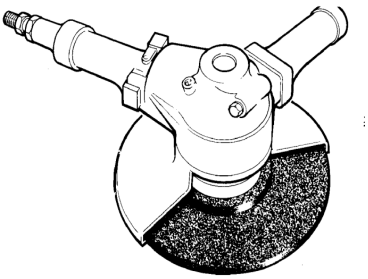


Figure 2 Guard for depressed-centre wheel and cutting-off wheel.

Guarding is not only to protect from bursts, it is also to protect the operator from injury due to contact with the moving wheel. The guarding is always to remain fitted to the machine whilst in use and is to be in good condition.

ELECTRIC GRINDING MACHINES

Electrical safety must be considered as well as the safe use of the wheel.

All portable electric machines should comply with BS EN 51044 Safety of hand-held electric motor operated tools, Part 2 Section 3 Grinders, disc type sanders and polishers.

Machines in service marked BS 2769 (Hand-held electric motor-operated tools. Specifications for grinders, polishers and disc-type sanders. can still be used. Additionally machines when supplied after 1/1/97 should carry the CE marking. The preferred voltage for these machines on construction sites is 110 volts. However, if a 240-volt supply has to be used then the supply to a portable machine should be protected by an RCD (residual current device).

These tools are classified according to the way in which protection against electric shock is provided. For Class I tools, accessible metalwork has to be effectively earthed so as to provide protection for the operator if the metalwork is made ‘live’ because of an internal fault. For Class II tools, protection is provided by the use of all insulated or double insulated construction, and accessible metalwork should not be earthed.

CABLES AND CONNECTORS

Hand-held tools are often required to withstand constant handling and rough usage, and the conditions of use should be taken into account when selecting flexible cables for the tools. Cables manufactured to British Standard 6500: 2000 Electrical cables,with an abrasion-resistant sheath would be satisfactory for normal use, but where the cable is vulnerable to damage, additional precautions such as heavy-duty sheathing or protective braiding will be necessary.

In the case of single-phase tools, two-core cable is suitable for Class II tools, but for Class I tools, a three-core cable is essential. The cable should be connected to the supply by a properly constructed connector, such as a plug and socket. For Class I tools the connector should incorporate an effective means of maintaining earth continuity.

In order to ensure correct matching between the electrical supply and the portable tool, it is essential that plugs, sockets and couplers for different electrical supply systems are not interchangeable. Connectors conforming to the following British Standards are recommended for industrial applications:

(a) BS EN 60309-2:1999 Plugs, socket outlets and couplers for industrial purposes;

(b) BS 196:1961 Specification for protected-type non-reversible plugs, socket-outlets, cable-couplers and appliance-couplers with earthing contacts for single-phase a.c. circuits up to 250 volts.

INSPECTION AND MAINTENANCE

Routine checks, regular inspection and preventive maintenance are essential if accidents are to be avoided. An efficient maintenance system will also reduce days lost due to tools being out of commission.

The user of a hand-held tool should carry out a visual check on the tool before using it so that obvious defects can be identified, for example damage to the cable sheath, loose plug connections etc. Any tool in an unserviceable or unsafe condition **must** be withdrawn from use until defects have been rectified by a person competent to carry out this class of work.

Routine visual checks are in addition to and are not a substitute for planned maintenance of hand-held tools.

All tools should be accompanied by specific instructions from the manufacturer. If there are no instructions, the following system of planned maintenance is recommended. All hand-held apparatus, including extension leads, should be identified by a serial number which should be recorded in a register. The register should indicate how often each item should be recalled for inspection. The recommended frequency of checks, inspection and testing for portable electric grinders is:

(a) For 110-volt machines the user is to carry out:

(i) a weekly safety check;

(ii) a formal visual inspection (eg a detailed inspection by a person competent to do so);

(iii) a combined inspection and test every three months (eg a detailed inspection and tests by a person competent to do so).

(b) For 240-volt machines the user is to carry out:

(i) a daily safety check;

(ii) a formal visual inspection every week (eg a detailed inspection by a person competent to do so);

(iii) combined inspection and tests before first-time use and then every month (eg a detailed inspection and tests by a person competent to do so).Safety in the use of abrasive wheels.

Extension leads should be treated as for 240-volt tools.

For all the apparatus there should be a careful inspection for signs of damage or deterioration including, for example, plug pins, terminals and cable anchoring devices, the cable sheath (particularly near the terminations), and the casing of the portable tool, together with its controls, brush gear and commutators. Any defects should be rectified. For further guidance and information see Maintaining portable and transportable electrical equipment.

PNEUMATIC GRINDING MACHINES

Although there should be no electrical risk with these machines it is vital that the compressed air supply is clean and water-free. Particular attention must be paid to the maintenance of two devices:

(a) the maximum speed governor. Ingress of dust into the governor is often a cause of failure;

(b) any form of pressure reduction valve that will prevent over-pressurization.

The relevant standard for this class of machine is BS 4390: 1969 Specification for portable pneumatic grinding machines to be replaced by BS EN 792 Hand-held non electric power tools - Safety Requirements Part 7 Grinders and Part 9 Die Grinders. New machines should carry the CE marking.

INTERNAL COMBUSTION GRINDING MACHINES

These machines, usually powered with a petrol engine, are mainly used for cutting operations using reinforced resin-bonded abrasive wheels or diamond and CBN wheels. One particular safety hazard with this type of machine is overspeeding. This may be due to a number of causes such as petrol/air ratio (mixture setting), together with ignition timing. **However, under no circumstances should the speed marked on the wheel be exceeded.** The speed-governing device should be given close attention, the ingress of dust being a common cause of failure. BS EN 1454 Portable, hand-held, internal combustion cutting-off machines - Safety is the relevant standard. New machines should carry the CE marking.

PERSONAL PROTECTIVE EQUIPMENT

To comply with the Personal Protective Equipment Regulations and other regulations, for example the Control of Substances Hazardous to Health Regulations and the Control of Noise at Work Regulations appropriate protection must be worn. People who use abrasive wheels on any type of machine are exposed to a number of risks:

(a) Injury to the eyes from flying abrasive and metallic particles,

(b) Inhalation of dust from dry grinding operations (for example petrol-engined cutting-off machines);

(c) Physical injury due to flying wheel fragments or ejected workpieces;

(d) Noise and vibration;

(e) On construction sites there will be a need for head protection as well as for feet and hands in addition to the other precautions mentioned.

Eye protection should conform to the relevant BS EN standard such as

BS EN 166 Personal eye protection. Specifications; BS EN 167 Personal eye protection. Optical test methods; and BS EN 168 Personal eye protection. Non-optical test methods.

Dust protection (face masks) etc should comply with BS EN 149 Respiratory protective devices.

LOOSE CLOTHING

Loose clothing such as ties or coat sleeves are easily drawn in between the wheel and the workpiece and should not be worn. Rags and waste should not be used near a revolving wheel as they may also become entangled.

STORAGE OF ABRASIVE WHEELS

Abrasive wheels are to be stored in an area where the temperature is not excessively hot or cold, and in a dry atmosphere.

Thin wheels, such as cutting-off wheels, are to be stored flat on a horizontal surface to prevent warping.

TRAINING

There is no substitute for thorough practical training in all aspects of the mounting and use of abrasive wheels. Any training programme should cover at least the following:

- Hazards and risks arising from the use of abrasive wheels and the precautions to be observed.
- Methods of marking abrasive wheels with their type, size and maximum operating speed.
- How to store, handle and transport abrasive wheels.
- How to inspect and test abrasive wheels for damage.
- The functions of all the components used with abrasive wheels, such as flanges, blotters, bushes, nuts, etc.
- How to assemble abrasive wheels correctly to make sure they are properly balanced and fit to use.
- The proper method of dressing an abrasive wheel (removing dulled abrasive or other material from the cutting surface and/or removing material to correct any uneven wear of the wheel).
- The use of suitable personal protective equipment (PPE), e.g. eye protection.

It is recommended that a record of training in the safe mounting of abrasive wheels is kept, showing the trainee´b4s name and date of training.

VENTILATION

Where the use of an abrasive wheel gives rise to dusts that are offensive or may be a hazard to health, or where the quantity of dust is excessive, all practicable measures shall be taken to minimise the hazard. Where practicable, exhaust ventilation shall be provided as near as possible to the source of the dust.

SUMMARY OF OPERATING PRECAUTIONS

Guards	Ensure the guard is in position and properly adjusted.
Work rests	Keep the rest as close as possible to the wheel.
Side grinding	Avoid grinding on the edge of straight-sided wheels.
Lubrication	Check that spindles do not become overheated through lack of lubrication.
Stopping wheel	Do not attempt to slow the wheel, allow it to stop naturally.
Cutting-off wheels	Avoid using warped wheels and avoid the tendency to twist the wheel or exert pressure on the sides of the wheel. Ensure that the workpiece is firmly secured or clamped.

REFERENCES

HS(G)17 - Safety in the Use of Abrasive Wheels.

GUIDANCE NOTE	DRIVING VEHICLES ON COMPANY BUSINESS	Code: G800	Issue: A

Introduction

It has been estimated that up to a third of all road traffic accidents involve somebody who is at work at the time. This may account for over 20 fatalities and 250 serious injuries every week. Some employers believe, incorrectly, that provided they comply with certain road traffic law requirements, e.g. company vehicles have a valid MOT certificate, and that drivers hold a valid licence, this is enough to ensure the safety of their employees, and others, when they are on the road. However, health and safety law applies to on-the-road work activities as to all work activities, and the risks should be effectively managed within a health and safety management system.

Benefits of managing work related road safety

The true costs of accidents to organisations are nearly always higher than just the costs of repairs and insurance claims. The consequences of an accident on the self-employed and small businesses are likely to be proportionately greater than on a larger business with greater resources. The benefits to you from managing work-related road safety can be considerable, no matter the size of your business.

- It allows you to exercise better control over costs, such as wear and tear and fuel, insurance premiums and legal fees and claims from employees and third parties.
- It also allows you to make informed decisions about matters such as driver training and vehicle purchase, and helps you identify where health and safety improvements can be made.
- Case studies and research have shown that benefits from managing work-related road safety and reducing crashes include:
  - fewer days lost due to injury;
  - reduced risk of work-related ill health;
  - reduced stress and improved morale;
  - less need for investigation and paperwork;
  - less lost time due to work rescheduling;
  - fewer vehicles off the road for repair;
  - reduced running costs through better driving standards;
  - fewer missed orders and business opportunities so reduced risk of losing the goodwill of customers;
- less chance of key employees being banned from driving, e.g. as a result of points on their licences.

Assessing risks on the road

Risk assessments for any work-related driving activity should follow the same principles as risk assessments for any other work activity. You should bear in mind that failure to properly manage work-related road safety is more likely to endanger other people than a failure to properly manage risks in the workplace.

Step 1 - Look for hazards that may result in harm when driving on public roads. Remember to ask your employees, or their representatives, what they think as they will have first hand experience of what happens in practice. You need the views of those who drive extensively, but also get the views of those who only use the roads occasionally. The range of hazards will be wide and the main areas to think about are the driver, the vehicle and the journey.

Step 2 - Decide who might be harmed. In almost all cases this will be the driver, but it might also include passengers, other road users and/or pedestrians. You should also consider whether there are any groups who may be particularly at risk, such as young or newly qualified drivers and those driving long distances.

Step 3 - Evaluate the risk and decide whether existing precautions are adequate or more should be done. You need to consider how likely it is that each hazard will cause harm. This will determine whether or not you need to do more to reduce the risk. It is likely that some risks will remain even after all precautions are taken. What you have to decide for each significant hazard is whether the remaining risk is acceptable.

When carrying out the risk assessment you first should establish whether you can eliminate the hazard. If not, the following should be considered when deciding on how to control the risk:-

- Consider whether your policy on the allocation of company cars actively encourages employees to drive rather than consider alternative means of transport.
- Consider an alternative to driving, e.g. going at least part of the way by train.
- Try to avoid situations where employees feel under pressure, e.g. avoid making unrealistic claims about delivery schedules and attendance which may encourage drivers to drive too fast for the conditions, or exceed speed limits.
- Organise maintenance work to reduce the risk of vehicle failure, e.g. ensure that maintenance schedules are in place and that vehicles are regularly checked by a competent person to ensure they are safe.
- Ensure that drivers and passengers are adequately protected in the event of an incident, e.g. ensure that seatbelts, and where installed airbags, are correctly fitted, work properly and are used.
- Ensure that company policy covers the important aspects of the Highway Code, such as not exceeding speed limits.

Step 4 - Record your findings. Employers with five or more employees are required to record the significant findings of their risk assessment. If you have fewer than five employees you do not have to write anything down, though it is useful to keep a written record. You must also tell your employees about what you have done. Your risk assessment must be suitable and sufficient. You need to be able to show that::

- a proper check was made;
- you consulted those who might be affected;
- you dealt with all the obvious hazards.

Step 5 - Review your assessment and revise it if necessary. You will need to monitor and review your assessment to ensure that the risks to those who drive, and others, are suitably controlled. For this to be effective you need to have a system for gathering, recording and analysing information about road incidents. You should also record details of driver and vehicle history.

You may also need to review your assessment to take account of changing circumstances, e.g. the introduction of new routes, new equipment or a change in vehicle specification. Such a review should seek the views of employees and safety representatives where appointed.

When evaluating the risks there are a number of factors to be considered to ensure that work related road safety is effectively managed. The following should be considered when carrying out the evaluation.

THE DRIVER

Are you satisfied that your drivers are competent and capable of doing their work in a way that is safe for them and other people?

Are your at-work drivers aware of company policy on work-related road safety, and do they understand what is expected of them?

TRAINING

- Are you satisfied that your drivers are properly trained?
- Do you evaluate whether those that drive at work require additional training to carry out their duties safely?
- Do you provide induction training for drivers?
- Do you arrange for drivers to be trained giving priority to those at highest risk, e.g. those with high annual mileage, poor accident records, or young drivers?
- Do drivers need to know how to carry out routine safety checks such as those on lights, tyres and wheel fixings?
- Do drivers know what actions to take to ensure their own safety following the breakdown of their vehicle?
- Do you need to provide a handbook for drivers giving advice and information on road safety?
- Are drivers aware of the dangers of fatigue?
- Do they know what they should do if they start to feel sleepy?

FITNESS AND HEALTH

- Are you satisfied that your drivers are sufficiently fit and healthy to drive safely and not put themselves or others at risk?
- Should staff that drive at work be reminded that they must be able satisfy the eyesight requirements set out in the Highway Code?
- Have you told staff that they should not drive, or undertake other duties, while taking a course of medicine that might impair their judgement? In cases of doubt they should seek the view of their GP.

THE VEHICLE

Suitability

- Are you satisfied that vehicles are fit for the purpose for which they are used?
- Do you investigate which vehicles are best for driving and public health and safety when purchasing new or replacement vehicles?
- Is your fleet suitable for the job in hand? Have you thought about supplementing or replacing it, with leased or hire vehicles?
- Do you ensure that privately owned vehicles are not used for work purposes unless they are insured for business use and, where the vehicle is over three years old, they have a valid MOT certificate?

CONDITION

- Are you satisfied that vehicles are maintained in a safe and fit condition?
- Do you have adequate maintenance arrangements in place?
- How do you ensure maintenance and repairs are carried out to an acceptable standard?
- Is planned/preventative maintenance carried out in accordance with manufacturers' recommendations? Remember an MOT certificate only checks for basic defects and does not guarantee the safety of a vehicle.
- Do your drivers know how to carry out basic safety checks?
- Are windscreen wipers inspected regularly and replaced as necessary?

THE JOURNEY

- Are journeys planned by drivers?
- Are your schedules realistic? Do journey times take account of road types and condition, and allow for rest breaks? The Highway Code recommends that drivers should take a 15 minute break every two hours.
- Does company policy put drivers under pressure and encourage them to take unnecessary risks, e.g. to exceed safe speeds because of agreed arrival times?
- Can you eliminate long road journeys or reduce them by combining with other methods of transport? For example, it may be possible to move goods in bulk by train and then arrange for local distribution by van or lorry.
- Do you plan journeys so that they are not so long as to contribute to fatigue?
- What criteria do you use to ensure that employees are not being asked to work an exceptionally long day? Remember that sometimes people will be starting a journey from home.
- Can your journey times and routes be rescheduled to take account of adverse weather conditions?
- Are you satisfied that drivers do not feel pressurised to complete journeys where weather conditions are exceptionally difficult?

Drivers shall be responsible for ensuring that:

- Daily checks are carried out on their vehicles to ensure that they are safe and roadworthy;
- They comply with the road traffic regulations at all times;
- Maintenance is carried out as required by manufacturers' instructions;
- All defects on vehicles and any ancillary equipment are reported and any additional maintenance is carried out as and when required;
- They do not drive any vehicle or machinery unless they have been fully trained and instructed in its operation;
- They comply with the requirements of the Company's Safety Policy;
- They do not use a hand-held mobile telephone in any vehicle unless the vehicle is parked and the engine is switched off;
- Information is given to management of any medical or legal impediment to their driving licence or any pending prosecutions;
- They complete the mileage record book for all journeys;
- Management is informed of any change to their state of health, either temporary or permanent, which might affect their working ability or their suitability to carry out any particular task or tasks.

MOBILE TELEPHONES

Using a hand-held mobile telephone while driving a motor vehicle is illegal. Drivers caught using a mobile phone in this way will be issued with a fixed penalty fine (currently 60 Pounds) and will receive an endorsement on their driving licence (currently 3 points).

The Regulations require a driver to be in a position to maintain control of their vehicle at all times; therefore, the police may stop anyone caught using their mobile telephone whilst driving, even though they may appear to be in control of the vehicle. The definition of driving within the Regulations includes situations where the vehicle is stationary but the engine is still running. In order to avoid committing an offence under this section, a driver will need to have parked and switched the engine off before using the telephone.

REMEMBER, YOU CAN STILL BE PROSECUTED FOR USING A HANDS-FREE DEVICE IF YOU ARE DEEMED NOT TO BE IN CONTROL OF YOUR VEHICLE.

VEHICLE

The following vehicle checks are considered good practice:

- Carry out pre-drive routine checks including checks of fuel level, operation and cleanliness of lights, condition of tyres / wiper blades, warning lights, etc.
- Ensure defects are reported and fixed as soon as possible;
- Ensure scheduled service / maintenance has been carried out. Service and general maintenance information can be found in the service manual or a reputable service provider;
- **DO NOT DRIVE THE VEHICLE IF YOU THINK IT IS UNSAFE**.

RULES OF THE ROAD

Observe the following rules (as per the Highway Code):

- Do not exceed speed limits;
- Obey traffic signs and signals;
- Give way to drivers who have the right of way or priority;
- Never drive under the influence of alcohol or drugs;
- Always wear your seat belt;
- Drive sensibly and defensively;
- Ensure mirrors and seat are correctly positioned before you start;
- Avoid “tailgating” - observe the “2-Second” rule;
- Don’t dazzle others - dip your headlights;
- Look well ahead and anticipate what may happen.

BAD WEATHER DRIVING

- Reduce speed;
- Increase distance between you and the vehicle ahead;
- Use engine / gears to slow down and apply brakes gently;
- Watch out for puddles, icy patches, and sudden pockets of fog;
- Use wipers, windscreen heater / demister, and turn on headlights.

EXTRA CONSIDERATIONS / PRECAUTIONS

- Do you know the contact number for breakdown / recovery service?
- In case of emergency do you have a fire extinguisher, first aid kit, drinking water, warm clothing?
- Do you have spares including fuses, fan belt; screen washer fluids?
- Do you have a torch, reflective warning devices?
- Do you have battery jump leads, and / or a tow rope?
- Is the spare wheel / tyre legal and properly inflated?
- Is the car jack / wheel brace in the vehicle?

GUIDANCE NOTE	LOADING AND UNLOADING TRANSPORTERS	Code: G801	Issue: A

RECOMMENDED PROCEDURES

Loading and unloading can be very dangerous. Heavy loads, moving or overturning vehicles and working at height can all lead to injuries or death. Loading and unloading should be avoided on busy roads, pavement areas and where there are pedestrians and other traffic.

LOADING AND UNLOADING AREAS SHOULD BE:

- Clear of all other traffic, pedestrians and people that are not involved in loading or unloading.
- Clear of any overhead power lines, cables or other obstructions.
- Level surface to maintain stability of the loads, and trailers. Parking should only be permitted on level and firm ground. Potholes to be avoided.
- The floor or deck of the loading area should be clear of obstructions, debris or broken boarding.
- Loading should allow for safe unloading.
- Areas should be protected from winds. Winds can be very dangerous during loading.

Dock shelters and dock houses can help with loading and unloading conditions. Such shelters should not create their own trapping or machinery hazards. All people using this equipment must be trained to do so. Any seal created around the vehicle may also impair communication therefore this needs to be taken into consideration and additional safety measures implemented.

Tailgates and sideboards must be closed when possible. If overhanging can not be prevented then this must be minimised as much as possible.

There must be safeguards in place to ensure that the driver does not drive away too early. This can be very dangerous if this occurs. Such problems may occur when there is a communication problem for example if the driver is foreign. Consideration should be made for the following control measures to prevent this from happening:

- Traffic lights
- Use of vehicle restraints
- Person in charge of loading / unloading holds the vehicle keys

USE OF BRAKES

During parking / unloading or loading it is important that the vehicle does not move. Vehicles therefore need effective brakes for general service and for parking.

Drivers sometimes use the emergency brakes as parking brakes when they uncouple the tractive and semi-trailer units, because they have to disconnect the suzie anyway. **This should never be allowed to happen. Air brakes should never be applied solely by disconnecting the suzie hose. The emergency brakes should never be relied on to secure the semi trailer. Such accidents which are caused by this are known as "vehicle runaways" and can be fatal and can be prevented.**

THE LOAD

- Loads to be spread as evenly as possible during loading / unloading operations. As uneven loads can make the vehicle / trailer unstable.
- Loads to be made secure and be balanced. Loads should not slide around, racking can be used.
- Vehicle must not be overloaded.
- The safe working load (SWL) limit is not to be exceeded at any time.
- Must be suitably packaged.
- Any spilled loads should be removed as soon as possible, to prevent any slip, trip and fall hazards.
- The vehicle should be suitable to the load to be transported.
- All loads should be handled mechanically wherever possible to reduce manual handling injuries.

If pallets are used, these must be checked to ensure in good condition, that the load is secured to them, loads are safe on the vehicle.

Checks must be completed before unloading to make sure loads have not shifted during transit and are not likely to move or fall when restraints are removed.

An overloaded vehicle may become unstable, difficult to steer and less able to brake.

MEANS OF SECURING A LOAD

The following can be considered:

- Clamps
- Special bolts
- Steel wire ropes
- Chains
- Webbing harnesses
- Sheets
- Nets
- Ropes and shoring bars

Sheeting rope hooks should never be used to secure loads. They are not designed to bear heavy loads.

Never rely on curtain sides to secure a load in place.

VEHICLE STABILITY

- The load should be positioned so that the centre of gravity is as low as possible and near to the vehicles centre line.
- When a load is stacked, the larger and heavier items should be placed at the bottom and lighter loads to the top.
- The heavier items should be placed nearer to the centre line of the vehicle and the lighter ones towards the sides.
- The load is to be evenly spread throughout the floor area
- When a load is stacked the lower packages should be strong enough to support the others when the vehicle is braking, cornering or accelerating.

SAFETY EQUIPMENT

Guards or skirting plates may be necessary if there is a risk that anything may be caught within the machinery of the transporter, such as dock levellers or vehicle tail lifts).

Ensure that the vehicle has its brakes applied and stabilisers (if available) are used. This will make the vehicle as stable as possible.

In some workplaces it may be possible to install a harness system to protect people working at height.

SAFE PLACE

A safe place needs to be provided for the driver if they are not involved in the loading / unloading of the transporter. Drivers should not remain within their cab.

It is important that the driver does not leave the vehicle unless the handbrakes applied, on level ground, engine off and any attachments are lowered.

No unauthorised personnel should be in the loading / unloading area.

LIFTING EQUIPMENT

The employer must ensure that all lifting equipment or parts of a load which will be load - bearing have adequate strength and stability to accept the stresses induced by lifting.

- Winch equipment and accessories should be visually checked on a daily basis by the driver, to ensure that they are in good condition.
- A recorded inspection of lifting equipment and accessories should take place on a weekly basis.
- The rope and any other lifting accessories must be thoroughly examined at least every 6 months by a competent person and a record kept.
- The winch itself must be thoroughly examined at least annually by a competent person and a record kept.
- Any winch rope that has received substantial damage is not to be used.
- Correct pulleys are to be used at all times and the winch rope is not to be allowed to come into contact with any straight or abrasive edges.
- Winch rope is not to be abused, i.e. wrapping winch rope around an object and hooking it up back on itself is not permitted. Correct shackles and chains are to be used.
- The driver is to ensure that the area is kept clear of personnel during the winching procedure.
- The driver is to ensure that the vehicle is chocked before removing the winch rope.
- The driver is not to get themselves between two vehicles during the winching procedure.

Remember that metal rubbing against metal is always liable to slip - stay alert.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

The driver is to wear suitable personal protective equipment (PPE) during loading and unloading procedures. This may include a hard hat, gloves, driver restraint, safety boots and equipment to prevent falls.

PREVENTION OF ACCIDENTS

- Ensure drivers have safe area to observe from
- Encourage drivers to report near misses and damaged equipment.
- Get information from the companies you are delivering to or collecting from about their facilities and off loading arrangements on their site, before your visit.

Ref: HSE Fact sheet - Safe driving: Loading and Unloading
Review of transport safety : HSG 136
HSE Info Sheet MISC 612
HSE - Vehicle selection and Suitability
HSE Un(loading) activities: checklist
HSE Load security fact sheet - Road Haulage

GUIDANCE NOTE	VEHICLE SAFETY IN THE WORKPLACE	Code: G802	Issue: A

INTRODUCTION

This safe system of work offers guidance to help ensure that vehicle movements in the workplace and activities such as loading and maintenance are carried out safely.
It applies to any vehicle or piece of mobile equipment which is used by employers, employees, self-employed people or visitors in any work setting, apart from travelling on public roads. This covers a wide range of familiar vehicles such as cars and vans, lift trucks, heavy goods vehicles etc. as well as less common vehicles and plant.

Vehicle activities must be properly managed to ensure a safe workplace. Employers have a duty to provide and maintain safe systems of work, and to take all reasonable practicable precautions to ensure the safety of their workers and members of the public who might be affected by their activities. Risk assessments must be carried out to assess the risks to workers and anyone else arising from the company's work activities.

Where two or more employers share a workplace, each employer must co-operate with the other employers and take all reasonable steps to co-ordinate the measures they take to comply with their legal duties. All employees must take care of their own safety and that of others, co-operating with management in meeting their obligations.

RISK ASSESSMENTS

The following will assist in identifying and assessing the risks:

- Identify the hazards associated with vehicle activities in the workplace. Look at each work activity associated with vehicles, e.g. arrival and departure of vehicles, their movements within the workplace, work on loading and unloading, etc. Ascertain what the dangers are and what is causing those dangers:
  - Is there a danger to people of being struck or run over by vehicles and what is the cause?
  - Is there a danger of people falling from vehicles, e.g. while gaining access to or alighting from the vehicle, or while involved in loading or unloading or other activities and what is the cause?
- Identify areas where people work around moving vehicles, and where people work on vehicles themselves.
- Identify who might be harmed by each of the hazards. This is likely to include drivers, other employees, customers and possible members of the public.
- When each hazard has been identified the risk should be evaluated, i.e. the likelihood that harm will occur and its severity. Assess whether existing precautions are adequate or whether more precautions are needed. If it has been decided that some risks have not been controlled well enough, steps will need to be taken to reduce them, so far as is reasonably practicable.
- It is recommended that all findings from the assessment are recorded. Write down the significant hazards and record the conclusions, e.g. hazard - risk of collision as the result of a blind bend; conclusion - need to install a fixed mirror on the corner of the building. All employees must be informed of the findings.
- Should any change be made to the workplace with regard to the introduction of new vehicles or a change of traffic routes these may create new hazards. Where a new hazard has arisen the risk assessment will need to be revised. It is good practice to review risk assessments on a regular basis.

THE WORKPLACE

Check the layout of routes is appropriate for the vehicle and pedestrian activities in the workplace:

- Are vehicles and pedestrians kept safely apart?
- Are suitable pedestrian crossing points on vehicle routes provided?
- Are there suitable parking areas for all parking needs?
- Do vehicle routes avoid sharp or blind bends?
- Is there scope for introducing a one-way system on vehicle routes within the workplace to reduce the risk of collisions?

Check vehicle routes are suitable for the type and quantity of vehicles that use them:

- Are traffic routes wide enough?
- Are they well-constructed and do they have firm and even surfaces?
- Are they free from obstructions and other hazards?
- Are they well-maintained?

Check that suitable safety features are provided where appropriate:

- Are roadways marked where necessary, to indicate the right way at road junctions?
- Is there a need for direction signs, speed limit signs and, where applicable, signs such as “Give Way”, “No Entry”, etc?
- Is there a need for features such as fixed mirrors to provide greater vision at blind bends, road humps to reduce vehicle speeds or barriers to keep vehicles and pedestrians apart?
- Are all roads, manoeuvring areas and yards adequately lit? Areas near junctions, buildings, plant, pedestrian routes and areas, and places where vehicles or mobile plant regularly move, all need particular attention.

THE VEHICLES

Vehicles should be checked at the workplace to ensure that they are safe and suitable for the work for which they are being used:

- Do they have suitable and effective service and parking brakes?
- Are they provided with horns, lights, reflectors, reversing lights and other safety features as necessary?
- Do they have seats and, where necessary, seats belts that are both safe and allow for driver comfort?
- Are there guards on dangerous parts of the vehicles, e.g. power take-offs, chain drives, exposed exhaust pipes?
- Do drivers need protection against bad weather conditions or against an unpleasant working environment such as dust, cold, dirt, fumes and excessive noise and vibration?
- Is there a safe means of access and exit from the cabs and other parts that need to be reached?
- Is there a need for driver protection against injury in the event of an overturn, and to prevent the driver being hit by falling objects?
- Vehicles should be checked, subject to appropriate maintenance procedures.

DRIVERS AND OTHER EMPLOYEES

Drivers and other employees should be adequately trained and capable of performing their work activities in a safe and responsible manner:

- Check the previous experience of drivers and test them to ensure that they are competent.
- Provide training on how to do the job and information about particular hazards.
- Carry out refresher training for drivers and other employees to ensure their continued competence.

Drivers and other employees should be checked to assess their work activities:

- Do drivers drive with care, e.g. do they use the correct routes, drive within the speed limit at the site and follow all other site rules?
- Do drivers park safely and in safe locations?
- Are employees using safe working practices when loading, unloading, securing loads, carrying out maintenance, etc?
- Do drivers and other employees rush to complete their work on time or is there a risk of accidents caused by fatigue as a result of excessive working hours?

Consult the employees to check that the level of management control and supervision is suitable:

- Are supervisors, drivers and other employees, including contractors and visiting drivers, aware of the site rules and aware of their responsibilities in terms of maintaining a safe workplace and safe working practices?
- Are all workers supervised and held accountable for their responsibilities?

VISITING DRIVERS

Deliveries and collections are essential to business, but can be some of the most dangerous transport activities that take place. A significant number of transport accidents in the workplace take place during deliveries. It is important to make sure that visiting drivers are aware of the workplace layout, the route they need to take, and relevant safe working practices (for example, for parking and unloading). You should take account of the fact that delivery drivers may never have visited the site before, and may only be on site for a short time. They should not have to enter potentially dangerous areas to move to or from their vehicles or places they need to go, such as the site office, or toilet or washroom facilities.

The employer at a workplace should work and co-operate as fully as possible with the employers of visiting drivers, to co-ordinate the measures that need to be taken for both employers and their employees to meet their health and safety responsibilities. For example, employers should communicate to:

- provide safe access to a vehicle for loading or unloading;
- provide suitable equipment (for example, for drivers delivering at retail outlets) to unload safely; and
- make sure that vehicles and the type of ground they have to use are suitable for safe working.

Consideration to printing site rules, directions, maps and approach information on the back of order forms and invoices, allowing visiting drivers to know what to expect before arriving on site.

VEHICLE ACTIVITIES

Reversing

Checks should be made to ensure that reversing manoeuvres are kept to a minimum. Where reversing is necessary, it should be undertaken safely and in safe areas:

- Is there scope for introducing one-way systems on routes to reduce the need for reversing manoeuvres?
- Is there a need to identify and mark reversing areas so that these are clear to both drivers and pedestrians?
- Can non-essential personnel be excluded from areas where reversing is common?
- Is a signaller (banksman) needed to direct reversing vehicles?
- Are there external side mounted and rear view mirrors on vehicles to provide optimum all round visibility?
- Do all vehicles have reversing alarms?

Parking

When parking vehicles, drivers must take care that they park in safe locations:

- Do drivers use the designated, clearly signed parking areas?
- Do drivers always ensure that their vehicles and trailers are braked and secured before leaving them parked?
- Are people and vehicles apart in and around parking areas by using pedestrian and vehicle exclusion areas?
- If possible, drivers leaving parked vehicles should not have to cross potentially dangerous work areas or traffic routes.

Loading and Unloading

Loading and unloading operations must be carried out safely at all times:

- Are loading and unloading operations carried out in an area away from passing traffic, pedestrians and others not involved in the loading or unloading operation?
- Are loading and unloading activities carried out on ground that is flat, firm and free from pot holes?
- Are the vehicles braked and/or stabilised, as appropriate, and the keys removed to prevent unsafe movements during loading and unloading operations?
- Is a key-safe system in place, where the keys are kept out of reach until it is safe for the vehicle to be moved?
- Is the loading and unloading carried out so that, as far as possible, the load is spread evenly to avoid the vehicle or trailer becoming unstable?
- Are checks made to ensure that loads are secured and arranged so that they cannot move about if the driver has to brake suddenly or if the vehicle has to negotiate steep inclines?
- Are checks completed to ensure that vehicles are not loaded beyond their capacity?

<u>Reference</u>

<u>HSE Guidance</u>

Workplace transport safety (HS(G)136)

GUIDANCE NOTE	BANKING VEHICLES	Code: G803	Issue: A

INTRODUCTION

Every year around 70 people are killed in transport-related accidents in the workplace. In addition, there are more than 1,000 major injuries, i.e. accidents which result in broken bones, amputations, etc. and around 5,000 injuries that cause people to be off work for more than 3 days.

Most transport-related accidents involve people being hit or run over by moving vehicles, people falling from vehicles, people being struck by objects falling from vehicles (usually part of the load) or being injured as a result of vehicles overturning.

Where possible, vehicle and pedestrian routes should be signed and segregated. Where this is not possible, a signaller/banksman must be used, especially when loading and unloading vehicles and equipment.

A banksman should be a trained and competent person authorised by the site management.

BANKSMAN

- Whilst acting as banksman, hi-visibility jacket or vest and hardhat (where appropriate) should be worn. This will ensure they are clearly and easily visible to the driver and that all signals are clearly seen.
- The banksman must be in constant contact with the driver with either hand signals or, where line of sight or distance impairs vision, by means of radio communication. Spoken instructions are to be avoided (other than by radio communication) as work sites are, by nature, noisy places and instructions may be misinterpreted or unheard.
- Both the banksman and driver must be aware of the means of communication being used and be fully conversant with the relevant hand signals or instructions before the operation starts.
- The banksman is to be in control of the operation.
- The banksman should be controlling the operation from a safe place and not putting themselves in danger from the operation or any other activity.
- The banksman must control other vehicle or pedestrian movement during the operation so as not to put them at risk and, if necessary, set up an exclusion zone for the duration of the operation.
- The operation is to be stopped if the banksman loses sight or communication with the driver until communication is restored.

THE DRIVER

- Must be in constant contact with the banksman.
- Must understand the signals/communication system in place (to be agreed with the banksman prior to starting).
- Must stop and wait if they lose sight or communication with the banksman, only resuming when communication has been restored.
- Must follow instructions given by the banksman.

GUIDANCE NOTE	STEEL FIXING	Code: G913	Issue: A

SAFETY PRECAUTIONS

The required safety precautions associated with steel fixing are many and varied. General guidance can be found in the guidance notes regarding the erection of structures (G903). Specific reference should also be made to other relevant sections referenced in the following key points:

- Suitable slings shall be used for lifting bundles of steel reinforcement bars; they are never to be lifted by the binding wire. Reference should be made to the guidance notes regarding cranes (G217) and lifting accessories (G202).
- Safe places of work shall be provided for steel fixers. Reference should be made to the guidance notes regarding working at height (G100), scaffolds (G113), aluminum tower scaffolds (G107), safety nets (G110), harnesses and belts (G120) and power-operated work platforms (G108).
- Persons not involved in steel fixing are to be kept away from the areas where the reinforcement bars are being handled.
- Reinforcement bars are to be laid out before fixing to ensure that individual bars can be easily removed and used.
- Eye protection is to be worn whilst reinforcement bars are cut. Those cutting or bending reinforcement bars shall also wear gloves.
- Disc-cutters are to conform to the standard as detailed in the guidance notes regarding cutting-off discs (G712).
- Cutting torches are not to be used on any reinforcement bars, which may be adversely affected by the heat.
- Where bar croppers are being used, precautions are to be taken to ensure that the short ends of the cut bars do not fly off and injure other persons. Bar bending machines are to be adequately guarded.
- After fixing, suitable walkways shall be provided for those requiring access over the steel. Projecting steel is to be “flagged” or boxed-over to prevent injury.

GUIDANCE NOTE	ASBESTOS WORK (GENERAL)	Code: H201	Issue: B

INTRODUCTION

Due to its unique fire-resistance properties, asbestos has been identified in over 3000 different products, most extensively in buildings. Most buildings built between 1950 and 1980 are likely to contain some asbestos. Asbestos in the form of asbestos cement can also be found in buildings constructed or refurbished as late as 1999.

The main uses of asbestos in buildings were as:

- sprayed insulating coating on steelwork and concrete;
- lagging on pipes and boilers;
- insulation boards on walls, doors and ceilings;
- asbestos cement as structural sheets, pipes and tanks;
- some ceiling tiles;
- some decorative plasters.

HEALTH HAZARDS OF ASBESTOS

All types of asbestos are classified as Category 1 carcinogens. Amphiboles, which include crocidolite (blue asbestos) and amosite more correctly called grunerite (brown asbestos) are considered the most dangerous substances, with the serpentine chrysotile (white asbestos) recognised as being slightly less dangerous due to the nature of the fibres.

Inhaled asbestos fibres can cause a range of asbestos-related diseases

- diffuse pleural thickening, preventing the lung from expanding and hence causing breathlessness;
- asbestosis, a scarring of the lungs, which has a latent period from first exposure of up to 30 years and for which currently there is no effective treatment;
- lung cancer, which has a similar latent period, and also currently has no effective treatment;
- mesothelioma, a cancer of the pleural lining, where the latent period from first exposure can be between 15 and 55 years and which is always fatal.

WORK WITH ASBESTOS

For <u>any work with ACMs</u>, the employer is required to:

- prevent the exposure of employees to asbestos as far as is reasonably practicable;
- identify the type of asbestos involved in the work, or assume the type of asbestos is <u>not</u> chrysotile alone;
- make a suitable and sufficient assessment of the risks to health presented by exposure, before carrying out the work;
- identify and implement the procedures needed to control exposure;
- record the significant findings of the assessment;
- prepare a suitable written plan of work detailing how the work is to be carried out without risk to health;
- provide employees who are liable to be exposed to asbestos and those who supervise such employees with information, instruction and training on the risks to health and the precautions to be taken;
- provide washing/changing facilities and facilities for the storage of protective equipment and personal clothing.

CATEGORIES OF WORKING WITH ASBESTOS

There are three categories for working with asbestos

LICENSABLE WORK

Licensable work with asbestos is -

- work where the exposure to asbestos is not **sporadic and of low intensity**; or
- work for which the risk assessment demonstrates that the **control limit** will be or is liable to be exceeded; or
- work on asbestos coating; or
- work on asbestos insulating board or asbestos insulation for which the risk assessment demonstrates that the work -
  - (i) is not **sporadic and of low intensity**; or
  - (ii) will be or is liable to exceed the **control limit**; or
  - (iii) is not **short duration work**

Where:

"Sporadic and Low Intensity" relates to the exposure risk and not the frequency of the asbestos work. Work which is likely to result in exposure at or above the short term exposure limit of 0.6 fibres per cubic centimetre (f/cm^3) of air measured over a 10 minute period cannot be considered sporadic and low intensity exposure.

"The Control Limit" for all types of asbestos is 0.1 fibres per cubic centimetre (f/cm^3) which is equivalent to fibres per millilitre (f/ml). This is the maximum concentration of asbestos fibres in the air (averaged over any continuous 4 hour period) that must not be exceeded.

"Short Duration Work" means work carried out by any one person for less than one hour in a seven -day period. The total time spent by all workers on the work in a seven-day period should not exceed a total of two hours including ancillary work liable to disturb asbestos.

"Asbestos Coating" means a surface coating containing asbestos for fire protective purposes or as both heat and sound insulation. It does not include textured decorative coatings.

"Asbestos Insulation" means any material containing asbestos and used for thermal, acoustic or other insulation purposes (including fire protection) except -

(a) asbestos cement or asbestos insulating board; or
(b) any article of bitumen, plastic, resin or rubber which contains asbestos and the thermal or acoustic properties of which are incidental to its main purpose.

"Asbestos Insulating Board" means any flat sheet, tile or building board consisting of a mixture of asbestos and other material except -

(a) asbestos cement; or
(b) any article of bitumen, plastic, resin or rubber which contains asbestos, and the thermal or acoustic properties of which are incidental to its main purpose.

Licensed work requires:

- use of a Licenced Contractor;
- notification 14 days in advance (HSE or local authority);
- preparation of specific asbestos emergency procedures,
- designation of asbestos areas;
- a medical examination every two years;
- health records to be maintained;
- compliance with risk assessment, control of exposure and training requirements.

Note: The HSE website holds a database of all current asbestos licensed contractors.

NOTIFIABLE NON-LICENSED WORK

Notifiable Non-Licensed Work requires:

- notification to the relevant enforcing authority before work commences;
- medical examinations by a doctor before exposure to asbestos begins and then at least every three years (There is a three year transition period for compliance expiring April 2015);
- a register of work (Health Records) to be kept by the employer for each employee exposed to asbestos e.g. copy of the notification with a list of workers on the job, plus the level of likely exposure of those workers to asbestos. This does not require air monitoring on every job if an estimate of degree of exposure can be based on experience of similar past tasks or published guidance;
- compliance with risk assessment, control of exposure and training requirements.

Assuming all exposure is **sporadic and of low intensity** and the **control limit will not be exceeded** and the **work does not require a licence** the following activates are Notifiable Non -Licensed Work:

- minor maintenance work involving asbestos insulation for example, repairing minor damage to a small section of pipe insulation where the exterior coating has been broken or damaged;

- minor removal work involving Asbestos Insulation Board (AIB) for example removing AIB panels fixed with nails or screws;

- removal work involving textured decorative coatings where the method of removal requires deterioration of the material. For example, where the material is treated by steam, hydrating gel etc. and scraped off the underlying surface;

- removal of asbestos paper and cardboard products if not firmly bonded into a matrix;

- maintenance work on Asbestos Cement (AC) which cannot be described as short and non-continuous;

- removal of AC which is substantially degraded e.g. badly fire damaged material, or where significant breakage (deterioration) is unavoidable to achieve removal,

Where:

“Textured Decorative Coating” means thin decorative and textured finishes, such as paints and ceiling plasters used to produce visual effects and which contain under 6% asbestos.

“Asbestos Cement” means a material which is predominantly a mixture of cement and chrysotile which when in a dry state absorbs less than 30% water by weight.

NON LICENSED WORK

Non Licensed Work requires:

- compliance with risk assessment, control of exposure and training requirements.

Notification, health records and medical surveillance do not apply because:

- the exposure of employees to asbestos is sporadic and of low intensity; and
- it is clear from the risk assessment that the exposure of any employee to asbestos will not exceed the control limit; and
- the work involves:
  - (i) short, non-continuous maintenance activities in which materials which are non-friable are handled; or
  - (ii) removal without deterioration of non-degraded materials in which the asbestos fibres are firmly linked in a matrix, or
  - (iii) encapsulation or sealing of asbestos-containing materials which are in good condition, or
  - (iv) air monitoring and control, and the collection and analysis of samples to ascertain whether a specific material contains asbestos.

Assuming all exposure is **sporadic and of low intensity**, the **control limit will not be exceeded** and the **work does not require a licence** the following activates are Non Licensed Works:

- short, non-continuous maintenance work involving AIB which is in good condition. For example , drilling holes in AIB to attach fittings or to pass through cables/pipes, cleaning light fittings attached to AIB, repairing very minor damage, e.g. a single broken corner, lifting ceiling tiles for inspection or access purposes;

- short, non-continuous maintenance work on AC;

- removal of AC. Weathered AC is likely to be able to retain the vast majority of fibres in its matrix and should not normally be regarded as degraded. Most AC can be removed whole and the inadvertent breakage of the occasional piece during manual removal will not attract Notifiable Non-Licensed Work requirements;

- short, non-continuous maintenance work on textured decorative coatings. For example, drilling holes, inserting screws;

- removal of textured decorative coatings when this can be achieved without deterioration of the material e.g. by careful cutting around backing sheets to achieve removal intact;

- removal, for example, of gaskets or asbestos rope cords from heating appliances which can be left in situ for disposal or can be lifted out virtually intact without substantial breakage;

- short, non-continuous maintenance work on clutch discs, brakes, friction products etc. unless significant damage (deterioration) is required e.g. by power tools;

- work to enclose or seal asbestos materials which are in good condition;

- air monitoring and control, and the collection and analysis of samples.

Where:

“Short non-continuous maintenance activities” include:

Activities involving asbestos insulation and asbestos insulating board, if any one person carries out work with these materials for less than 1 hour in a seven day period. The total time spent by all workers on the work should not exceed a total of 2 hours.

When calculating the time the work takes, you should include anything ancillary to the work which is liable to disturb the asbestos, including setting up enclosures and clearing any potentially affected area.

Please note that if short non-continuous maintenance activities are carried out by licensed contractors under this exemption, then it does not preclude the operatives concerned from carrying out other work with asbestos during the seven day period, it only precludes them from carrying out work under the short, non-continuous maintenance activities exemption within the seven day period.

“Firmly linked matrix” - the more firmly linked the asbestos containing material is, the likelihood of fibres being released is reduced. Examples of asbestos containing materials with a firm linked matrix include:

- asbestos cement (e.g. corrugated roof sheets, flue pipes, guttering);
- textured decorative coatings and paints which contain asbestos (e.g. artex);
- any article of bitumen, plastic resin or rubber which contains asbestos where its thermal or acoustic properties are incidental to its main purpose (e.g. vinyl floor tiles, electric cables, roofing felt).

There may be other materials in which the asbestos fibres can be firmly linked in a matrix such as paper linings, cardboards, felt, textiles, gaskets, washers or rope where the products have no insulation purposes. If this is the case then the exemption from licensing may apply.

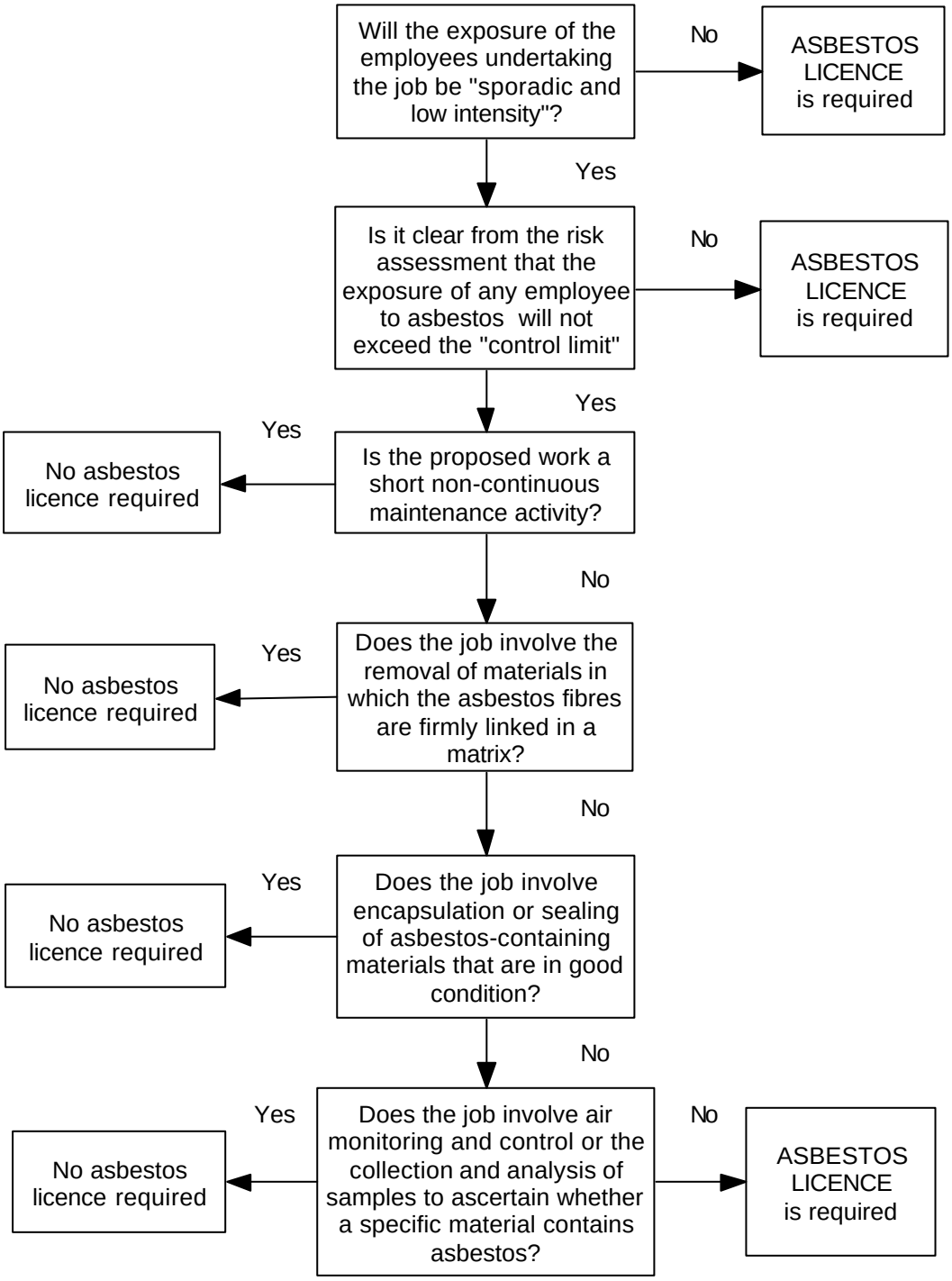
The Control of Asbestos Regulations does not define the terms **“friable”** or **“without deterioration”** of non degraded materials. The Oxford English Dictionary defines these as:

- Friable - capable of being easily crumbled or reduced to powder; pulverisable, crumbly.

- Deterioration - the action or process of deteriorating, a growing or making worse; a deteriorated condition.

- Degraded - having suffered degradation, worn down.

DETERMINING WHETHER AN ASBESTOS LICENCE IS REQUIRED TO WORK WITH ASBESTOS UNDER THE CONTROL OF ASBESTOS REGULATIONS



ASBESTOS TASK MANUAL

HSE guidance HS(G)210 - "Asbestos Essentials Task Manual" provides task guidance sheets for the building maintenance and allied trades. Tasks covered by the manual include drilling holes in asbestos insulating board, removal of a single asbestos insulating board ceiling tile, drilling holes in asbestos cement and other bonded materials.

Individual task guidance sheets can be downloaded from the HSE website -

www.hse.gov.uk/asbestos <http://www.hse.gov.uk/asbestos>

ASSESSMENT AND PLAN OF WORK

The Control of Asbestos Regulations require that a suitable and sufficient risk assessment is carried out for any work which is liable to expose employees to asbestos, so as to establish the potential risks and whether or not the work is licensable.

From this assessment, a plan of work with details of the work methods and controls to be used should be provided for both licensable and non-licensable work. The plan of work should always be job-specific; however, information from previous similar jobs can be used provided there are no additional risks and it is appropriate for the site conditions.

For licensable work, the plan of work must be site specific, readily available on site and cover in sufficient detail the following information:

- the scope of the work as identified by the risk assessment;
- details of hygiene facilities, transit route and decontamination arrangements, vacuum cleaners, protective clothing and RPE;
- details of the use of barriers and signs, location of enclosures and airlocks, location of skips, negative pressure units, air monitoring, cleaning and clearance certification, emergency procedures.

CLEANLINESS OF PREMISES AND PLANT

Once removal of the asbestos has been completed the premises must be thoroughly cleaned before being handed over for reoccupation. All visible traces of asbestos dust and debris must be removed and a thorough visual inspection carried out.

Where the work is licensable then a certificate of reoccupation should be issued following the 4-stage clearance procedure:

- a preliminary check on site conditions and job completeness;
- a full visual inspection inside the enclosure/work area;
- clearance air monitoring (see note below);
- final assessment after enclosure/work area dismantling.

Air measurements shall only be taken by those able to demonstrate they can carry out such work to the specified requirements in ISO 17020. Competence should be evidenced through accreditation with a recognised accreditation body such as the United Kingdom Accreditation Service (UKAS).

Analysis of the concentration of asbestos in the air shall be measured using the 1997 WHO recommended method.

Any person who issues a site clearance certificate for reoccupation must be accredited by an appropriate body (i.e. UKAS) as competent to perform work in compliance with ISO 17020 and ISO 17025.

WASTE DISPOSAL

All asbestos waste is classified as hazardous waste under the Hazardous Waste Regulations and must be disposed of at a licensed waste disposal site. For most waste, double plastic sacks are suitable provided they will not split during normal use. Large pieces of rigid material, e.g. cement sheets, should be double-wrapped intact in heavy gauge polythene sheeting.

The waste **must** be clearly labelled and transported by registered carrier in an enclosed vehicle, skip or freight container.

TRAINING

The Control of Asbestos Regulations require that anyone liable to be exposed to asbestos fibres at work undertakes relevant training. This includes maintenance workers and others who may come into contact with or who may disturb asbestos (e.g. electricians, plumbers, etc.) as well as those involved in asbestos removal work.

The three main types of training cover:

- licensable work - such as removing asbestos insulation or insulating board;
- non-licensable work - such as a roofer or demolition worker removing a whole asbestos cement sheet in good condition or analytical staff and asbestos surveyors;
- asbestos awareness - for those persons who are liable to disturb asbestos while carrying out their normal everyday work, or who may influence how work is carried out.

All training should be provided by someone who has had adequate personal practical experience and who has theoretical knowledge of all relevant aspects of the work carried out by the employer. All training certificates issued by such people or organisations should be traceable and valid for no more than 1 year.

(Chapter 4 of HSG247 Asbestos: The Licensed Contractors' Guide sets out the detailed content of the asbestos training modules for operatives, supervisors, managers, directors, supervisory licence holders and ancillary licence holders involved in licensable work).

A GUIDE TO LIKELY FIBRE CONCENTRATIONS

The figures below are a guide to the airborne fibre levels that may be expected close to the operator's breathing zone in a number of different processes. The following points should be borne in mind when using them:

They are based on measurements taken by HSE. Different processes in different locations may result in higher or lower concentrations that those listed in the table.
They are average concentrations for the time during which the process is actually taking place.

Selection of a figure from the list is not in itself an assessment. The person making the assessment must consider whether it is reasonably practicable to use methods that give a still lower value.

The estimated dust concentrations given are to help in making assessments of likely exposure and through the assessment to help in the choice of work methods, exposure control methods and protective equipment. The figures are a guide only; results may vary from one operation to the next, and the assessment should allow for that. If there is doubt about the likely exposure to asbestos dust then the precautions taken should be adequate to meet the worst case.

These figures are the concentrations found when the processes are carefully carried out. Bad handling practices may result in higher concentrations.

All the figures given for typical fibre levels for work with asbestos cement sheets and pipes are shown in fibres per millilitre of air. As shown, many of the tasks create dust levels above the control limit (0.1 f/ml) and therefore must be carried out by an asbestos licensed contractor.

Process		Concentration fibres/ml	
Asbestos Stripping Operations			
De-lagging	Dry stripping of Crocidolite	100-1000	
	Dry stripping, except Crocidolite	Greater than 20	
	Stripping with water sprays	5-40	
	Controlled wet stripping (thorough soaking of insulation)	1-5	
Removal of insulating board and tiles	Breaking and ripping out	5-20	
	Unscrewing and careful removal with application of local exhaust ventilation	Less than 2	
Asbestos Cement Sheets and Pipes (Normally Chrysotile)			
Machine cutting without exhaust ventilation	Abrasive disc cutting	15-25	
	Circular saw	10-20	
	Jig saw	2-10	
Machine sawing with exhaust ventilation		Below 2	
Reciprocating saw		Below 1	
Hand saw		Below 1	
Machine drilling		Below 1	
Removal of asbestos cement sheeting		Below 0.5	
Stacking of asbestos cement sheet after removal		Below 0.5	
Remote demolition of asbestos cement structures		Below 0.1	
(CAUTION: subsequent clearance may give rise to concentrations greater than 1)			
Cleaning of asbestos cement		Roofing	Vertical Cladding
	Dry brushing (wire)	3	5-8
	Wet brushing (wire)	1-3	1-2
	Water jetting	0-0.5	1-2
(NOTE: Water jetting may produce debris and slurry which is difficult to control and needs to be collected and disposed of as hazardous waste)			

Process		Concentration fibres/ml
Asbestos Insulation Board and Tiles (Normally Amosite and Chrysotile)		
Sanding and surforming		6-20
Machine cutting without exhaust ventilation	Circular saw	Greater than 20
	Jig saw	5-20
Machine cutting with exhaust ventilation		1-5
Drilling overhead		5-10
Drilling vertical columns		2-5
Hand sawing		5-10
Scribing and breaking		1-5
Rough handling of insulating board and removal of pieces		Greater than 15
Careful removal of whole boards		Up to 5
(NOTE: The dust levels are likely to be highest if Amosite is present and the material is handled roughly. Bad handling practices may result in much higher concentrations)		
Decorative Plasters		
Scraping painted plaster		0.1 - 0.2
Light hand sanding of unpainted area		Greater than 0.3
Mixing		Greater than 1

REFERENCES

The Control of Asbestos Regulations
The Hazardous Waste (England and Wales) Regulations
The List of Wastes (England) Regulations
L143 Approved Code of Practice and guidance for work with materials containing asbestos
HS(G)210 Asbestos Essentials Task Manual

GUIDANCE NOTE	ASBESTOS INFORMATION INSTRUCTION AND TRAINING	Code: H203	Issue: B

INTRODUCTION

In accordance with the Control of Asbestos Regulation employers **must** ensure that any employee employed by that employer is given adequate information, instruction and training where that employee:

- is or is liable to be exposed to asbestos, or if that employee supervises such employees;
- carry out work in connection with the employer's duties under the Control of Asbestos Regulations, so that they can carry out that work effectively.

ASBESTOS AWARENESS TRAINING

Asbestos awareness training is required to be given to employees whose work could foreseeably expose them to asbestos. Exemption from this requirement would apply only where the employer can demonstrate that work will only be carried out in or on buildings free from Asbestos Containing Materials (ACMs). Examples of those workers that may fall into this category are:

- general maintenance staff;
- plumbers;
- electricians;
- gas fitters;
- painters, decorators and plasterers;
- construction and demolition workers;
- heating and ventilation engineers;
- telecommunication engineers;
- fire and burglar alarm installers;
- i.t. installers;
- shop fitters;
- architects, surveyors and other such professionals.

Training should cover the following topics in appropriate detail, by means of both written and oral presentation, and by demonstration as necessary:

- the properties of asbestos and its affect on health, including the increased risk of lung cancer for asbestos workers who smoke;
- the types, uses and likely places where asbestos and ACMs may be found in buildings and in plant;
- the procedure to be followed to deal with an emergency such as the accidental disturbance or discovery of asbestos or ACM including if they suspect it may contain asbestos;
- how to avoid the risks from asbestos e.g. by confirmation from the employer that ACMs are not present. An employee should not carry out any work that may disturb the fabric of the building unless they have confirmation that ACMs are not present.

TRAINING FOR NON-LICENSABLE ASBESTOS WORK

This training is designed for those who undertake planned works with asbestos which is non-licensable such as:

- roofers or demolition workers removing whole asbestos cement sheets (in good condition);
- maintenance workers and their supervisors ;
- those who carry out asbestos sampling and analysis.

This training is in addition to the asbestos awareness training detailed above and should be delivered by means of both written and oral presentation, and by demonstration as necessary. It should include:

- details of the work which has the potential to expose them to asbestos, the importance of control measures to minimise potential exposure;
- how to make a suitable and sufficient assessment of the risks of exposure to asbestos including the control limits and the purpose of air monitoring;
- details of safe working practices, control measures, PPE including how their correct use can reduce the risks from asbestos, limit exposure to the workers and limit the spread of asbestos fibres outside the work area;
- maintaining control measures including the maintenance of enclosures (if applicable);
- procedures for reporting, recording and correcting defects;
- the purpose, choice and correct selection of suitable RPE including any limitations
- details of cleaning, maintenance and storage of RPE and PPE in accordance with manufacturer's instructions;
- rpe fit tests, including their relevance and the importance of achieving and maintaining a good seal;
- hygiene requirements, waste handling, decontamination and emergency procedures;
- an introduction to the regulations and Approved Codes of Practice that apply including any other relevant regulations that apply such as for the carriage and disposal of asbestos;
- any other work hazards that may apply such as work at height, use of tools, electrical equipment, plant etc;
- for analysts, personal sampling and leak and clearance sampling techniques.

Where equipment such as decontamination facilities, PPE, RPE, mini enclosures and other control techniques such as class H vacuum cleaners are to be used then practical training should be given. This should allow workers to practice using the equipment in a safe environment identifying any problems or issues before entering the work area.

Details of the procedure for providing information, instruction and training should be set out in writing and contained within the safety policy document. This should be reviewed regularly particularly when working methods change. Records of training undertaken by each individual should be kept.

TRAINING FOR LICENSABLE ASBESTOS WORK

This training is designed to be given to all employees involved in licensable works. This should include operatives, supervisors, managers, directors and supervisory license holders. It should be done in addition to the asbestos awareness training detailed above:

- the risks involved with taking potentially contaminated clothing or equipment home or elsewhere
- smoking and the increased risk of developing lung cancer;
- the risk assessment and the purpose of the plan of works;
- operations which could result in the exposure to asbestos and the importance of preventative controls to minimise exposure;
- control limits, the assessment of exposure and the importance of air monitoring to check compliance with the limit including the purpose of personal sampling;
- safe working practices, control measures, and protective equipment including an explanation of how the correct use of control measures, PPE and work methods can reduce the risks, limit exposure and limit the spread of asbestos outside of the work area;
- the importance of following the procedures controls and preventative measures set out in the plan of works and risk assessment. For managers and supervisors ensuring the workforce follow all work instructions;

- the maintenance of control measures including enclosures and negative pressure equipment;
- the procedures for reporting, recording and correcting defects;
- the purpose, choice and selection of RPE and its limitations;
- the use, cleaning, maintenance and safe storage of RPE with a focus on ensuring that the RPE is working correctly in accordance with manufacturer's instructions and information;
- the importance of achieving and maintaining a good seal around the face including the importance of fit tests and of being clean shaven;
- suitability, use, storage and maintenance of PPE including that used for transit
- hygiene requirements;
- decontamination procedures, particularly with enclosures, airlocks (including bag locks) and hygiene units;
- site organisation; marking out work areas, setting up barriers, transit routes, waste storage areas, pre-cleaning, sealing sources of potential leaks, construction and layout of the enclosure including negative pressure units, viewing panels and airlocks, positioning of decontamination units, air management and leak testing;
- controlled removal techniques and how they work including types of wet surfactant injection of sprayed asbestos and lagging, spray wetting of AIB and asbestos cement, wrap-and-cut, and glove bags (if relevant);
- waste handling including bagging procedures, storage and disposal;
- site clean-up and clearance procedures including the certification of re-occupation arrangements;
- emergency procedures including general procedures such as the uncontrolled release of asbestos fibres into the workplace or outbreak of fire;
- medical examination requirements;
- the results of any air monitoring carried out with an explanation of the findings;
- for analysts, personal sampling and leak and clearance sampling techniques;
- other work hazards such as work at height, electrical hazards, slips, trips etc;
- an introduction to the regulations and guidance.

ADDITIONAL TRAINING

Supervisors, managers, directors and supervisory license holders should be given the following additional training at an appropriate level so they can effectively carry out their role on site:

- details of responsibilities for all aspects of work on site;
- the importance of onsite supervisory duties at all key stages including witnessing smoke tests, ensuring hygiene facilities are fully operational before work starts, ensuring signs and barriers are erected, carrying out safety checks and ensuring work is carried out safely;
- producing and applying plans of work setting out appropriate procedures, controls and preventative measures based on the assessment, including how and when to update plans;
- how and when to notify the enforcing authority that work is taking place and situations where re-notification is necessary;
- dealing with situations where the methods set out in the plan cannot be followed due to a change in circumstances and a revision to the plan is needed;
- applying contingency procedures in the event of a failure of control;
- the importance of monitoring and auditing the work activities;
- the importance of having effective arrangements in place to communicate with and monitor workers inside the enclosure and hygiene unit;
- the need to provide additional information, instruction and training to workers as necessary such as the use of a particular piece of equipment or work method;
- assessing the competency of employees and identifying training needs;

- when and how air monitoring should take place including how to interpret the results and who to inform;
- how the results and records of personal air sampling, fit tests and medicals should be kept and maintained and to whom they should be communicated;
- how to apply the procedures for dealing with accidents, incidents and emergencies;
- keeping the work area clean and free of asbestos;
- the importance of ensuring that the correct procedures are followed at the end of the job to allow a certificate of reoccupation to be issued;
- an understanding of what the laboratory analyst will require before clearance sampling is undertaken and the certificate of reoccupation can be issued.

Practical training is essential for those entering enclosures such as operatives, supervisors and supervisory licence holders. Practical training is also required where people are required to use the following plant and equipment or carry out the following work activities or procedures:

- decontamination procedures and use of hygiene facilities;
- use of PPE, particularly RPE;
- construction of enclosures, airlocks and achieving sufficient numbers of air changes within the enclosure;
- controlled removal techniques, including the use of multiple and single needle injection systems, glove bags and wrap-and-cut;
- waste removal procedures on site including double bagging and removal through the bag lock.

Anyone who carries out any examination, testing (including clearance inspection, air monitoring and exposure monitoring) or maintenance of plant or equipment (eg LEV systems and RPE) should have had sufficient training and experience in inspection methods and techniques to ensure that they are competent.

REFRESHER TRAINING

Refresher training should be given at least every year and should be appropriate to the role undertaken. Those persons who require only awareness training could have refresher training as part of other health and safety updates. Employers should identify the specific training needs of their employees so that the refresher training can be appropriately tailored. It should not be a repeat of the initial training. Where training needs dictate, refresher training should include an appropriate element of practical training, particularly covering decontamination procedures, use of RPE, and controlled removal techniques. Refresher training will be required more frequently than annually if:

- work methods change;
- the type of equipment used to control exposure changes;
- the type of work carried out changes significantly.

REFERENCES

Control of Asbestos Regulation
ACoP L143 Work with materials containing asbestos

GUIDANCE NOTE	HAZARDOUS DUSTS, FUMES, GASES AND VAPOURS	Code: H400	Issue: A

INTRODUCTION

Hazards from substances can be divided into two main areas: **physical hazards** and **health hazards**. This section looks at the health hazards from situations in which internal damage to employees can be caused, involving, for example, disorder or malfunction of the lungs, stomach, ear or brain.

HAZARDOUS DUSTS, FUMES, GASES AND VAPOURS

Substances harmful by inhalation are usually in the form of dusts, fumes, gases or vapours.

It should be noted that smoking increases the health risks associated with inhalation hazards. This has particular importance where there is a risk of lung disease or cancer. Active measures shall be taken to promote awareness of this fact to all levels of employees.

It is a legal requirement under the Control of Substances Hazardous to Health Regulations to assess the extent of the risk prior to permitting anyone to enter or work in an area where such hazards exist. An assessment may reveal that it is necessary to provide adequate natural ventilation. However, in many cases, the assessment will initially have led to an evaluation of both the amount and concentration of the hazardous substance present in the atmosphere, which in turn would have resulted in implementing controls for entry into the area, the provision of forced ventilation and/or extraction, the monitoring of the atmosphere and the provision and use of respiratory protection.

In a confined space an assessment of the oxygen content, to ensure that the oxygen levels are within the range of 18% to 21.5% and to assess the possibility of the atmosphere being explosive or flammable, shall be carried out.

Entry into any area where the atmosphere is unsafe shall be strictly controlled and supervised, and the necessary safety precautions shall be laid down and strictly complied with.

If, after all reasonably practicable steps have been taken to ensure adequate ventilation, the hazard still exists, the use of respirators or breathing apparatus shall be necessary. The type of respiratory protective equipment (RPE) required needs careful evaluation if the correct and most cost-effective choice is to be made. Respirators shall not be worn in oxygen deficient areas; only breathing apparatus that is self-contained or fed by an airline shall be used.

The certificate of approval, issued annually by the Health and Safety Executive, lists the types of RPE approved for use in conjunction with specific legislation, such as the regulations applicable to lead and asbestos. The types of RPE available may be suitable for the filtration of a variety of substances - the suitability shall be checked with the manufacturers or suppliers of the equipment.

Adequate instruction and training shall be given to all those required to use RPE, both in use, hazards and rescue procedures.

All dusts, gases and fumes shall be regarded as hazardous to health until such time as evidence to the contrary is provided.

DUSTS

Most of the damage and toxic effects take place once the dusts, etc. reach the deep lung spaces and those particles that are small enough to reach these areas are regarded as "respirable" dusts. Airborne dusts that do not contain substances recognised as being hazardous to health are regarded as "nuisance" dusts.

Where possible, the dusts shall be cleaned up as they are created and dust-inhibiting measures, such as damping down surfaces, vacuum cleaning and the exhaust ventilation of power tools, shall be taken.

Typical hazardous dusts are:

Asbestos

In maintenance, refurbishment and demolition, asbestos in the form of cement products, lagging, sprayed coatings and insulation boarding (including old ceiling tiles) is often encountered.

There are two main safety hazards associated with asbestos:

- Asbestosis. - This may result from working with all types of asbestos. It is a chronic industrial lung disease, slow in onset, leading to increasing breathing difficulties and eventual respiratory disablement. It is dose-related and results from a long exposure.
- Mesothelioma. - This results from the inhalation of asbestos. This is a specific and serious form of cancer only found after exposure to asbestos and affects either the lining of the lung cavity or the abdominal wall.

Wood Dust

This is caused through sawing, routing, moulding, carving and sanding.

The hazards associated with exposure to wood dusts include asthma, skin disorders, and irritation to the eyes and respiratory system. There is also evidence that certain wood dusts are carcinogenic.

Where exposure cannot be prevented, suitable and sufficient assessment of the risks from airborne dust must be carried out such that adequate controls can be implemented. This may mean additional ventilation is required, i.e. local exhaust ventilation at machines, along with the use of suitable personal protective equipment (PPE).

Man-Made Mineral Fibres (MMMF)

These fibres are widely found in use as a replacement for asbestos and in the form of fibreglass insulation in lofts and other areas.

There is little evidence to indicate that MMMFs are a cause of cancer. However, inhalation is to be avoided as irritation of the respiratory system is a common health effect. Other effects include skin irritation and dermatitis where contact with the skin is regular and/or prolonged.

PPE would normally include overalls (tightly woven Terylene or similar), impervious gloves and approved respirators.

Plaster, Mortar and Cement

Cementitious materials contain lime. Inhalation of dry dust is likely to irritate the respiratory system. Contact with the eyes and skin may also irritate and burn.

Dust respirators shall be used along with eye protection and the skin shall be protected.

When wet, the skin shall be protected either by gloves or with the use of barrier creams.

Silica and Quartz Dust

Large quantities of silica-bearing rocks are crushed for the production of aggregates to make concrete. There are hazards, not only in the crushing operation, but also in the batching of the aggregates, the abrasive cleaning of buildings and the drilling or scabbling of concrete.

The major hazard is that of silicosis, the effects of which are the same as asbestosis. The precautions to be taken are, where appropriate, the use of “wet” methods of work, total enclosure of the work area, exhaust ventilation, RPE and the segregation of other workers.

FUMES, GASES AND VAPOURS

The majority of gases and vapours have a toxic effect and inhalation usually results in rapid absorption into the blood stream. Others may have the effect of reducing the percentage of oxygen in the atmosphere, which could lead to the asphyxiation of workers. Exposure to exhaust gases from vehicles and machinery are particularly dangerous in confined spaces, such as tunnels, sewers and manholes.

Oil mists can also be created by the exhaust of pneumatic tools and can build-up in a confined space or poorly ventilated area and can cause nausea.

The use of chemicals with potential toxic properties is increasing in the workplace. Solvent fumes can be given off by drying paint, lacquers and adhesives. They are frequently heavier than air and can build-up in confined spaces, displacing the oxygen. Polymer resins give off styrene, and glues and foams can give off isocyanates.

Examples of hazardous fumes, gases and vapours include:

Isocyanates

These are used in adhesives, insulation foams, paints and varnishes. The most hazardous operation involving isocyanates is the spraying of foam compounds in which isocyanates are present.

They act as an irritant to the respiratory tract and may cause sensitisation - leading to asthma, dermatitis and damage to the eyes.

Precautions include the wearing of protective clothing, the provision of exhaust ventilation and, where necessary, the use of full-face breathing apparatus.

Liquefied Petroleum Gases (LPG)

Though we are usually well aware of the hazards connected with LPG it is not usually appreciated that the use of LPG space heaters in confined areas can, without adequate ventilation, cause a deficiency of oxygen in the atmosphere resulting in asphyxiation. Propane and butane have a narcotic effect as well as presenting a risk of explosion.

When using LPG it must be ensured that there is adequate high- and low-level ventilation.

Solvents

Solvents normally give off a vapour, which can be flammable and even explosive. These are frequently found in paints, adhesives, paint strippers, varnishes, mastics, surface coatings, etc. The inhalation or absorption of solvents through the skin can result in impaired judgement, dizziness, headaches and unconsciousness. Other possible effects include skin irritation and dermatitis. The risk is greater when the solvents are used in confined spaces or poorly ventilated areas.

Where possible, the area should be well-ventilated. However, air quality monitoring and the use of RPE may be required in potential confined space situations. Skin contact should be avoided by means of impervious clothing and gloves. Smoking, eating and drinking should be prohibited in the working area and good personal hygiene practices encouraged.

HAZARDOUS CONTACT WITH THE SKIN AND MUCOUS MEMBRANES

Many fumes and dusts can be harmful in contact with the skin and mucous membranes, e.g. eyes and nasal passages. There are also many equally harmful chemical-based products.

The most common hazard is occupational dermatitis. Occupational dermatitis is neither infectious nor contagious, but will continue for as long as the sufferer is in contact with the offending substance and often longer. If a person is allergic to the substance it is not safe for them to handle that substance at any time.

Many materials are known to potentially cause adverse health effects, although the level of reactions to substances does vary from person to person. The following list includes some known to fall into this category:

- Pitch, tar and bitumen;
- Brick, stone and plaster dust;
- Cement;
- Paints, lacquers, stains and varnishes;
- Woods;
- Epoxy resins;
- Acrylic and formaldehyde resins;
- Chromates present in primer paints, cement, etc.;
- Petrol, thinners and white spirit;
- Acids and alkalis.

The incidence of occupational dermatitis can be reduced by the provision and use of protective clothing and barrier creams to help prevent skin contact with the material, and by practicing good personal hygiene such as regularly washing off contaminants.

SUBSTANCES HAZARDOUS BY INGESTION

The ingestion of hazardous substances is likely to cause internal irritation and may cause systemic poisoning. In the majority of cases the risk of this occurring can be significantly reduced or even eliminated when the following precautionary steps are followed:

- Using substitute materials which are safer or less toxic;
- Ensuring that employees are aware of the hazard when using substances;
- Establishing safe systems and instructing employees in the safe use of toxic substances;
- Ensuring that all substances are correctly and clearly labelled;
- Prohibiting drinking, eating and smoking in areas where toxic substances are stored or used;
- Promotion of a personal hygiene programme and health education;
- Provision of the correct PPE and ensuring its use.

GUIDANCE NOTE	GAS CYLINDERS GENERAL HANDLING AND STORAGE	Code: H401	Issue: A

CYLINDER IDENTIFICATION

- **Acetylene** cylinders are wholly painted maroon and the outlet valves are threaded left-handed.
- **Argon** cylinders are wholly painted dark green and the outlet valve threads are right-handed.
- **Oxygen** cylinders are painted black with a white shoulder and the outlet valve threads are right-handed (valves are, therefore, not interchangeable).
- **Propane** cylinders are wholly painted red and the outlet valves are threaded left-handed.

Under no circumstances are cylinders to be painted other than in their original colours or coated in any way to mask these colours.

GAS CHARACTERISTICS

- **Acetylene** has a distinctive smell of garlic, is highly flammable and may, mixed with air or oxygen, form an explosive mixture.
- **Argon** is non-flammable and inert. However, as it is odourless, colourless and heavier than air it can be deadly if inhaled or used in a confined space.
- **Oxygen** has no smell and is not itself flammable. However, an oxygen enriched atmosphere can be extremely dangerous, causing otherwise non-flammable materials to burst into flames.
- **Propane** smells of rotting vegetation and is heavier than air. It may, therefore, collect in low-lying areas. Further information is given in the guidance notes regarding liquefied petroleum gases (H404).

STORAGE OF CYLINDERS

Oxygen cylinders are to be stored at least 3 metres away from those containing fuel gases, since any mixture of fuel gas and oxygen, which might result from leaking cylinders, can cause an explosive mixture.

Gas cylinders are to be kept on a hard standing, in a safe place, in the open air wherever possible. Where this is not possible they are to be kept in a storeroom, constructed of non-flammable materials, with adequate high- and low-ventilation. Oxygen cylinders are not to be kept in the same storeroom as acetylene or liquefied petroleum gas.

Gas cylinders, whether full or empty, are to be stored in an upright position. Full cylinders are to be stored apart from empty ones.

Oxygen cylinders may be stored horizontally, no more than four cylinders high and wedged, to prevent rolling.

All vertically stored cylinders are to be secured to prevent them falling.

Full cylinders are to be stored separately, away from empty ones.

Cylinders are to be shielded from direct sunlight or other heat sources to prevent the build-up of excessive internal pressure and cylinders should be stored away from any combustible materials.

CYLINDER HANDLING

Compressed gas cylinders should be handled only by those familiar with the hazards and who are trained in the proper handling techniques. Cylinders containing compressed gases are heavy and awkward to move. Improper handling of com- pressed gas cylinders can result in sprains, strains, falls, bruises, or broken bones. Other hazards such as fire, explosion, chemical burns, poisoning, and cold burns could occur if gases accidentally escape from the cylinder due to mishandling.

Hands and clothing are to be free from grease, oil and grit when cylinders are handled. This is to prevent them from slipping, to prevent grit from getting into the valve assembly, or grease from getting onto the nozzle or valve.

Nozzles are not to be used for handling purposes; they are not designed to withstand the weight or stress.

Cylinders in use are to be stored and transported on the trolleys provided. If it is necessary to move a cylinder that is not on a trolley, all regulators and hoses are to be removed and a check made to ensure that the valve is shut.

Under no circumstances are cylinders to be dragged, slid, rolled along the ground or used as rollers for moving materials and equipment.

If cylinders are to be moved by crane they are to be secured in a cradle. On no account are they to be moved using chains or slings, as these are likely to slip, allowing the cylinder to fall.

Gas cylinders are to be treated with care and not subjected to falls or shocks. When they are being unloaded from vehicles they are to be lowered and are never to be dropped.

TRANSPORTING CYLINDERS

Transporting cylinders of more than 5 litres capacity by road will invoke the Carriage of Dangerous Goods by Road Regulations.

Gas cylinders are to be transported in the vertical position. If they are ever left lying down they are to be stood upright for at least 10 minutes prior to being used. Always secure cylinders when being transported.

REGULATORS

Regulators are always to be fitted to the cylinders to reduce the gas pressure from that in the cylinder to the working pressure of the torch/blowpipe. Only regulators designed for the specific gas in the cylinder are to be fitted to it.

All regulators are to be fitted with filters, but too much dust can clog them. To prevent this happening the cylinder valve is to be “cracked open” before the regulator is fitted to the cylinder, this will blow all the dust clear.

The adjusting screw of the regulator is to be released before the cylinder valve is opened and the valve is to be opened gradually. If the valve is opened suddenly, the abrupt compression of the gas may generate excessive heat, causing the valve seat material to ignite and damage the gauge.

Periodic checks are to be made to ensure that no gas is escaping from the regulator when the pressure regulating screw is set at zero. A leak may cause a pressure build-up in the hose. Water, containing detergent, is to be used to check for leaks. Bubbles in the detergent are an indication of leaking gas.

HOSES

Hoses are to be kept for one type of gas only and colour coded for identification.

Acetylene	Red
LPG/Propane	Orange
Argon, Nitrogen, other inert gases	Black
Oxygen	Blue

Hoses are to be inspected daily to ensure that they are free from:

- Cuts.
- Cracks.
- Burns.
- Worn patches.

Hoses are to be effectively clipped or crimped, although not with jubilee clips, to the equipment and protected from:

- Sharp edges.
- Falling metal.
- Passing traffic.
- Heat sources/sparks from welding.

NON-RETURN VALVES AND FLASHBACK ARRESTORS

If the oxygen and fuel gases become mixed in one hose an explosive mixture can result in a “flashback”. To prevent this, each hose is to be flushed with its own gas prior to the blowpipe being lit. This is to be done in a well-ventilated area and away from ignition sources.

To prevent the gases mixing in the hoses during use, non-return valves are to be fitted to each blowpipe inlet connection. Flame arrestors are also to be fitted.

If the nozzle of the blowpipe becomes damaged or blocked a build-up of pressure can result in a reverse flow of gas and a “flashback” can occur. Therefore, blowpipes are to be checked prior to use and are to be dismantled and cleaned on a weekly basis.

GENERAL PRECAUTIONS

- Only proprietary fittings are to be used.
- If a cylinder’s valve leaks and it cannot be closed with a spanner, the valve is to be shut and the cylinder returned to the supplier. A label should be attached detailing the problem.
- If an oxygen cylinder leaks in an enclosed area it is to be purged with fresh air.
- Cylinder valves are never to be packed with washers.
- The flame is never to come into contact with the cylinder.
- Oil, grease or other fatty substances are not to be allowed to come into contact with oxygen regulators, valves or fittings, as these are spontaneously combustible in contact with oxygen.
- Disused oil drums are not to be used as “workbenches” as only a small amount of residual oil within the drum can lead to an explosion.

- Never insert an object (e.g., wrench, screwdriver, etc.) into valve cap openings to remove a stuck cylinder cap. Doing so may damage or open the valve, causing a leak to occur. Use an adjustable strap-wrench to remove over-tight or rusted caps.
- Always know and understand the gases and associated equipment you will be using. Refer to the supplier's MSDS to determine the proper PPE and any other special requirements for the gas being used.

LEAK DETECTION

Cylinders, valves, connections, piping and hoses are to be inspected regularly for leaks.

Leaks may be identified by:

- Smell.
- The sound of escaping gas.
- Condensation or frost around the area of the leak.
- Brushing soapy water over the suspect area or valve and looking for bubbles.

If a leak is discovered and it cannot be stopped, the cylinder is to be removed as quickly as possible to an open space which is clear of drains, culverts, etc. It is to be placed with the leak uppermost, marked with warning notices and the supplier notified.

EMERGENCY ACTION

Be aware of potential hazards and develop plans to cover possible emergencies. Use emergency drills to practice implementing these plans. Inform local hospitals, fire departments, and other emergency response organizations of the gases in use so that they, too, will be prepared in the event of an emergency.

In the event of an emergency it is important to avoid endangering life. The following action is to be taken in all but the most minor of incidents:

- Call the emergency services.
- Evacuate all unnecessary personnel.

In the case of a leak without a fire, stop the escape of gas, if possible. Remove defective cylinders, as detailed above.

GUIDANCE NOTE	OXY/GAS WELDING AND CUTTING	Code: H405	Issue: A

There may be a need for a hot-works permit to be in place prior to commencing the task; a written permit system is likely to result in a higher standard of care and supervision.

INTRODUCTION

Oxygen has no smell and is not itself flammable. However, an oxygen enriched atmosphere can be extremely dangerous, causing otherwise non-flammable materials to burst into flames.

Acetylene has a distinctive smell of garlic, is highly flammable and may, when mixed with air or oxygen, form an explosive mixture.

Propane smells of rotting vegetation and is heavier than air. It may, therefore, collect in low-lying areas.

Please refer to the guidance notes regarding gas cylinders (H401) for general advice on handling, storage, equipment, precautions and emergency actions. Advice specific to oxy/gas welding and cutting is detailed below. Please refer also to the guidance notes regarding liquefied petroleum gases (H404).

STORAGE OF CYLINDERS

Oxygen cylinders are to be stored at least 3 metres away from those containing fuel gases, since any mixture of fuel gas and oxygen, which might result from leaking cylinders, can cause an explosive mixture.

Gas cylinders are to be kept on a hard standing, in a safe place, in the open air wherever possible. Where this is not possible they are to be kept in a storeroom, constructed of non-flammable materials, with adequate high- and low-ventilation. Oxygen cylinders are not to be kept in the same storeroom as acetylene or liquefied petroleum gas.

Gas cylinders, whether full or empty, are to be stored in an upright position.

Oxygen cylinders may be stored horizontally, no more than four cylinders high and wedged, to prevent rolling.

All vertically stored cylinders are to be secured to prevent them falling.

Full cylinders are to be stored separately, away from empty ones.

Cylinders are to be shielded from direct sunlight or other heat sources to prevent the build-up of excessive internal pressure.

OPERATIONAL FAULTS

Flame Snap Out

This is the unintentional extinction of the flame outside the nozzle. It can occur during use due to:

- Both regulators being at an incorrect pressure.
- The torch nozzle being obstructed.
- The nozzle being held too close to the work.
- The blowpipe valves not being sufficiently open to allow an adequate flow of gas.

The following corrective action should be taken:

- Completely shut torch valves.
- Check regulator settings.
- Check nozzles.
- Relight.
- Ensure there is an adequate gas flow.

Backfire

This is the retrogression of the flame towards the blowpipe mixer, the flame either being extinguished or reignited at the nozzle. For causes and action see the notes regarding sustained backfire below.

Sustained Backfire

This is the retrogression of the flame into the blowpipe neck or body, the flame remaining alight. It can occur on lighting-up due to:

- Regulators not being set to the correct pressure.
- Light being applied before a flow of gas mixture has been properly established.

The following corrective action should be taken:

- Close both blowpipe valves, oxygen first.
- Check the cylinder pressure.
- Check and adjust the regulator settings.
- Check the torch.
- Relight when the gas flow is properly established.

It can occur during use due to:

- Regulators not being set to the correct pressure.
- The nozzle being obstructed.
- The nozzle overheating.

The following corrective action should be taken:

- Close both blowpipe valves, oxygen first.
- Check the cylinder pressure.
- Check and adjust the regulator settings.
- Cool the torch and check.
- Clean the nozzle of any obstruction.
- Purge both hoses and relight.

Flashback

The most dangerous of these occurrences, flashback is caused by mixed gases in the hose or hoses.

The following preventative action should be taken:

- Ensure all connections are tight.
- Ensure the cylinder valves are open and the blowpipe valves are shut.
- Set the regulators to the required pressure.
- Purge each hose separately by opening the blowpipe valve and allowing gas to flow long enough to ensure only pure gas is in the hose.
- Ensure the blowpipe is fitted with a spring-loaded non return valve.
- Shut the valve for each hose as the exercise is completed.
- Only carry out this procedure in a well-ventilated area.
- Maintain the equipment in a good condition

Corrective action:

- Shut both blowpipe valves.
- Shut both cylinder valves.
- Extinguish the hose, if alight.
- Remove the gas regulator, if the “bull nose” is sooty carry out the procedure for a heated cylinder.
- If the “bull nose” is clean, replace the regulator.
- Repair or replace the hose or hoses.
- Check if the cut-off valve has shut, reset or replace it.
- Reassemble the equipment and continue with the work.

Heated Cylinder

The gas cylinder can become accidentally heated or get hot due to internal decomposition.

The operator should:

- Raise the alarm.
- Remove any external heat source.
- Shut-off valves and detach the regulator and other fittings.
- Drag the cylinder into an open space.
- Apply a flow of water until the cylinder is cool, or immerse the cylinder.
- Open the valve fully and apply water until the cylinder is empty.

Site supervision is to:

- Clear the area of personnel.
- Ring the fire brigade.
- Contact the supplier/manufacturer for advice.

HAZARDS

The main hazards from gas welding are:

- Fires.
- Explosions.
- Burns.
- Eye damage.
- Respiratory disease.
- Systemic poisoning.

The correct organisation of work and the selection of suitable equipment can minimise these risks.

PRECAUTIONS

Burns

Skin burns can result from metal splatter or from touching hot workpieces. Prolonged exposure to the heat from welding can result in reddening of the face.

The hands, arms and legs are to be covered at all times whilst welding. Where necessary, leather gauntlets, jackets and spats shall be issued.

Eye Damage

Sparks, splatter, slag and other foreign bodies may penetrate the eyes. During gas welding, infrared (IR) radiation and visible light are produced. Exposure of the eyes to IR radiation may cause the outer surface of the eye to dry out and the eye to become irritated. The eyes must be protected from infrared and visible light by means of box goggles with a housing made that complies with BS EN 175 and fitted with the appropriate filters to BS EN166, as required by the Personal Protective Equipment at Work Regulations.

Persons working in the vicinity of welding are to be protected by welding screens around the working area, or, if that is not practicable, shall be issued with the appropriate eye protection.

Heat Stress

The longer the duration of welding, the hotter the surroundings can become. This is intensified in confined spaces. In extreme cases the operator may faint. Ventilation shall be provided in areas where thermal stress can be envisaged and a second person shall stand by in case of emergencies.

Respiratory Disease

All welding processes produce gases and fumes, which can result in respiratory diseases, with an increased risk of asthma and cancer.

Harmful gases may also be produced during gas welding - the principal toxic gases produced being carbon monoxide and nitrous fumes. Carbon monoxide is only produced in large enough amounts to be dangerous when there is incomplete combustion.

In working areas, where there is insufficient natural ventilation to clear any fumes or gases, extract ventilation shall be provided along with any respiratory protective equipment (RPE) that is deemed necessary.

Systemic Poisoning

Galvanised metal, lead-coated or other toxic metals may give off toxic fumes, which may affect other parts of the body. Exhaust ventilation shall be provided for all welding or cutting taking place on these types of materials, along with any RPE that is deemed necessary.

Lead

When working with lead, the requirements of the Control of Lead at Work Regulations come into effect. Further information is detailed in section O regarding health surveillance and the management of occupational illness, and in the guidance notes regarding exposure to lead in the construction industry (H603).

Fire/Explosion

Where welding is carried out near to flammable materials or gases, fire and explosion are always a danger. Wherever possible, flammable substances are to be removed from, or kept out of, welding areas. If this is not possible, fire-resisting sheets are to be utilised to protect the surroundings from flames, sparks and splatter. At least one fire-extinguisher is to be available in every area where welding is carried out. The following types of extinguishers are to be provided:

Combustible material	Type of extinguisher
Organic such as paper and wood	Water
Electrical installations	Dry powder CO_2 BCF
Oil or flammable liquid fires	Dry powder Foam CO_2 BCF

Noise

Oxy/gas welding and any associated chipping can result in noise levels above the control levels. See the guidance notes regarding noise at work (B008).

Reference: Safety in Gas Welding produced by the HSE

GUIDANCE NOTE	ALUMINIUM WELDING/CUTTING	Code: H406	Issue: A

There may be a need for a hot-works permit to be in place prior to commencing the task.

CHARACTERISTICS OF ALUMINIUM AFFECTING ITS WELDABILITY

Aluminium is one of the most weldable of all metals, but its particular characteristics demand different welding techniques to those used for steel.

Gas and metal arc welding, as applied to aluminium, are now almost obsolete and generally used only for individual applications where the quality of the welding is not paramount.

For general engineering fabrication the two most important and widely used methods for fusion welding aluminium are the Tungsten Inert Gas (TIG) and Metal Inert Gas (MIG) processes, in which the arc and molten metal are shielded from the atmosphere by an envelope of inert gas.

Electrical Conductivity

The electrical conductivity of aluminium is greater than that for steel and it therefore requires higher capacity power sources for resistance welding.

Oxidisation

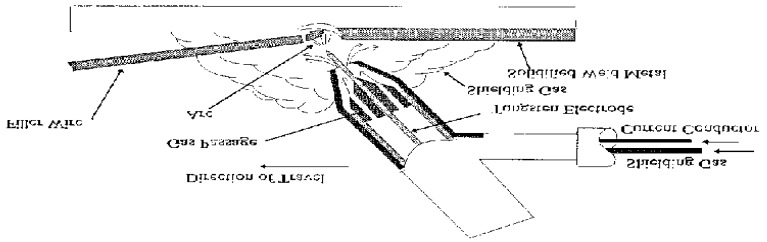
A thin transparent layer of aluminium oxide is always present on the surface of aluminium. It is continuous, does not flake off and if removed will reform under the action of oxygen or air. Before welding, this inherent oxide must be removed by scratch brushing and prevented from reforming by suitable fluxes or by the action of an electric arc under an inert gas shield.

Preliminary Welding Procedures

Weld areas must be properly prepared, cleaned and degreased to remove any hydrogen bearing compounds, and welding material must be of the correct quality and condition.

TIG Welding

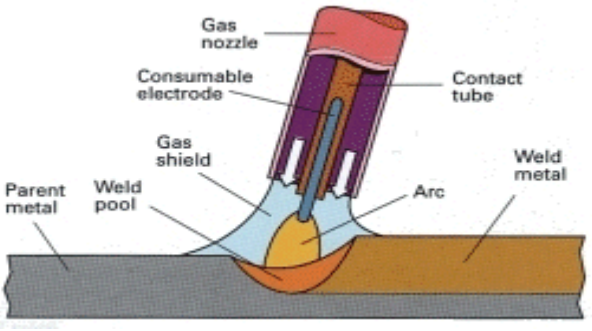
For welding aluminium, an alternating current arc is struck between a tungsten electrode and the aluminium. A filler rod, if required, is fed independently. Fluxes are not required because the arc cleans the electrode and the aluminium, and re-oxidisation is prevented by a shield of inert gas. Control by the welder of both heat input and the addition of filler material enables a high degree of penetration control, and is normally preferred for welding unbacked butt joints which are accessible from one side, or for any other work involving intricate torch manipulation, such as pipes and complex extruded sections.



The Tungsten Inert Gas (TIG) Process

MIG Welding

In the MIG process, a direct current of arc of reverse polarity (with the electrode positive) is struck between the aluminium and a continuously fed aluminium wire electrode, which also acts as a filler. As in the TIG process, fluxes are not required because the arc cleans the aluminium and re-oxidisation is prevented by a shield of inert gas. The aluminium wire is fed semi-automatically to the weld area at a speed balancing the burn-off rate, which in turn is determined by the current setting required for the weld. The MIG process lends itself to high-speed welding but penetration cannot be controlled as closely as in the TIG process so butt joints normally have to be backed or welded from both sides.



The Metal Inert Gas (MIG) Process

Equipment

Basic equipment used for MIG or TIG includes;

- Power Source:
  - Controllable AC/DC power source 1A-300A and 60V-100V.
  - AC/DC rectifier, AC only, or DC only power sources with drooping characteristics are required.
- High Frequency Unit. - Initiates the arc without the electrode touching the workpiece by means of a high-frequency spark, which prevents weld contamination.
- DC suppresser unit. - Stabilise the AC arc
- Suppress DC tendency of AC arc. This is only required when welding aluminium, magnesium and their alloys.
- Contactor - Breaks the arc without removing the electrode and gas shield from the weld area. Protects the operator by cutting of the open circuit voltage when the torch is not in use. Contactor may be operated by a switch on the torch or by use of a foot pedal. Foot control also allows for current adjustment.
- Cables - Of a type recommended by the manufacturer with suitable plugs and connections.
- Torch - Air-cooled for light duties to approx. 1.6mm thickness. Water-cooled for heavier duty up to 12mm thickness.
- Electrodes - Non-consumable electrodes are made from tungsten, some with certain additives i.e. thoriated electrodes mainly used for stainless and heat resistant steel. Used on DC negative polarity.
- Zirconiated electrodes used for AC welding of Aluminium or Magnesium.

Control of Process

There are three main parameters to be controlled, which are:

Current Filler-wire addition Travel Speed

Current range is dependent on the type and size of electrode used, material thickness and joint position. A high level of skill and dexterity are required to co-ordinate addition of filler wire to travel speed and to maintain a constant arc length.

Safety

The main danger when carrying out TIG or MIG welding is due to the high current in the cabling.

Care should be taken to ensure that there is good insulation of all power cables, secure welding clamps and protection against arc radiation. The high-frequency spark used to initiate the arc is liable to break through any breach in the insulation. The spark can cause very deep, serious burns, which would require medical attention as soon as possible.

The delivery of inert gases causes no significant danger directly, as they are by their nature non-reactive, but they may lead to a reduction in the oxygen content of the air to a point where asphyxiation occurs. Operatives should ensure that there is adequate ventilation at all times.

HAZARDS

The main hazards from aluminium welding are:

- Fires.
- Explosions.
- Burns.
- Eye damage.
- Respiratory disease.
- Systemic poisoning.

Correct organisation of the work and the choice of suitable equipment can minimise these risks.

PRECAUTIONS

As with all industrial operations, the safety aspects of welding aluminium must be fully considered.

It is necessary to protect the skin against direct or reflected ultra-violet radiation from the arc.

Skin burns can result from metal splatter or from touching hot workpieces. Prolonged exposure to the heat from welding can result in reddening of the face.

The hands, arms and legs are to be covered at all times whilst welding. Where necessary, leather gauntlets, jackets and spats shall be issued.

Eye Protection

Currents for welding aluminium are higher than those for steel, so additional protection from the more intense arc radiation is necessary.

Everyone working in a welding area must wear anti-flash goggles. Sparks, splatter, slag and other foreign bodies may penetrate the eyes. During gas welding, infrared (IR) radiation and visible light are produced. Exposure of the eyes to IR radiation may cause the outer surface of the eye to dry out and the eye to become irritated. The eyes must be protected from infra-red and visible light by means of box goggles fitted with appropriate filters to BS EN 169.
Persons working in the vicinity of welding are to be protected by welding screens around the working area, or, if that is not practicable, shall be issued with the appropriate eye protection.

The welding head-screen shall have a filter lens of the correct EW rating to protect your head and eyes from sparks, heat and UV radiation, such as:

EW8 = 0-15amps;
EW9 = 15-75amps;
EW10 = 75-100amps
EW11 = 100-200amps
EW12 = 200-250amps
EW13 = 250-320amps
EW14 = 320-400amps

Fumes

Adequate ventilation and fume extraction, or airflow helmets are necessary.

Heat Stress

The longer the duration of welding, the hotter the surrounding can become. This is intensified in confined spaces. In extreme cases the operator may faint. Ventilation shall be provided in areas where thermal stress can be envisaged and a second person shall stand by in case of emergencies.

Respiratory Disease

All welding processes produce gases and fumes, which can result in respiratory diseases.

Harmful gases may also be produced during gas welding, the principal toxic gases produced being carbon monoxide and nitrous fumes. Carbon monoxide is only produced in large enough amounts to be dangerous when there is incomplete combustion.

In working areas, where there is insufficient natural ventilation to clear any fumes or gases, extract ventilation shall be provided along with any respiratory protective equipment (RPE) that is deemed necessary.

Systemic Poisoning

Galvanised metal, lead-coated or other toxic metals may give off toxic fumes, which may affect other parts of the body. Exhaust ventilation shall be provided for all welding or cutting taking place on these types of materials along with any RPE that is deemed necessary.

Lead

When working with lead, the requirements of the Control of Lead at Work Regulations come into effect. Procedures for Working with Lead will be provided where applicable.

Fire/Explosion

Where welding is carried out near to flammable materials or gases, fire and explosion are always a danger. Wherever possible, flammable substances are to be removed from, or kept out of, welding areas. If this is not possible, fire-resisting sheets are to be utilised to protect the surroundings from flames, sparks and splatter. At least one fire-extinguisher is to be available in every area where welding is carried out. The following types of extinguishers are to be provided:

Combustible Material	Type of Extinguisher
Electrical Installations	Dry Powder CO_2

Principal Welding Processes for Aluminium Alloys

Process	Typical Applications	Comments
Fusion Welding		
- TIG including plasma and pulse	Piping systems, beer barrels, chemical and pressure vessels, gas bottles, thin sheet metalwork and work requiring intricate torch manipulation.	High quality all position welding - manual, mechanised or fully automatic.
- MIG including plasma and pulse	General construction, ship building, rail, road (tippers, tankers, dump trucks), storage tanks, beer barrels, gas bottles, pressure vessels, large diameter pipelines, armoured fighting vehicles, bus-bars.	High quality all position welding - manual, mechanised or fully automatic.
- Electrogas	Large storage tanks, electrical bus-bars.	Limited application. Vertical position only. Flat position only.
- Electroslag	Electrical bus-bars.	
- Submerged Arc	Electrical bus-bars.	
- Manual Metal Arc	For non-stressed applications only.	Requires corrosive flux. Not for high quality work.
- Oxyacetylene		
- Electron Beam	High technology aerospace/defence, micro-welding, electronic equipment.	High capital cost.

- Laser Beam	Precision micro-welding for electronic equipment.	
Resistance Welding		
- Spot	Sheet metalwork, domestic holloware, automotive, aerospace, electrical.	High capital cost. High production.
- Seam	Sheet metalwork, production of pipe from strip, automotive, aerospace.	
Stud		
- Condenser Discharge	Automotive trim, insulating pins, panhandle attachments, domestic holloware.	High capital cost. High production.
- Drawn Arc	Ships, decking fixtures, architectural, electrical.	
Flash	Architectural sections, window frames, piping, wire joining, wheel rims, beer barrel rims, dissimilar metal Al/Cu joints, electrical conductors.	
Solid Phase Bonding		
- Friction	Dissimilar metal joints Al/Cu, Al/Steel, Al/Al bus-bar, electrical terminations, and pipe joints.	Butt joints. Prevents formation of brittle intermetallics.
- Explosive	Al/Al, Al/Cu, Al/Steel, electrical, transition joints, pipeline joints.	Lap joints.
- Ultrasonic	Lap joints in foil, thin sections, thin to thick, electrical.	
- Cold Pressure	Al/Al, Al/Cu, Al/Steel, electrical, sheet, wire.	
- Hot Pressure	Joining extrusions edge to edge (e.g. Al forge process) for transport, body sides, etc.	Butt joints.

GUIDANCE NOTE	SPRAY PAINTING	Code: H409	Issue: A

INTRODUCTION

The hazards from this type of painting are potential irritation of the eyes and respiratory system and dermatitis. Therefore, protective equipment as detailed shall be provided to, and worn by, all operators who are involved in or working near paint spraying.

EYE PROTECTION

Goggles or face shields, manufactured to BS EN 166, shall be supplied and worn at all times whilst spray painting or working adjacent to spray painting.

The goggles or face shields are to be kept clean; all paint splashes being removed with soap and water. The use of solvent will, generally, damage eye protection.

RESPIRATORY PROTECTION

Respiratory protection, in the form of facemasks, shall be provided and is to be worn whilst spray painting or working adjacent to spray painting. These facemasks shall take the form of disposable cup masks or respirators with disposable cartridges.

When spraying in a confined area positive ventilation, or self-contained or air line fed breathing apparatus, shall be provided. Self contained or air-fed breathing apparatus shall only be worn by persons trained and competent to do so.

PROTECTIVE CLOTHING

Protective clothing, in the form of coveralls, shall be provided and worn, whilst spray painting. These shall be regularly cleaned and shall be replaced as and when necessary.

SKIN PROTECTION

Gloves or barrier creams are to be used whilst spray painting.

Barrier creams are to be applied before work starts and reapplied after washing.

SPILLAGE

All spillage of paint is to be cleaned up immediately, using clean cloths and water or thinners. On no account is any spillage to be allowed to dry.

SPRAYING EQUIPMENT

If compressors are used to supply air for spraying they are to comply with the requirements as detailed in the section “Compressors and Pneumatic Tools”.

If electrically operated paint sprayers or portable electric hand tools are used, they are to conform to the requirements as detailed in the section “Electrically Operated Tools”.

FIRST AID

Eye wash bottles, containing sterile eye wash solution, are to be available whenever spray painting is undertaken. If paint enters the eyes, they are to be washed immediately with copious amounts of eyewash. Medical attention is to be immediately sought, if the paint cannot be removed easily. Details of the paint and thinners used are to be given to the medical practitioner.

GUIDANCE NOTE	STORAGE OF FLAMMABLE LIQUIDS	Code: H500	Issue: A

The Dangerous Substances and Explosive Atmospheres Regulations (DSEAR) require risks from the indoor storage of dangerous substances to be controlled by elimination or by reducing the quantities stored.

It is recognised that, for practical purposes, where flammable liquids are used, there is likely to be a need for a limited quantity to be stored in the workroom/working area.

It is the responsibility of the employer/duty holder, when carrying out their risk assessment, to justify the need to store any particular quantity of flammable liquid within a workroom/working area. However, the guiding principle is that only the minimum quantity needed for frequently occurring activities or that required for use during a half-day or one shift should be present in the workroom/working area. Clearly, actual quantities will depend on the work activity and also the organisational arrangements for controlling the fire risks in the workroom/working area.

You need to inform all staff on the site about the hazards of storing flammable liquids, and about the need to exclude sources of ignition and heat from the designated storage areas. Those responsible for the operation of the store also need to receive specific training in how to deal with spillages and leaks, and emergency procedures.

When not in use, containers of flammable liquids needed for current work activities should be kept closed and stored in suitable cabinets or bins of fire-resisting construction and which are designed to retain spills (110% volume of the largest vessel normally stored in it). These should be located in designated areas that are, where possible, away from the immediate processing area and do not jeopardise the means of escape from the workroom/working area.

Storerooms, cupboards and bins need to be marked to indicate the hazards associated with their contents. The yellow hazard triangle symbols, which are widely available, indicate the flammability hazards clearly. If it is not reasonably practicable to mark directly on the storage area, then it can be displayed nearby. "No smoking" and "No naked lights" notices may be appropriate.

The flammable liquids should be stored separately from other dangerous substances that may enhance the risk of fire or compromise the integrity of the container or cabinet/bin, e.g. energetic substances, oxidisers and corrosive materials. It is recognised that these other dangerous substances may be flammable liquids in their own right or held in a flammable liquid. However, it is still inappropriate to store these in the same cabinets or bins with other flammable liquids.

It is recommended that the maximum quantities that may be stored in cabinets and bins are no more than 50 litres for extremely highly flammable and those flammable liquids with a flashpoint below the maximum ambient temperature of the workroom/working area; and no more than 250 litres for other flammable liquids with a higher flashpoint of up to 55 degrees C.

These values are recommended guidelines, representing good industry safe practice, rather than absolute limits. There is intended to be some flexibility with these limits, where it is recognised that the design of modern day buildings and the pattern of work can sometimes make adherence to these quantities difficult to achieve, e.g. in large or open-plan workrooms/working areas. However, where the employer/duty holder does identify a need to store quantities in excess of the recommended limits, a robust demonstration of this requirement would need to be made and, in particular, the risk assessment should take into account:

- The properties of the materials to be stored or handled in the workroom/working area. (For mixed storage the worst-case situation should be applied, i.e. all materials in the storage cupboard or bin should be considered as being the same material as the one that has the lowest flashpoint.)
- The size of the workroom/working area and the number of people working in it.
- The amount of flammable liquids being handled in the workroom/working area and the quantities of liquid that may be accidentally released or spilled.
- Ignition sources in the workroom/working area and potential fire spread in the event of an ignition.
- Exhaust ventilation provision to the workroom/working area and/or the storage cupboard or bin.
- The fire performance of the storage cupboard or bin.
- The arrangements for closing the cupboard or bin doors/lid in the event of a fire.
- Means of escape from the workroom/working area.

The priority in the event of any incident or emergency is to ensure that people can safely escape from the workroom/working area. The purpose of storing dangerous substances in cupboards and bins is to provide a physical barrier to delay the spread of a fire and, should the dangerous substances subsequently become involved in the fire, for sufficient time for safe evacuation of personnel and the duty holder's immediate emergency procedures supporting this to be implemented.

The performance requirements for fire-resisting cupboards and bins are described in detail in the DSEAR Approved Code of Practice (L136). These are not specifically an absolute test or standard for the cupboard or bin itself; rather they relate to nominal construction principles. They describe:

- That the materials used to form the sides, top, bottom, door(s) and lid are capable of providing the required fire-resistance, i.e. 30 minutes integrity, and reaction to fire, i.e. minimal risk.
- That the joints between the sides, top and bottom of cupboards and bins should be free from openings or gaps.
- That the lid/doors should be close-fitting against the frame of the bin/cupboard, such that there is a nominal overlap between the frame and lid/doors in their closed position.
- That the supports and fastenings should be of a material with a melting point greater than 750?C.

These criteria represent the minimum performance requirements for compliance with the current legislation. However, it is to be noted that there are a number of more demanding standards and design specifications, which refer to the fire performance of the complete cabinet structure, e.g. British and European Standards.

It is the responsibility of the employer/duty holder to ensure that cabinets to any particular standard or design specification do meet the minimum legal requirements. Equally, the use of cabinets with enhanced fire performance should not be seen as a substitute for the provision of dedicated storerooms and outdoor storage areas for the safe keeping of containers which are nominally empty or are not needed for current work.

GUIDANCE NOTE	NEEDLES AND SHARPS	Code: H505	Issue: A

INTRODUCTION

Biologically hazardous agents are living micro-organisms capable of causing disease or harm.

Pathogenic micro-organisms have special adaptations allowing them to colonise a host and cause disease. Other organisms are opportunist pathogens and are able to cause disease in debilitated hosts or those with immune deficiencies.

The occupational acquired infections which are normally associated with discarded needles and sharps are hepatitis B and HIV infections.

CONTROL OF EXPOSURE

Where employees are exposed to discarded needles and sharps, or other material that may be contaminated with human secretions, the following precautions must be adopted:

- Keep cuts and abrasions covered with an impervious dressing.
- Wear heavy-duty, impervious gloves to protect the hands whilst collecting the sharps, etc.
- Segregate the needles and sharps from other rubbish in a disposable plastic container.
- Dispose of the container and its contents by contacting the local authority's environmental health department.
- Ensure a strict hygiene culture is enforced prior to eating, drinking, smoking, etc.

FIRST AID

If discarded needles and sharps are found accidentally, work in that area is to be suspended until the debris has been cleared. Should a worker receive a cut or puncture wound from a needle or sharp, they are to inform their medical practitioner at the earliest opportunity.

INFORMATION AND TRAINING

Where work is to be carried out in an area known to be contaminated with discarded needles and sharps all employees are to be made aware of the precautions to be adopted and the potential hazards associated with this kind of debris.

HIV AND AIDS

AIDS (Acquired Immune Deficiency Syndrome) is a disease of the immune system, caused by the virus HIV. The body's defence system is damaged, allowing illnesses and infections, which would not otherwise have occurred, to develop. The HIV virus can be transmitted by injection or inoculation with infected blood. AIDS is not transmitted by normal social contact and normally the HIV virus survives only for a very short period outside the body.

Where there is a risk of contamination, heavy-duty gloves and overalls should be worn as protection against cuts, and suspected items should be removed by tongs and placed in puncture proof bins for disposal.

The COSHH Regulations require employers to ensure that exposure of employees to substances hazardous to health is either prevented, or if this is not reasonably practicable, adequately controlled.

GUIDANCE NOTE	HANDLING AND CHARGING BATTERIES	Code: H705	Issue: A

INTRODUCTION

Acid burns to the face, eyes and hands are common injuries associated with the handling and charging of batteries. Batteries can require frequent recharging and prior to the charging process the battery cell vent covers are removed to allow the cells to be topped-up with distilled or deionised water. It is during this process that employees can be at risk from being splashed with acid, which is contained in the individual battery cells.

When being charged, batteries produce hydrogen gas, which is explosive. It is released during the charging process through the battery vent covers.

Due to the risks involved in the process it must be ensured that only trained and competent persons are allowed to carry out battery charging activities.

BATTERY CHARGING UNIT

The charging units should be placed in a well-ventilated area which is free from sources of ignition. Forced ventilation should be provided in the battery charging area if natural ventilation is not sufficient. Adequate lighting in the battery charging area must be provided.

Cautionary signage should be displayed in the charging area with the words “No Smoking - No Naked Lights”.

Battery charging units are supplied in a wide variety of sizes and can be portable or fixed. Due to the nature of the process, it is important that the equipment is maintained and is kept in good working order. The charging units must be regularly maintained and inspected for signs of mechanical defects and electrical faults. The units need to be subject to electrical testing and inspection in accordance with approved electrical codes of practice.

Employees should be instructed to report any visual defects or damage to the equipment. Routine inspection of cabling and glanding must be carried out along its entire length for signs of mechanical damage, which could lead to short-circuiting.

Residual current devices (RCD), where fitted locally, should be periodically tested for functionality.

STORAGE OF BATTERIES

Batteries should be stored in tidy and dry work areas. Clear space must be provided between them to allow natural ventilation between the batteries.

FIRST AID

Adequate arrangements should be made to ensure first aid provisions are adequate.

An emergency eye wash station should be provided near the battery charging facility and a sign displayed with the words “If splashed with acid, wash off immediately and seek medical attention.”

FIRE SAFETY

Lighting and electrical control switches in the battery charging area should be flameproof and intrinsically safe to ensure that lighting and electrical switches do not provide a source of ignition for gases created during the process.

A suitable fire-extinguisher should be provided in the battery charging area which is mounted and clearly signed.

WORKING PROCEDURES

When carrying out battery charging employees must:

- Be suitably instructed and trained in the charging and topping-up of batteries.
- Wear suitable personal protective equipment (PPE) such as eye protection, gloves and splash-resistant aprons.
- Not wear finger jewellery when connecting and disconnecting batteries.
- Adhere to the manufacturer’s specification on charging rates and time.
- Ensure that hands are dry when handling batteries.
- Ensure that the battery charger is switched off during the connection and disconnection of the leads.
- Ensure that all battery vent covers are adjusted or removed prior to charging.
- Ensure batteries are not connected to the charging unit during the topping-up process.
- Do not overfill the battery cells during topping-up.
- Prevent the possibility of short-circuiting by ensuring connections are secure.
- Ensure battery polarities are connected correctly.

GUIDANCE NOTE	HEALTH AND SAFETY RULES	Code: I002	Issue: A

EMPLOYEES

This section details the rules and standards that relate to all employees at work, contractors and visitors. It is the responsibility of all to obey these rules and to behave in a safe manner whilst at work.

Deliberate contravention of these rules shall be considered a break in the employee's contract of employment and shall, at the discretion of the management, lead to instant dismissal.

It should also be borne in mind that contravention of the health and safety legislation is a criminal offence and that a prosecution can be taken against the employee by the enforcing authority.

WORKING PRACTICES

- No equipment is to be operated by any person unless they have been trained and are authorised to do so.
- Any fault, defect (including damage) or malfunction in any item of equipment must be reported immediately.
- No equipment is to be cleaned whilst in motion, unless you are authorised to do so.
- No repairs, maintenance or adjustments to equipment are to be carried out, unless you are authorised to do so.
- All substances are only to be used in accordance with the written instructions.
- All substances are to be stored in accordance with the written instructions and are to be returned to storage after use.
- All hazard notices or warning signs displayed on the premises are to be obeyed.
- All notices displayed in the workplace are to be read and you are to ensure that you understand the instructions.
- All safety equipment and facilities provided are to be used and are not to be misused or wilfully damaged.
- Protective clothing and safety equipment is to be stored in accordance with instructions.
- The work area is to be kept clean and tidy at all times.
- All waste is to be disposed of in the correct container.
- All liquid spillages are to be cleaned up immediately.
- All emergency procedures relevant to each work area are to be obeyed.
- Emergency exits and equipment are not to be obstructed.
- Any use or damage to firefighting equipment is to be reported immediately.
- Prompt medical assistance must be sought for any injury received at work and the injury must be reported as soon as possible.

MISCONDUCT

Any employee found to have acted in any one of the following ways shall be liable to the organisation's disciplinary procedure:

- Wilfully breaching the safety rules or safety policy.
- Operating any equipment without authority.
- Misusing equipment provided
- Misusing items provided for first aid.
- Recklessly interfering with or misusing anything provided in the interest of health, safety or welfare at work.
- Defacing or removing notices, signs, labels or any other warning device.
- Misusing any chemical, flammable substance, toxic material, etc.
- Smoking in designated "No Smoking" areas or whilst using flammable substances.
- Taking part in horseplay or practical jokes.
- Making false declarations or interfering with evidence following an accident or dangerous occurrence.

This list is not exhaustive.

GUIDANCE NOTE	VIOLENCE TO STAFF	Code: I003	Issue: A

WHAT IS VIOLENCE?

Violence is defined as “any incident in which an employee is abused, threatened or assaulted by a member of the public in circumstances arising out of the course of his or her employment”.

Verbal abuse and threats are the most common types of incident. Physical attacks are comparatively rare.

Both employer and employees have an interest in reducing violence at work. For employers, violence can lead to low morale and a poor image for the organisation, making it difficult to recruit and retain staff.

For employees, violence can cause pain, suffering and even disability or death. Physical attacks are obviously dangerous but serious or persistent verbal abuse or threats can also damage an employee’s health through anxiety or stress.

ACTION PLAN

Employers and employees need to work together on this issue to decide what to do.

Find out if there is a problem

This can be done informally by the relevant managers, supervisors and safety representatives or by a short questionnaire to staff. The results of any survey should be disclosed to staff so that if there is a problem they will see that management are aware of it.

If no problem is detected it is still advisable to check again, from time to time.

Record and reporting all Incidents

The recording of all incidents is essential in building up a picture of a problem, and may assist in solving the problem before it escalates out of control and any serious harm is caused. A simple report form can be used to record the details of who, what, where, when, why and how.

Staff may be unwilling to report incidents for a number of reasons. They should be encouraged to report all such incidents.

You should also report serious incidents to the police by dialling 999 in an emergency, or contacting your local police station.

Classify all Incidents

Classifying incidents will assist in finding out what kinds of incidents are happening. They can be classified under headings such as place, time, type of incident (physical or verbal), who was involved and the possible causes.

Verbal assaults are difficult to classify as it greatly depends upon how the individual reacts to the assault.

Employers must notify their enforcing authority in the event of an accident at work to any employee resulting in death, major injury or incapacity for normal work for three or more days. This includes any act of non-consensual physical violence done to a person at work.

Search for Preventive Measures

There are no ready-made remedies but the way jobs are designed can reduce the risk of violence. Measures that can be taken include the training of staff to enable them to recognise when a situation may escalate and instruction on how to deal with this; reducing the amount of any cash handled (if involved); installing CCTV systems; or installing security locks or doors.

The circumstances of each individual incident will dictate which preventative measures are appropriate in the situation.

Work Environment

- The way your premises are designed in terms of layout, security provision and the general environment can affect the risk of crime and violence happening to your staff.
- Premises design/layout
- Poor location of cash tills and sales displays, blind spots, poor layout and counter design can all make customers less visible and target items more accessible.
- If people think they cannot be seen, they may be more likely to commit crime or violence.

Think carefully about the layout of your premises - can it be improved?

- Can you see your customers and colleagues?
  - Consider high and wide counters
  - or installing mirrors to help you see concealed areas.
- How do you manage the way your customers move around your premises?
- Consider how you can prevent the build-up of crowds or queues.
- Maintain the exterior of your building to prevent break-ins.

Visibility and Lighting

- If you are not able to easily see your customers and colleagues, spotting and deterring aggressive behaviour becomes more difficult.
- Staff can feel less safe, and criminals can feel more secure.
- If this is a risk for you or your staff, ensure your lighting is adequate.
- You should aim to keep entrances/exits, reception areas and car parks well lit.

Working Practices

- How people carry out their jobs affects the risk of violence and crime happening to you or your staff.
- Cash handling and transit
- People carrying out these activities may be particularly vulnerable to robbery attacks.
- Reduce the amount of cash handled, particularly in front of customers.
- Arrange cash collection where possible. Think about who is going to handle your cash, and how. Try to avoid set routines and routes.

Security Devices

- A lack of security devices, such as alarms and locks, can increase the risk of crime and work-related violence. However, even when they are used, other control measures will help to reduce the risk further.
- Good quality materials and workmanship for doors, windows and locks are important.
- Window restraints, e.g. bars and shutters, can make your workplace more secure.
- Alarms can be useful, but make sure your staff know how to use them and how to respond.

Security Personnel

- Well-trained security staff can reduce the risk of violence. However, make sure they are competent and have the right level of training for what you want them to do.
- This will include getting a suitable licence to practice from the Security Industry Authority (SIA).

Legal Options

- There are several legal options that are open to you, or the police and your local authority, to help to deal with issues around anti-social behaviour and violence.
- These mainly involve banning individuals from your premises or local area, or preventing alcohol being consumed in specific areas.
- Bans, such as exclusion orders, restraining orders, trespass notices and Antisocial Behaviour Orders (ASBOs) keep troublemakers from specific premises, among other things. Managers can also order someone off their premises, and ask them not to return, but make sure you have appropriate support when doing this.
- Fines or fixed penalty notices (FPNs) can be issued by the police for anti-social behaviour and criminal activity.
- Local authority bye-laws make it an offence to consume alcohol in designated street areas, for example ‘Designated Public Places Orders’.
- In order to take legal action, the police or local authority may need evidence of the extent of the violence or anti-social behaviour problem, or examples of incidents.
- This is why regular and consistent recording and reporting of work-related violence is important, together with keeping CCTV footage for evidence.

Staffing Levels

- Risks increase where there are inadequate staffing levels. Visibility will be reduced, and waiting and queuing times might increase, leading to customer frustration.
- It may also mean there are less staff available to deal with situations if customers become difficult or violent.

Partnership working and special schemes

- Working with others is one of the most effective tactics in preventing violence and aggression.
- Partnerships can be between you and just one other business, organisation or agency, or with a whole network of organisations.
- The benefits of working with others include:
  - sharing of information;
  - pooling of funding and expertise;
  - greater likelihood of identifying and understanding violence and crime in your business.

Decide what to do

It is advisable to involve employees in the decision making process when deciding what preventative measures are to be taken. Employee involvement ensures they are more likely to support any action taken and work with it rather than against it.

Put Measures into Practice

Whatever measures are decided upon, a section of the health and safety policy statement should include dealing with violence to staff. This will make employees aware of the policy and help them to co-operate with you, follow procedures and report any incidents.

Check That These Measures Work

Once procedures have been put into place a check needs to be made to ensure that they are working effectively. If not, other measures will need to be decided upon and put into place.

WHAT ABOUT THE VICTIMS?

Victims may need help. This may include counselling, time off or help with legal advice. Employees will be better able to cope with stressful situations once they know they have your support.

REFERENCES

www.hse.gov.uk/violence

GUIDANCE NOTE	SITE RULES	Code: I100	Issue: A

EMPLOYEES

This section details the rules and standards that relate to all employees at work, contractors and visitors. It is the responsibility of all to obey these rules and to behave in a safe manner whilst at work.

Deliberate contravention of these rules shall be considered a break in the employee's contracts of employment and, at the discretion of the management, shall lead to instant dismissal.

It should also be borne in mind that contravention of the Health and Safety Legislation is a criminal offence and that a prosecution can be taken against the employee by the enforcing authority.

Working Practices

- No machine, item of plant or equipment is to be operated by any person, unless they have been trained and are authorised to do so.
- All machine guarding is to be in place and correctly adjusted, prior to machinery being used.
- Any fault, defect, including damage, or malfunction in any item of machinery, plant, equipment, tool or guard must be reported immediately.
- No machine, plant or equipment is to be left unattended whilst in motion, unless you are authorised to do so.
- No machine, plant or equipment is to be cleaned whilst in motion, unless you are authorised to do so.
- No repairs, maintenance or adjustments to machines, plant or equipment are to be carried out, unless you are authorised to do so.
- All substances are only to be used in accordance with the written instructions.
- All substances are to be stored in accordance with the written instructions and are to be returned to the storage after use.
- All hazard notices or warning signs displayed on the premises are to be obeyed.
- All notices displayed in the workplace are to be read and you are to ensure that you understand the instructions.
- All safety equipment and facilities provided are to be used and are not to be misused or wilfully damaged.
- Protective clothing and safety equipment is to be stored in accordance with the instructions.
- The work area is to be kept clean and tidy at all times.
- All waste is to be disposed of in the correct container.
- All liquid spillages are to be cleaned up immediately.
- All emergency procedures relevant to your work area are to be obeyed.
- Emergency exits and equipment are not to be obstructed.
- Any use or damage to fire fighting equipment is to be reported immediately.
- Prompt medical assistance must be sought for any injury received at work and the injury must be reported as soon as possible.

MISCONDUCT

Any employee, found to have acted in any one of the following ways, shall be liable to the organisation's disciplinary procedure: -

- Wilfully breaching the safety rules or Safety Policy.
- Removing any guard or protective device without permission.
- Operating any machine, plant or equipment without authority.
- Misusing items provided for first aid.
- Recklessly interfering with or misusing anything provided in the interest of health, safety or welfare at work.
- Defacing or removing notices, signs, labels or any other warning device.
- Misusing any chemical, flammable substance, toxic material, etc.
- Smoking in designated "No Smoking" areas or whilst using flammable substances.
- Taking part in horseplay or practical jokes.
- Making false declarations or interfering with evidence following an accident or dangerous occurrence.
- Misusing compressed air, electric or pneumatic equipment.
- Overloading lifting equipment.

(The above list is not exhaustive).

VISITORS

The following rules are designed to assist in the control of visitors to the premises. It is of importance that persons visiting the premises should not be allowed to wander freely. In the event of fire it is important to know the number of persons in the area and their location, to ensure that, on evacuation, the buildings are in fact empty.

Protective Clothing and Equipment

Visitors are required to wear and use the protective equipment, which shall be supplied where necessary.

Accidents

All accidents or incidents occurring on the premises must be reported.

Fire

Visitors are required to follow any fire procedures displayed and are to obey any "No Smoking" controls.

CONTRACTORS

In the context of the Health and Safety at Work Etc. Act 1974, the term contractor has a wide definition. Any person or organisation that enters into an agreement, whether written or oral, with the Organisation to provide any service is regarded as a contractor. This includes window cleaners, builders or a specialist.

Contractor's Contact

The contractor's contact is to ensure that: -

- The contractor has received a completed copy of the Contractor's Information Sheet, prior to any work starting;
- The contractor's work is monitored to ensure that they are complying with the Organisation's Health and Safety Policy.

CONTRACTORS SAFETY INFORMATION

This Safety Information, which forms an integral part of the Organisation's Health and Safety Policy, is applicable to all contractors and persons under their control and forms part of the Terms of Contract.

Contractors are required to ensure that: -

- They, and all persons under their control, familiarise themselves with the site and any hazards to be found on the site;
- Their activities are conducted in accordance with the safe practices as detailed in this Policy, taking precautions to protect all employees and others who may be affected by their actions or failures to act;
- They comply with all the requirements of the Organisation's Health and Safety Policy;
- They comply with all the relevant legislation applicable to the workplace;
- They provide the correct protective equipment and clothing to their employees at the contractor's expense;
- Employees remain within the designated areas of their work;
- They only employ persons who are sufficiently trained and experienced in the performance of their duties. If persons under training are employed the contractor is to ensure that they are adequately supervised.

Nothing in the above information relieves the contractor of their duties and obligations under Statute or Common Law.

Failure to comply with the Organisation's Health and Safety Policy or any legal requirements will lead, at the employer's discretion, to suspension of the contractor's work, at no cost to the employer, or to termination of the contract.

CONTRACTOR'S SAFETY INFORMATION SHEET

Your Contact within this Organisation is: -.....

First Aid kits are located at: -.....

Contractors are responsible for ensuring that all persons under their control know and understand the fire procedures applicable to their work areas and the location of any fire fighting equipment within those areas.

Means of escape and access routes into the work areas are not to be obstructed without prior permission.

All accidents or dangerous occurrences are to be reported, immediately, to the above contact.

Welfare facilities are provided as agreed within the contract and are not to be misused.

All registers and other documents required by Statute are to be available for inspection by the employer or their safety advisers at all times.

GUIDANCE NOTE	ON-SITE INSPECTIONS AND AUDITS	Code: J105	Issue: A

INTRODUCTION

Where it is necessary for staff to visit sites that, at times, may be considered hazardous the following procedure must be adhered to:

On Arrival

- Introduce yourself to the person in charge of works.
- Ensure you receive all information appertaining to the site regarding known hazards.
- Ensure that you are equipped with all the relevant PPE required for those hazards identified.
- If the site is unoccupied consider whether it is safe to continue alone. If you believe that it is then inform your external minder, normally by telephone, that you are about to enter the site and give an approximate time when you will contact your minder again.

Audit/Inspections

- When carrying out the audit/inspection a member of the on-site management team should accompany you.
- If at any time you, in your opinion, are placed at imminent risk of injury during your visit you are to stop and inform both the client's on-site representative and the company office of your decision.
- Discuss remedial actions with the client and record this in writing.

HAZARDS

There follows a list of those hazardous areas or situations that you may encounter during the course of your visit. This list is not to be considered exhaustive and is to be used purely as an aide memoire.

Be careful of the following. If in doubt - STOP.

Structures

The chance of partial or total collapse of:

- Chimney stacks, parapets or gable walls.
- Leaning, bulged and unrestrained walls (including boundary walls).
- Rotten or corroded beams and columns.
- Roofs and floors.
- Incomplete/temporary structures (Scaffolds etc)

Timbers

- Rotten and broken staircases and floors.
- Flimsy cellar flaps and broken pavement lights.
- Floorboards, joists and buried timbers weakened by age, decay or attack.
- Projecting nails and screws.
- Broken glass, loose glazing in windows and partitions, weak or broken hinges and sash cords.
- Glass panels in doors and winglights may be painted over.

Roofs

- Fragile rooflights (often obscured by dirty or temporary coverings).
- Asbestos cement sheeting.
- Low parapets or unguarded roof edges. Loose copings.
- Rusted, rotten or moss covered fire escapes, access ladders and guardrails.
- Rotten roof joists and decking.
- Slippery roof coverings and surfaces.
- Broken access hatches.
- Mineral wool dust, mortar dropping, birds' nesting material and excrement in roof voids.
- Cornered birds and vermin.
- Insects, bugs and lice. Bee and wasp colonies.
- Water cooling plant may harbour legionella.
- Unguarded flat roofs.
- Broken, loose, rotten and slippery crawling boards and escape ladders.
- High winds during roof inspection.
- Ill-secured or flimsy, collapsible, sectional or fixed loft ladders.
- Concealed ceiling joists and low purlins.
- Ill-lit roof voids.

Unsafe Atmospheres

- Confined spaces with insufficient oxygen, including manholes, roof voids, cellars, vaults, ducts and sealed rooms.
- Rotting vegetation which may consume oxygen and give off poisonous fumes.
- Accumulation of poisonous or flammable gases in buildings on contaminated land.
- Stores containing flammable materials such as paint, adhesives, fuel and cleaning fluids.
- Hazardous substances, including toxic insecticides and fungicides.
- Gas build-up in sub-floor voids.

Live and Unsecured Services

- Electricity, gas, water and steam supplies.
- Awkward entrances into substations and fuel stores.
- Temporary lighting installations, mains connections and generators.
- Buried cables and pipes.

Hidden Traps, Ducts and Openings

- Lift and service shafts, stairwells and other unguarded openings.
- Manholes, including those obscured by flimsy coverings, cesspools, wells and septic tanks.

Intruders and Others

- Physical dangers from squatters and vagrants.
- Guard dogs.
- Health risks, including HIV, from discarded syringes, condoms and bodily fluids.
- Structures weakened by vandalism or arson.
- Aggressive tenants and property owners.

Contamination

- Asbestos, lead and other substances hazardous to health.
- PCB and PCN chemicals in electrical transformers and capacitors in fluorescent lighting fittings.
- Overhead electrical cables.
- Contaminated water supplies.
- Contaminated air conditioning systems; legionella.

Vermin and Birds

- Rats and mice; Weil's and other diseases.
- Bird droppings; psittacosis and others.
- Lice may be present in bedding, soft furniture and carpets.

Tips and Land Reclamation Sites

- Unstable slopes and ground.
- Water lagoons, ponds and other water-filled areas.
- Slurry and quicksand areas.
- Burning areas where tips are heating or on fire.
- Hazardous or harmful chemicals; liquid matters and wastes; contaminated land.
- Explosive and toxic gases and vapours.

Moving Plant/Vehicles

- Impact from moving vehicles.
- Dust and spray.
- Spillage from poorly loaded dumpers.
- Reversing.
- Overhead loads (crane lifts).
- Noise.

Process Plant

- Moving parts of plant, conveyor systems, etc.
- Dust.
- Noise.

GUIDANCE NOTE	COMPETENCY CARDS	Code: K002	Issue: A

INTRODUCTION:

Since the late 1980's the HSE concept on competence has been central to improving health and safety performance and standards within the construction industry.

The Meaning of Competence

The Oxford English dictionary defines 'competent' as being adequately qualified or capable and effective. The practical definition is borne out by regulation 7 (5) of the management of health and safety regulations which states that a person is deemed to be competent if he or she has an adequate combination of training and experience or knowledge.

Competence is a combination of appropriate practical and theoretical knowledge and the ability to apply that knowledge in a work situation

What makes a construction worker 'competent'?

Current route to competence include:

- Qualifications (both-work based and college based)
- Short courses
- Safety passport courses
- Competent person development
- On-the-job training
- General experience
- Refresher training, continual development and life long learning.

In construction one of the ways of proving this is by the use of Competency Cards. The most common competency card scheme in the construction industry is the Construction Skills Certification Scheme (CSCS).

There is a designated route through from trainee to management. Each level has a cross link to the associated trade and equivalent level of NVQ.

Additionally there are various boards covering different sectors of the industry. Construction Plant Competence Scheme (CPCS) deals with training levels within the use of heavy plant.

The Construction Industry Scaffolders Record Scheme (CISRS) deals with training levels within the scaffold industry.

There are other well known training bodies such as:

- International Powered Access Federation (IPAF) these are a recognised training body in the mobile elevated platform sector.
- Prefabricated Access Suppliers and Manufacturers Association (PASMA) are a recognised training body for mobile towers and platforms.

It's not to say that the above training providers have to be used however they are one way of identifying the person has received the required training to carry out their task competently.

As part of a Principal Contractors construction phase plan there will be a section in this relating to training. This should always be reviewed as it may state the minimum requirement or type of training provider they require to work on site.

On receiving a copy of a competency card form a contractor it is advisable to contact the training association and cross reference the card to clarify if it is a genuine card.

REFERENCES

Regulations/ACoPs:

Construction Design and Management Regulations (Management Health and Safety in Construction) ACOP L144

Appendix 4: Core Criteria for demonstration of competence

The Health and Safety People is a qualified training provider for a number of trade training bodies so please contact our training section of the company on:

Telephone: 08456 122 144 or email training@thsp.co.uk

Links:

<http://www.thsp.co.uk/training>

<http://www.cscs.uk.com>

<http://www.cskills.org/education/cpcs/>

<http://www.cisrs.org.uk>

<http://www.ipaf.org/>

<http://www.pasma.co.uk/>

GUIDANCE NOTE	MANUAL HANDLING SOLUTIONS	Code: L002	Issue: A

INTRODUCTION

The Manual Handling Regulations define manual handling operations as:

Transporting or supporting of a load, including the lifting, putting down, pushing, pulling, carrying or moving thereof by hand or by bodily force"

More than a third of all industrial injuries are caused by manual handling activities. Manual handling can result in injuries which may be acute or chronic. Acute injuries are the immediate type of injury such as cuts, bruises, torn ligaments or fractures. Chronic injuries are often cumulative and can result from poor posture or excessive repetition of activities and are often not associated with a single manual handling event. Chronic injuries may include back pain and musculo-skeletal disorders. Manual handling injuries can result in long term absence from work, compensation claims and regulatory action from the enforcing authority.

AVOIDING MANUAL HANDLING

Avoiding manual handling operations that may cause injury may be achieved by:

- Redesigning the task to avoid moving the load;
- Doing the job in a different way e.g. breaking the load down to smaller, more manageable units.
- Automation;
- Mechanisation;
- The use of mechanical manual handling aids;

FACTORS TO CONSIDER WHEN SELECTING LIFTING AND HANDLING AIDS

- Consult employees and safety representatives during assessment and when considering possible solutions.
- Seek advice on suitability from suppliers/hirers.
- Request equipment on trial basis, if possible, to check it solves the problem, again involve employees who will be expected to use it.
- Ask suppliers about other customers so you can see it in use.
- Check lifting equipment is CE-marked.
- Consider what maintenance will be required.
- Check the proposed use will be within the safe working load.
- Does it suit the area it will be used in? Is there enough room to manoeuvre, enough headroom etc?
- Does it suit the terrain in terms of stability and ground surface?
- Consider other risks associated with introducing the lifting aid, e.g. site safety and driver training, concerning use of a fork lift truck.

Where implementing a long term solution may take some time e.g. procuring funding for mechanical aids, short term solutions must be introduced to reduce any high risks to an acceptable level.

GUIDANCE NOTE	FIRE MARSHALS / WARDENS	Code: M006	Issue: A

INTRODUCTION

The Regulatory Reform (Fire Safety) Order requires that a responsible person is nominated, assisted by sufficient competent persons to implement procedures for the evacuation of people from a building in the event of fire, and similarly to undertake fire-fighting measures where necessary. Persons so nominated are usually referred to as fire wardens, with the person supervising them during an emergency, and who has overall responsibility for the evacuation plan, known as the fire marshal. Properly trained fire wardens with a heightened awareness and a responsible approach to fire and other emergency scenarios can be used to assist in achieving compliance with the emergency plan.

DUTIES OF THE FIRE WARDEN

The duties of the fire warden will depend on the Fire and Emergency Plan for the premises, however the general duties are likely to cover:-

- The carrying out of regular inspections of the premises to identify potential fire-related problems, or defects in the fire precautions in their area of responsibility.
- Ensuring that fire escape routes remain clear.
- Ensuring that fire and emergency route signage remains in good condition.
- Ensuring that the fire precautions in their area are not compromised by actions such as the wedging open of fire doors.
- Assisting people to evacuate in the event of fire or, if appropriate, other emergencies.
- Making the area safe in the event of an evacuation, ie stopping production or removing power where practicable or safe to do so.
- Ensuring that their area is clear when evacuated.
- Taking whatever action is required by the Fire and Emergency Plan with regard to the evacuation of people with disabilities.
- Ensuring that people are correctly mustered at the relevant assembly point, and accounted for.
- Passing on to the responsible person (fire marshal) the information that their area is clear, that all people are mustered or accounted for, or details, as far as is known, of people missing.
- Providing a contact point in a department for guidance or advice in their area of responsibility, even if only to pass the queries on to the fire marshal.
- Assisting in the induction of new entrants to the fire instructions for their area.
- Weekly documented checks of fire extinguishers, fire alarms and emergency lighting (if installed).

Working under the fire marshal, it is recommended that there is at least one fire warden appointed for each floor of the building, and for more complex buildings this number should be increased.

IN THE EVENT OF A FIRE

- Ensure that the alarm has been raised.
- Check that processes have been made safe.
- Evacuate staff from the building.
- Check that any staff with disabilities are assisted/taken to refuges or evacuated using the planned methods.
- Fight the fire, if safe to do so and if trained in the use of fire-fighting equipment.

THE FIRE MARSHAL

Generally in larger premises, the efforts of fire wardens need to be co-ordinated and someone needs to take charge during the evacuation. This person should be appointed by the company and is commonly known as the fire marshal. In smaller premises the fire marshal may have sole responsibility for fire precautions, and take on all duties themselves.

A key role of the fire marshal is to keep track of the effectiveness of the evacuation, undertake the “roll call” of staff and inform the fire brigade of any missing persons, their likely location(s) and any significant characteristics of the premises, e.g. the location of gas cylinders.

TRAINING & COMPETENCE

People nominated to undertake fire warden/marshal responsibilities must be adequately trained. The content of a fire warden training course would normally include:

- Methods by which the fire alarms are activated.
- Communications, particularly with the Emergency Services.
- Evacuation procedures.
- In-house emergency procedures.
- Detailed knowledge of the fire safety plan for the premises and familiarity with the emergency plan.
- Awareness of human behaviour in fires.
- How to encourage others to use the most appropriate escape route and direct people in emergency situations, performing a supervisory/managing role in any fire situation.
- The extent of their responsibilities to ensure safe evacuation, including how to search safely and recognise areas that are dangerous to enter
- Assisting those on the premises to leave, the difficulties that some people, particularly if disabled, may have in escaping and any special evacuation arrangements that have been pre-planned
- Their responsibilities for checking the premises to ensure everyone has left (usually within a specified area, floor or section of a building)
- The use of fire-fighting equipment IF SAFE TO DO SO, and the types and application of fire extinguishers and where they are located
- Liaising with the fire and rescue service on arrival
- Shutting down vital or dangerous equipment
- Checking zones of responsibility, thereby ensuring that no persons remain
- Ensuring all windows and doors are closed to prevent the spread of fire (in a bomb threat situation, all windows and doors should be left open)
- Checking off of personnel at the assembly point
- Reporting the result of the evacuation and assembly to the fire marshal or designated person and awaiting further instructions
- Informing personnel when it is safe to return to the building.

With regard to training on fire itself, fire wardens/marshals should be taught:

- How fires start and the risks of flashovers.
- The fire triangle (Heat, Oxygen, Ignition).
- Different classes of fire.
- Colour codes for extinguishers.
- Extinguishing agents.
- Use of suppressants.
- Methods of fire spread, e.g. convection, conduction and radiation.

There are no set rules on the frequency of refresher training for fire wardens/marshals, one period of training per year is adequate - although every six months is preferable.

GUIDANCE NOTE	FIRE INSTRUCTION AND DRILLS	Code: M007	Issue: B

TRAINING AND INSTRUCTION

All employees shall receive instructions and training on initial employment and thereafter annually to ensure that they understand the fire precautions, the practical use of fire-extinguishers and hose reels, and the action to be taken in the event of a fire. This shall include persons engaged on duties outside normal working hours, such as security personnel and cleaners.

Such instruction shall be given by a competent person and shall be based upon written instructions.

The instruction and training shall include the following:

- The action to be taken on discovering a fire.
- The action to be taken on hearing the fire alarm.
- How to raise the alarm, including the location and activation of alarm points, telephones and alarm indicator panels.
- The correct method of calling the emergency services.
- The location and correct use of firefighting equipment.
- The escape routes to be used and the muster points.
- The importance of the need to ensure that fire doors are not obstructed or propped open and are closed when the alarm is sounded.
- The isolation of electrical and gas supplies and the stopping of machinery, where appropriate.
- The evacuation of members of the public and other persons who may occupy the building.

Certain categories of personnel shall be given further training in matters that are particular to their own responsibilities at the time of a fire. These categories shall include:

- Department heads.
- Security staff.
- Telephonists.
- Supervisory staff.

ALARM TESTS

The fire alarm shall be tested weekly in all buildings, using a different actuation point for each test. A check is to be carried out in each building to ensure that the alarm is audible from every position within the building.

FIRE DRILLS

Fire drills shall be carried out every 6 months. Consideration shall be given to the simulated blocking of fire evacuation routes to provide realistic conditions.

FIRE INSTRUCTION NOTICES

Notices detailing the action to be taken in the event of fire shall be displayed in conspicuous positions in all parts of the building.

RECORDS

Records shall be kept of all activities relating to fire and fire prevention and shall include:

- Dates of any training and instruction given, fire drills and alarm tests.
- Type of training, instruction, drill or test.
- Duration of training or drill.
- Name of person carrying out training, instruction, drill or test.
- Names of persons receiving training or instruction.

FIRE DRILL RECORD FORM		
Date:	**Time:**	
Total number of participants:		
Staff:	**Visitors:**	**Others (specify):**
Evacuation time:		
Miscellaneous information (simulated inaccessibility, etc.):		
Problems identified:	**Action to be taken:**	**Date action completed:**
Signature:	**Date of next drill:**	

NOMINAL ROLL - EMERGENCY EVACUATION

Name:	Comment:

GUIDANCE NOTE	TRAINING REQUIREMENTS FOR FIRST AIDERS	Code: N002	Issue: A

INTRODUCTION

UK Employers have an obligation under the Health and Safety (First Aid) Regulations to make adequate and appropriate first aid provision for their workforce. The HSE recommend that someone at work is able to undertake first aid duties at all times when people are at work.

The HSE updated the First Aid at Work Training requirements in October 2009.

This information contained within this guidance note should be used in conjunction with the guidance note on assessing first aid requirements N001.

CATEGORIES OF FIRST AIDERS

FIRST AID AT WORK (FAW):

This is a comprehensive three day course covering everything required to be an official company first aider. It is especially useful for companies that are in high risk sectors or who have many employees.
On completion of training successful candidates should be able to:

- Provide emergency first aid at work including the following techniques:
- Administer first aid to a casualty who is unconscious (including seizure).
- Administer CPR.
- Administer of first aid to a casualty who is choking.
- Administer first aid to a casualty who is wounded and bleeding.
- Administer first aid to a casualty suffering from shock.
- Provision of first aid for minor injuries (including small cuts, grazes and bruises, minor burns and scalds, small splinters).

In addition, attendees will learn how to administer first aid to a casualty with:

- Injuries to bones, muscles and joints - this includes spinal injuries.
- Chest injuries.
- Burns and scalds.
- Eye injuries.
- Sudden poisoning.
- Anaphylactic shock.
- Recognise the presence of major illnesses and provide appropriate first aid including heart attack, stroke, epilepsy, asthma and diabetes).

ANNUAL UPDATES FOR TRAINING

The HSE strongly recommend that people completing both the First Aid at Work and Emergency First Aid at Work course attend an annual update to refresh their skills. This annual update will take half a day (3 hours). This should be implemented to avoid “skills fade”.

EMERGENCY FIRST AIDER AT WORK (EFAW):

This is a one day course and is better suited for low risk environments and companies with few staff as outlined within the relevant risk assessment.
On completion of training successful candidates should be able to:

- Understand the role of the first aider including reference to:
- The importance of preventing cross infection.
- The need for recording incidents and actions.
- The use of available equipmen.t
- Assess the situation and circumstances in order to act safely, promptly and effectively in an emergency.
- Administer first aid to a casualty who is unconscious (including seizure)
- Administer CPR.
- Administer first aid to a casualty who is choking.
- Administer first aid to a casualty who is wounded and bleeding.
- Administer first aid to a casualty who is suffering from shock.
- Provide appropriate first aid for minor injuries (including small cuts, grazes and bruises, minor burns and scalds, small splinters).

APPOINTED PERSON:

When an employer's first aid needs assessment identifies that a first aider is not necessary, the minimum requirement is to appoint a person to:

- Take charge when someone is injured or ill, including calling an ambulance if required;
- Look after the first aid equipment, e.g. restocking the first aid box.

This training could be undertaken by an employer in house.

Appointed Persons should not attempt to perform first aid or emergency care for which they have not received training.

RE-QUALIFICATION COURSES

To maintain a First Aid at Work qualification the holder must complete a two day re-qualification courses before the expiry date of their certificate.

To maintain an Emergency First Aid at Work qualification the holder must re-attend a one day courses for Emergency First Aid at Work before the expiry date of their certificate. Certificates for both these courses are still valid for three years.

PREVIOUS FIRST AID QUALIFICATIONS

Any First Aid certificates prior to October 2009 are still valid until the expiry date shown on the certificate.

REFERENCE

Regulations/ ACoPs: Health and Safety (First Aid) Regulations

HSE Guidance: updates to First Aid at Work Training October 2009

Red Cross Guidance Notes

St Johns Ambulance Guidance Notes

GUIDANCE NOTE	RIDDOR REPORTING	Code: N005	Issue: D

INTRODUCTION

The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR) require that some work-related accidents, diseases and dangerous occurrences are reported to the relevant enforcing authority. Employers, the self-employed and those in control of work premises all have duties under RIDDOR.

DEATH OR MAJOR INJURY

If there is an accident connected with work and an employee, or a self-employed person working on company premises is killed or suffers a major injury (including as a result of physical violence), or a member of the public is killed or taken to hospital, the enforcing authority must be **notified immediately** by the quickest practicable means and, where required, a report sent within 10 days.

The following are reportable major injuries:

- Fracture other than to fingers, thumbs or toes;
- Amputation;
- Dislocation of the shoulder, hip, knee or spine;
- Loss of sight, either permanent or temporary;
- Chemical or hot metal burn to the eye or any penetrating injury to the eye;
- Injury resulting from an electric shock or electrical burn leading to unconsciousness or requiring resuscitation, or requiring admittance to hospital for more than 24 hours;
- Any other injury leading to hypothermia, heat-induced illness or unconsciousness; or requiring resuscitation; or requiring admittance to hospital for more than 24 hours;
- Unconsciousness caused by asphyxia or exposure to harmful substances or biological agents;
- Acute illness requiring medical treatment or loss of consciousness arising from absorption of any substance by inhalation, ingestion or through the skin;
- Acute illness requiring medical treatment where there is reason to believe that this resulted from exposure to a biological agent or its toxins or infected material.

OVER SEVEN-DAY INJURY

An “over-seven-day injury” is one which is not classified as a major injury but which results in the injured person being incapacitated for **more than seven consecutive days** (not counting the day of the accident but including weekends and rest days). The report must be made within 15 days of the accident.

As with all accidents, you must still keep a record of the accident if the worker has been incapacitated for more than three consecutive days. This should be recorded in the accident book.

OCCUPATIONAL DISEASE

If a doctor notifies an employee that he or she suffers from a reportable work-related disease the enforcing authority must be notified as soon as possible. A full list of reportable occupational diseases are identified in schedule 3 of the Report of Injuries, Diseases and Dangerous Occurances Regulations available on the HSE website.

Reportable diseases include:

- Certain poisonings;
- Some skin diseases such as occupational dermatitis, skin cancer, chrome ulcer and oil folliculitis/acne;
- Lung diseases, including occupational asthma, farmer's lung, pneumoconiosis, asbestosis and mesothelioma;
- Infections such as leptospirosis, hepatitis, tuberculosis, anthrax, legionellosis and tetanus; and
- Other conditions such as occupational cancer, certain musculoskeletal disorders, decompression illness and hand-arm vibration syndrome.

DANGEROUS OCCURRENCE

If something happens which does not result in a reportable injury but which clearly could have done, it may be classified as a dangerous occurrence, which must be **notified immediately** to the enforcing authority.

The following are reportable dangerous occurrences:

- Collapse, overturning or failure of load-bearing parts of lifts and lifting equipment;
- Explosion, collapse or bursting of any closed vessel or associated pipework;
- Failure of any freight container in any of its load-bearing parts;
- Plant or equipment coming into contact with overhead power lines;
- Electrical short-circuit or overload causing fire or explosion;
- Any unintentional explosion, misfire, failure of demolition to cause the intended collapse, projection of material beyond a site boundary, injury caused by an explosion;
- Accidental release of a biological agent likely to cause severe human illness;
- Failure of industrial radiography or irradiation equipment to de-energise or return to its safe position after the intended exposure period;
- Malfunction of breathing apparatus while in use or during testing immediately before use;
- Failure or endangering of diving equipment, the trapping of a diver, an explosion near a diver or an uncontrolled ascent;
- Collapse or partial collapse of a scaffold over 5 metres high, or erected near water where there could be a risk of drowning after a fall;
- Unintended collision of a train with any vehicle;
- Dangerous occurrence at a well (other than a water well);
- Dangerous occurrence at a pipeline;
- Failure of any load-bearing fairground equipment, or derailment or unintended collision of cars or trains;
- A road tanker carrying a dangerous substance overturns, suffers serious damage, catches fire or the substance is released; and
- A dangerous substance being conveyed by road is involved in a fire or released.

The following dangerous occurrences are reportable except in relation to offshore workplaces:

- Unintended collapse of:
  - Any building or structure under construction, alteration or demolition where over 5 tonnes of material falls;
  - A wall or floor in a place of work; and
  - Any falsework.
- Explosion or fire causing suspension of normal work for over 24 hours.
- Sudden, uncontrolled release in a building of:
  - 100kg or more of flammable liquid;
  - 10kg of flammable liquid above its boiling point;
  - 10kg or more of flammable gas;
  - 500kg of these substances if the release is in the open air.
- Accidental release of any substance which may damage health.

NEAR MISS

A near miss is any other occurrence where injury has not occurred but which clearly could have done. The term “near miss” has no basis in law but is a term frequently used in safety management. Enforcing authorities do not need to be notified of near misses. However, it is strongly recommended that a full investigation is carried out in line with the company’s accident reporting and investigation procedures.

NOTIFICATION/REPORTING

Fatal and major incidents may be notified by telephone to the National Incident Contact Centre between the hours of 8.30 a.m. and 5.00 p.m. on weekdays, without the need to follow up with a report.

Telephone the Incident Contact Centre on:

0845 300 9923

Reporting of all other incidents under RIDDOR must be submitted via the relevant online interactive form, available on the HSE Website - www.riddor.gov.uk .

On line forms are:

- F2508 Report of an Injury
- F2508 Report of a Dangerous Occurrence
- F2508A Report of a Case of Disease
- OIR9B Report of an Injury Offshore
- OIR9B Report of a Dangerous Occurrence Offshore
- F2508G1 Report of a Flammable Gas Incident
- F2508G2 Report of a Dangerous Gas Fitting

CONTACTING THE HSE OUT OF HOURS

The types of circumstances where HSE may need to respond out of hours are:

- Following a work-related death, or where there is strong likelihood of death following and incident at or connected with work;
- Following a serious accident at a workplace, to gather details of physical evidence that would be lost if you waited until normal working hours;
- Following a major incident at a workplace where the severity of the incident, or the degree of public concern requires an immediate public statement from either HSE or Government ministers.

The duty officer can be contacted on **0151 922 9235.**

GUIDANCE NOTE	PRE-EMPLOYMENT HEALTH SCREENING	Code: O002	Issue: A

GENERAL

The Equality Act 2010 came into force on 1st October 2010. It replaced all previous discrimination legislation and aims to update, simplify and strengthen legislation so as to protect individuals from unfair treatment and promote a fair and more equal society. The Act protects individuals on the grounds of age, disability, gender reassignment, race, religion or belief (including lack of belief) sex, sexual orientation, marriage and civil partnership, and pregnancy and maternity. These are described as "protected characteristics".

The Act also prohibits employers, or third parties acting on their behalf, from asking potential employees about their health before offering them work through pre-employment questionnaires. Companies who do ask job candidates about health pre-employment will find it harder to defend a claim against disability discrimination from an unsuccessful candidate.

The Equality and Human Rights Commission can take enforcement action against you if you ask job applicants any health or disability related questions that are not allowed by the Act. This includes sending job applicants health questionnaires asking questions other than those that are permissible under the Act before you have offered them a job.

The Act does however allow for certain circumstances where you can ask health related questions before you offer an individual a job. Those circumstances are restricted to asking questions that:

- will allow you to make any reasonable adjustments for the individual during the recruitment and selection process;
- will help you to decide whether a candidate can carry out a function that is essential (intrinsic) to the work they will be required to undertake;
- will assist you in monitoring the diversity among people making applications for jobs;
- will help you to take positive action to assist disabled individuals; and,
- will assure you that the candidate has the disability where the job genuinely requires the individual to have a disability.

Once an individual has passed the interview stage and they have been given an offer of employment you are permitted to ask appropriate health questions. When making an offer of employment, consider making it subject to a satisfactory health report. Remember that should you withdraw an offer of employment on health grounds you must be able to prove that the health issues raised mean an individual is unable to carry out an intrinsic function of the role.

JOB APPLICANT'S INFORMATION

It is perfectly acceptable for an employer to establish what skills, qualities, qualifications or experience an individual may have to ensure they are suitable for the job. This type of information is usually gathered via application forms or curriculum vitae (CVs). This information must not be used to directly discriminate unlawfully against them, e.g. an applicant being rejected because they fall within one of the "protected characteristics" mentioned above.

It is however acceptable for you to ask questions where the question relates to a person's ability to carry out a function that is intrinsic (or absolutely fundamental) to that job. Where a health or disability related question would mean you would know if a person can carry out that function with reasonable adjustments in place, then you can ask the question.

An example given in the Equality Act's explanatory notes of "intrinsic to the work concerned" is a warehouse job involving heavy lifting, where the employer would be permitted to ask questions relevant to establishing whether the employee is able to cope with such duties.

REASONABLE ADJUSTMENTS

As before, the Act puts a duty on employers to make reasonable adjustments. Reasonable adjustments ensure that in any particular case a disabled job applicant or employee is not disadvantaged by reason of working practices or the physical features of premises. The Act also includes a duty to take reasonable steps to provide auxiliary aids/services where this could alleviate any disadvantage and makes it clear that the costs should not be passed on to the disabled person. You should seek professional advice when considering reasonable adjustments and what is practicable.

GOOD PRACTICE

Use job descriptions and person specifications to aid recruitment. These focus on the key requirements of the role including skills, experience and qualifications. They will help you to more easily identify the right person for the job and will help to avoid discrimination. When using job descriptions and personal specification you should make it clear what the job involves and the skills, qualifications, qualities and experience you are looking for. Try to avoid making assumptions how a job will be done as there could potentially be a different way of doing it which may include making reasonable adjustments. When specifying skills, qualifications, qualities and experience try to be clear as to whether they are essential or desirable.

GUIDANCE NOTE	HEALTH SURVEILLANCE (NOISE)	Code: O007	Issue: A

In accordance with the requirements of the Control of Noise at Work Regulations, this company shall provide health surveillance for all employees who are likely to be regularly exposed to noise levels at or above the upper exposure action values, or who are at risk for any reason, e.g. they already suffer from hearing loss or are particularly sensitive to damage. This health surveillance will include:-

- Regular hearing checks under controlled conditions.
- Advising employees of the results of their hearing checks.
- Keeping (in confidence) health records.
- Ensuring that employees identified with hearing damage are examined by a doctor.

The purpose of our noise health surveillance programme is to:

- Identify when employees might be suffering from early signs of hearing damage.
- Where necessary, do something to prevent the damage getting worse.
- Check that control measures are working.

Where possible, we shall start the health surveillance before employees are exposed to noise (i.e. for new starters or those changing jobs) to give a baseline; otherwise, it will be introduced at any time, as necessary, for employees already exposed to noise. This will be followed by a regular series of checks, usually annually for the first 2 years of employment and then at 3-yearly intervals (although this may need to be more frequent if any problem with hearing is detected or where the risk of hearing damage is high).

The hearing checks will be carried out by a competent person or organisation, e.g. an occupational health professional, a doctor or a nurse with appropriate training and experience.

Where appropriate, this company shall:

- Keep health records for each employee (see note below).
- Ensure records are available to employees, an occupational health adviser or appointed doctor and to inspectors appointed by the relevant enforcing authority.
- Act upon any recommendations made by the occupational health service provider about employees' continued exposure to noise.
- Use the results to review and, if necessary, revise our risk assessment and our plans to control risks.

Analysing the results of noise health surveillance for our workers will reflect how well our measures to control noise are working, and allow us to target noise reduction, education, and compliance practices more accurately.

Note: The Control of Noise at Work Regulations does not specify a minimum period for which health records must be kept. Therefore, records are to be maintained and readily available for inspection during the employment period of any employee under medical surveillance. Health records shall subsequently be offered to the Health and Safety Executive should this company cease to trade.

GUIDANCE NOTE	FOOT PROTECTION	Code: P002	Issue: A

INTRODUCTION

Foot injuries are common whilst at work, and employers have basic duties regarding the provision and use of personal protective equipment to safeguard the feet.

CAUSES OF INJURY

Foot injuries usually result from the following causes:-

- Crushing caused by heavy objects falling onto part or all of the foot.
- Foot penetration due to standing or walking onto a sharp object, e.g. nails left imbedded in timber.
- Contact with irritant or corrosive chemicals, e.g. cement burns whilst pouring concrete.

LEGAL REQUIREMENTS

The Personal Protective Equipment at Work Regulations governs the provision and use of all protective clothing, including footwear. Where a risk assessment identifies the need for safety footwear to protect against one or more of the risks outlined above, this must be provided free of charge by the employer or the self- employed.
The regulations also require that:

- The footwear is properly assessed before use to ensure it is suitable.
- It is maintained and stored properly.
- It is provided with instructions on how to use it safely.
- It is used correctly by employees.

ASSESSING SUITABLE SAFETY FOOTWEAR

To allow for the right type of safety footwear, carefully consider the different hazards in the workplace, this will enable you to assess which types of footwear are suitable to protect against your particular hazards.

Ask your supplier for advice on the different types of footwear available, and how suitable they are for different tasks.

Where a significant risk of foot injuries exist, the footwear should:

- Be strong enough to withstand the stresses placed upon it.
- Have protected (steel) toecaps capable of resisting a heavy falling object.
- Where there is a risk of foot penetration the footwear should incorporate a steel midsole, or other armouring to prevent this type of injury.
- Be robust enough and have sufficient grip for the working environment.

It must also be:

- Comfortable.
- Flexible to reduce the risk of tiring legs and feet.
- Capable of absorbing perspiration.
- Waterproof (where required).

COMMON TYPES OF SAFETY FOOTWEAR

- **The Safety Boot or Shoe**. This is the most common type of safety footwear and it has a steel toecap and most types have a protected mid-sole. They are usually worn in construction or industry where heavy items could fall onto feet.
- **Wellington Boots**. These should be worn to protect against water and corrosive materials such as cement. They are usually made of rubber, but are available in polyurethane and PVC which is warmer and more resistant to chemicals, oils, petrol, greases and sunlight. Wellington boots can be obtained with corrosion and impact resistant toe-caps, rot-proof insoles, ankle bone padding and cotton linings. They range from ankle boots to chest waders. This type of footwear should be worn for operations where water or other liquids may be present.
- **Safety Trainers**. In recent years a range of softer, more flexible safety footwear, known as safety trainers have been introduced. These are fitted with a protective toe-cap and anti-slip soles. Whilst their resistance to sole penetration is usually less than that provided by the safety boot, they can be worn for a wide variety of work activities, provided the area is free from materials likely to penetrate the wearers' foot.

MAINTENANCE

Safety footwear should be maintained in good condition, checked regularly and discarded if worn or deteriorated. Laces should be checked and replaced as necessary. (Do not replace laces with bits of wire or string) Materials lodged into the tread should be removed. The stitching should be checked for loose, worn, or cut seams. Spraying the upper layers of new footwear with a silicone spray or applying protective wax will give extra protection against wet conditions.

CE MARKING

Ensure that any safety footwear purchased is "CE" marked and complies with the requirements of the Personal Protective Equipment Regulations. The CE marking signifies that the footwear satisfies certain basic safety requirements and in some cases will have been tested and certificated by an independent body.

GUIDANCE NOTE	HAND PROTECTION	Code: P003	Issue: A

DECIDING WHAT TYPE OF HAND/ARM PROTECTION IS NEEDED

Safety gloves are available in a wide range of types. The type and degree of protection afforded by gloves will depend on the glove material and the way the glove is constructed. Gloves must be comfortable, fit well and be suitable for purpose. There is no point insisting on the use of gloves if an operative cannot grip, handle, feel the item they are using. A wide range of sizes may be needed to cater for all employees.

Suppliers of PPE should be able to provide further information on what type is suitable. The choice depends on the exact nature of the hazard(s) involved. The most common types of gloves include the following:

- Chemical protection gloves protect against contact with substances such as acids, alkalis, solvents, irritants, etc. Protection can be provided by many different materials.
- Gloves that protect against excessive high and low temperatures can be provided, made of materials such as Kevlar, terrycloth, glass fibre and leather, etc.
- Gloves providing protection against sharp edges, including splinters and abrasives, etc and made of leather, chain-mail, knitted Kevlar, etc.
- General use gloves are made from materials such as rubber, plastic and knitted fabric. They can resist abrasion, repel some liquids and provide a good grip. Some thin gloves can protect the hands while still providing good dexterity and touch, such as those used by surgeons. In most cases, general-purpose gloves should only be used against low risks.

The types of hazards which can be protected against include the following.

- Penetration and abrasion: gloves made from chain mail will resist strong sharp cuts; chain mail, leather, nitrile and PVC with fabric liner can protect from penetration and abrasion. Knitted Kevlar gloves will protect against cuts, and Kevlar needlefelt gives good puncture resistance.
- Thermal protection: available in various weights and construction, cotton terrycloth gloves will protect from both heat and cold, (but they do tend to impede dexterity). Neoprene gloves are good for handling oils in low temperatures. Gloves made from Kevlar, glass fibre and leather can protect against higher temperatures, and aluminised gloves can be used to handle hot materials such as would be used in foundries.
- Fire resistance: chromed leather gloves are fire retardant.
- Chemicals (contamination) protection: the degree of chemical protection will depend on the glove material, its thickness and method of construction. It is vital that manufacturers are consulted and their instructions followed regarding gloves to protect against chemicals, especially toxic chemicals where the time taken for the chemical to get through the glove material is the critical factor. Materials available are natural rubber; synthetic rubbers such as neoprene, nitrile and butyl; and “plastics“ PVC, PVA and viton. Any chemical resistant gloves may be used when handling powdered chemicals, but some glove materials may be adversely affected by abrasion.
- General glove use: natural and synthetic rubber, plastic or knitted fabric gloves will allow dexterity, resist cuts and abrasions, repel liquids and allow a good grip. Rubber gloves are softer and allow a sensitive touch and give a firm grip in water or wet conditions. Leather, cotton knit or other general purpose gloves are suitable for most common jobs. General purpose gloves should only be worn to protect against minimal risks to health and safety, such as gardening and washing up, and similar low-risk tasks.

- Electrical hazards: voltage and the conditions in which the hazard exists should be taken into account, but generally natural rubber latex gloves offer excellent electrical insulating properties. Protective gloves designed for electrical insulation purposes are covered by a stringent standard BS EN 60903: Live Working. Gloves of Insulating Material. Gloves used for electrical safety within the EU must conform to this standard.

When providing protection against chemicals, it is important to know the exact nature of the substances in order to identify suitable glove materials. The safety data sheets on the substances may provide some information on which types of gloves are acceptable.

The degree of protection provided by gloves will depend on:

- The material used.
- The thickness of the gloves.
- How they have been made.

In addition to hand protection, the provision of arm protection may be needed. This could be in the form of long gloves or as separate arm protectors, which can complement shorter gloves for some risks, such as heat protection.

Barrier cream can be useful in some circumstances where it is not possible to use gloves. For example, gloves are not suitable in a machine shop but there may be coolants and other substances that can affect the skin. However, barrier creams are not a substitute for suitable gloves.

Latex gloves can be very useful at work, however, some people are allergic to latex and are unable to use gloves made of this material. They may react to the powder present on the gloves. In this case, other employees should not use this type of glove near to anyone with a latex allergy.

Working for long periods wearing impervious gloves can adversely affect the skin, causing sweating and irritation. It might also aggravate existing skin conditions. Wearing a pair of thin cotton-lined gloves under the impervious ones can help reduce this problem.

Gloves should not be worn by anyone working with moving machinery (e.g. drills, lathes, etc) because of the risk that the gloves may get caught in the machine and cause the wearer to be drawn in.

HAND AND ARM PROTECTION: STORAGE AND MAINTENANCE

Care should be taken when putting on, using, taking off, and storing gloves. They should be kept in good condition, checked regularly and changed if damaged, worn or deteriorated. They should:

- Be free from holes, cuts or tears.
- Have no foreign bodies or materials embedded in the glove material.
- Not be distorted out of shape.

Gloves should be stored somewhere clean and free from contamination. There should be adequate facilities for the disposal of contaminated protective gloves.

Glove cleaning should be carried out following the manufacturer’s recommendations as special conditions or requirements might apply. For example, repeated washing may remove fungal or bacterial inhibitors from the lining of the glove which may ultimately lead to skin irritation. There is also a risk of cross-contamination as chemical residues can remain on gloves even after washing.

Contact between gloves and chemicals should be kept to a minimum, as some chemicals can alter the physical characteristics of a glove and impair its protective properties. Gloves contaminated by chemicals should be washed as soon as possible and before they are removed from the hands.

People using non-disposable gloves for chemical protection should clean the gloves before taking them off and then take them off in a manner that does not risk them contaminating themselves or the insides of the gloves. If they are grossly contaminated, they should be thrown away.

People using disposable gloves should take them off so that they do not touch the outside of the gloves. This can be done by pulling from the cuff and turning the glove inside out while removing it, providing the cuff is not contaminated (in which case, longer gloves are probably required).

GUIDANCE NOTE	RESPIRATORY PROTECTION RPE	Code: P004	Issue: A

INTRODUCTION

Suitable respiratory protective equipment (RPE) must be provided if, despite the precautions taken, exposure is not adequately controlled. In the hierarchy of control measures RPE is regarded as the last resort as a means of controlling exposure to hazardous substances. It is only when the exposure cannot be adequately reduced by other means, including process and work methods modification and engineering controls, should the use of RPE be considered. Where RPE is provided, the employer must provide adequate training in its selection, use, maintenance and storage.

The RPE must be suitable for the purpose for which it is used. This means that it must provide effective protection to the wearer in the circumstances in which it is worn. It must be capable of providing a sufficient quantity of clean air for the wearer to breathe, it must fit the wearer and the wearer must use it properly in accordance with the manufacturer's instructions. If the respirator is not a disposable 'one shift' type, it must also be cleaned daily and maintained in accordance with the manufacturer's instructions. A risk assessment will identify which specific type of RPE is suitable

TYPES OF RESPIRATORY PROTECTIVE EQUIPMENT

RPE is divided into two groups; respirators and breathing apparatus, which are further divided into other classes.

1) Respirator (filtering device): this filters or cleans air before it is inhaled by the wearer. Respirators can protect against dust, fibres, fumes and gas, but are not suitable to be worn in environments which are immediately dangerous to life or health, i.e. those where there is little or no oxygen to breathe, such as a confined space.
2) Breathing apparatus (BA): this delivers breathable air or oxygen to the wearer from an independent source, either through an air-line or from a portable container. As a result, breathing apparatus may be suitable for environments that are immediately dangerous to health or life

OTHER CLASSES OF RPE

These two groups are further sub-divided into other classes of RPE, such as:

1) Disposable and non-disposable half masks.
2) Air-line and container-fed breathing apparatus.

All disposable respirators must be individually CE-marked. They are also marked to show the European standard, EN 149, and class:

- FFP1 (low efficiency).
- FFP2 (medium efficiency).
- FFP3 (high efficiency).

It is vitally important to maintain RPE in effective and efficient working order.

- Follow the instructions in the manual.
- If any equipment is faulty, stop work until it is repaired.
- Make sure that users examine their RPE and test it works properly before each use.
- Examine and test RPE thoroughly at least once every three months.
- Check the air flow and air quality to air-fed RPE at least once every three months or before use.
- Ensure that compressors take in only clean air. Keep records of all examinations and tests for at least five years.
- Review records - failure patterns show where preventive maintenance is needed. If hot work involves cadmium, seek advice on biological monitoring.
- Make sure all RPE is properly fit-tested - get advice from your supplier.
- Make sure that workers check their RPE works properly before use.
- Replace RPE filters as recommended by your supplier. Throw away disposable masks after one use.
- Keep RPE clean and store it away from dust.

Everyone who is involved in the use of RPE should be appropriately trained. They must be aware of why the RPE is being worn and how it should be worn properly.

Training may be available from the supplier or manufacturer of your RPE.

GUIDANCE NOTE	EYE PROTECTION	Code: P005	Issue: A

EYE AND FACE PROTECTION

Any activities that include risks to the eyes that cannot be eliminated by other measures are likely to require eye protection. Activities that may involve splashes of chemicals or molten metals, dusts, gases, mists, sprays, bright light, etc can all damage the eyes. Activities that might require PPE to protect the eyes and face include:

- work with hazardous substances that cause burns and irritation, such as corrosives (acids and alkalis) or irritants (solvents, paints, bleach, etc).
- work with hazardous substances that can be absorbed through the skin, such as some solvents.
- work with molten metals or other molten substances.
- work with metal-cutting machinery.
- work with power-driven tools and equipment.
- work with hand tools for breaking, cutting, grinding or drilling hard materials; driving in pins, bolts or rivets; driving in masonry nails, cutting steel wires and banding; using cartridge operated hand tools; chipping metal and painted surfaces.
- tasks involving the blasting or erosion of concrete and other masonry, buildings and structures by shot or compressed air or high pressure water jets.
- dressing and grinding any materials with grinding machines, or by applying them to a grinding wheel, disc or band; breaking up with power or hand tools of concrete, masonry, bricks, tiles, glass, hard plastic, etc.
- welding that gives off intense light or other optical radiation that could damage the eyes (e.g. causing arc eye).
- use of UV light sources.
- work on any process with equipment that produces light amplification (e.g. lasers) or radiation.
- using any gas or vapour under pressure, including air guns.

Eye protection may be required not only for people carrying out the work, but also for others in the area who may come into contact with the processes and substances and therefore be at risk from the hazards. This should be identified when assessing risks.

DECIDING WHAT TYPE OF EYE/FACE PROTECTION IS NEEDED

There is a wide range of eye and face protection. Which type is suitable will depend on the risks involved. Suppliers of PPE should be able to provide further information on exactly which type will be suitable.

The main types of eye and face protection are as follows.

- Safety glasses or spectacles provide protection against impact from small objects. Different levels of impact resistance are available. They are similar to prescription glasses; however they have side shields that provide lateral protection. They are suitable for general working conditions where there may be minor dust, chips or flying particles. They provide little or no protection against liquids or vapours.

- Eye shields are similar to safety glasses; however they have a single frameless one-piece lens. These provide a similar level of protection to safety glasses. Some eye shields can be worn over prescription glasses.

- Safety goggles provide protection for the eyes from all angles as they provide a seal around the entire area of the eyes. They are used when the eyes need to be completely covered but the rest of the face does not need to be protected. Different types of goggles are available to provide protection from liquids, dusts, gases, vapours, molten metal and high impact levels. There are different designs to help prevent problems with fogging, however they need to be chosen carefully to ensure they are suitable for the work. Goggles can also be obtained with a range of filters to provide protection against lasers and welding.

- Face shields protect the face but do not fully enclose the eyes. Therefore, they do not provide protection against dusts, mists or gases, but can provide protection against impact, spraying, chipping, grinding or chemical splashes. They are frequently used in conjunction with eye protection, as they are not by themselves protective eyewear. They can include welding filters or reflective metal screens that deflect heat. These are useful in blast and open-hearth furnaces and other work involving radiant heat.

For protection against light and other non-ionising radiation (e.g. lasers, ultraviolet, welding flashes), it is important to make sure that you choose the correct type of filter.

SELECTING SUITABLE EYE/FACE PROTECTION

The selection of suitable eye protection depends primarily on the hazard, but comfort, style and durability should also be considered. Employees should be consulted and involved in the selection process.

Safety glasses are available in a variety of styles, weights and sizes, etc. They can include adjustable side arms and be fitted with prescription lenses for people who need them. They should be treated to reduce fogging problems. Most manufacturers offer a range of prescription safety spectacles which are individually matched to the wearer.

Eye shields can be useful for visitors and other people who only need eye protection for short periods as some styles can be worn over prescription glasses. However, wearing both an eye shield and prescription glasses is unlikely to be comfortable for long periods and so it is usually better to provide prescription safety glasses to employees.

Goggles are heavier and less comfortable than glasses; however they provide much better protection. They are more prone to misting and should be treated with anti-mist coatings.

Face shields are the heaviest and bulkiest form of protection, however they should be comfortable if they are fitted with an adjustable head harness.

IS THE EYE PROTECTION COMPATIBLE WITH THE WORK TO BE DONE?

Eye and face protection can interfere with how well people can see and this needs to be considered when selecting it.

It is often necessary to wear eye and face protection with other types of protection, especially respiratory protection. The best solution can be to use PPE that combines the different types of protection required.

EYE AND FACE PROTECTION: STORAGE AND MAINTENANCE

All eye protectors need to be properly cared for and stored.
Personal issue eyewear should be stored in a suitable spectacle case or eyewear container when not in use. Those for visitors should also be suitably stored - usually in a purpose made “store-and-issue” wall mounted container.

The lenses of eye protectors must be kept clean; dirty lenses can restrict vision and cause eye fatigue, which can lead to accidents. If eye shields or other eye protection for visitors are provided, they should be thoroughly cleaned before they are reissued.
It may be necessary to find out from the suppliers the best way of cleaning the lenses of safety eyewear. However, the best method for cleaning should in most cases be to wet the lenses with water or a proprietary lens cleaning fluid and wipe them dry with a tissue or lint-free cleaning cloth.

Anti-misting cleaning fluids may be needed if misting is a problem; lens cleaning fluid containing anti-misting and anti-static properties can be used.

Wiping lenses clean with a dry cloth, especially plastic or polycarbonate lenses, should be avoided as it may scratch them. Lenses that become scratched or pitted, or that have particles impacted on them, must be replaced as they may restrict vision and their impact resistance may also be impaired.

It is recommended that any issue of PPE to an operative is recorded in a register as this is proof that the associated PPE has been issued.

GUIDANCE NOTE	HIGH VISIBILITY CLOTHING	Code: P006	Issue: A

INTRODUCTION

The Management of Health and Safety at Work Regulations require employers to assess the risks to their employees. Employers' risk assessments should identify all the tasks for which the workers will need HV clothing. Employers should also ensure that the clothing is not only suitable for the task but that it will be worn when required.

The selection and use of HV clothing are covered by the Personal Protective Equipment at Work Regulations 1992. In practice, this means that HV clothing will be mandatory for the majority of people whose work involves them spending time in or around vehicles or moving plant equipment.

Remember: HV clothing and other personal protective equipment (PPE) are always the last line of defence. Wherever possible other measures to reduce or control the risks should be adopted first.

SELECTION OF HV CLOTHING

Many factors should be taken into account to ensure that the correct clothing is chosen for a particular task.
Choice of clothing should take into account ambient and artificial lighting conditions at the workplace, and the effect of conditions such as fog and snow.
For some jobs an HV waistcoat, for example, may be all that is needed, but those workers who are particularly at risk, may need full body HV clothing so that they are as visible as possible to a driver or operator who is likely to be some distance away. HV clothing should provide adequate protection during the day and at night, as well as in adverse weather. AS A RULE: the darker the conditions or worksite, the greater the amount of HV clothing required.

To be effective HV clothing should be of a colour that will allow the wearer to stand out against the ambient background found in the working environment. In practice the best colours for this purpose are likely to be day-glo fluorescent orange or yellow. Where necessary the clothing should also incorporate retroreflective material to make the wearer visible when seen in headlights in poor lighting conditions or during darkness. This may require reflective strips at or below waist level on waistcoats or jackets, or strips on trousers.

HV clothing should be comfortable and fit the wearer properly. It should cause the minimum of restriction in the wearer's movement.

COMPATABILITY WITH OTHER FORMS OF PPE

If two or more types of PPE are worn, they should not interfere with each other. Therefore for example, protective clothing for chemical spills should also provide the necessary level of conspicuity. Similarly, wet or cold weather clothing should have suitable HV qualities or be capable of being worn under HV garments.

BRITISH STANDARDS

HV clothing should be manufactured to a recognised standard. The British Standard for high visibility warning clothing is BS EN 471. This is a harmonised European standard produced with the legal requirements for PPE in mind. Clothing which conforms to the standard is marked with a pictogram like this: the first number (X) indicates the class of conspicuity, this depends on the minimum area of conspicuous materials that are incorporated into the clothing, with Class 3 being the best and Class 1 the lowest; the second number (Y) indicates the retroreflection performance with Class 2 being more visible than Class 1 when seen in headlights during darkness. The standard gives specifications for coveralls, jackets, waistcoats, tabards, trousers and harnesses. High visibility clothing must be 'CE' marked to show it meets the new European rules on the manufacture of PPE. Remember: the CE mark only means that the clothing meets the standard. It does not mean it can be used in all situations. HV clothing must be suitable for the actual conditions of use.

DUTIES OF EMPLOYERS

You must:

- Provide any HV clothing needed for the job free of charge to any employees who may be exposed to significant risks to their safety;
- Maintain HV clothing in a clean state and in good working order. It should be checked before being given to employees;
- Provide storage facilities for clothing when not in use;
- Provide adequate information, instruction and training to enable employees to use HV clothing correctly. This should include an explanation of the risks, why the clothing is needed, how and when it should be worn;
- Supervise employees to ensure that they wear the clothing correctly and whenever it is needed.

DUTIES OF EMPLOYEES

- Employees should wear the HV clothing provided as instructed by your employer.
- Look after clothing issued to you, check for and report any damage or defects to your employer.
- Use the storage facilities provided when the clothing is not in use.
- Remember: damaged or ill-fitting clothing will not protect you properly.

REFERENCES

Management of health and safety at work: approved code of practice

Personal protective equipment at work: guidance on regulations

British Standard BS EN 471 high visibility clothing

GUIDANCE NOTE	HEARING PROTECTION	Code: P007	Issue: A

INTRODUCTION

Hearing protection should be issued to all employees where extra protection is needed, over and above what has been achieved using noise control. It may also be used as a short term measure to protect employees whilst other methods of controlling noise are being developed. You should not however use hearing protection as an alternative to controlling noise by technical and organisational means.

EMPLOYERS DUTIES

Employees are required to:-

- Provide your employees with hearing protection if they ask for it, and their noise exposure is above the lower action level of 80Dba.
- Provide your employees with hearing protection, and ensure that they use it properly, when noise levels exceed the upper action level of 85 Dba.
- Identify hearing protection zones, that is, areas where the use of hearing protection is mandatory, and use signs to mark such areas where possible.
- Provide employees with training and information on how to use and care for the particular hearing protection that they are issued.
- Ensure that employees use and maintain their hearing protection correctly, so as to maximise their protection.

EMPLOYEES DUTIES

- Co-operate with your employer by wearing the hearing protection he has provided.
- Wear hearing protection properly, whenever you are in a hearing protection zone.
- Look after your hearing protection, do not modify it, and report any problems or damage to your supervisor immediately.
- Do not share hearing protection.
- Do not remove hearing protection, even for a short time whilst still within a hearing protection zone.

EFFECTIVE USE

- Ensure that hearing protection provides sufficient protection. The aim should be to achieve below 85Dba at the ear.
- Target the use of hearing protection at the noisy tasks and jobs that are carried out in a working day.
- Select hearing protection that is suitable for your particular working environment. This should include consideration of comfort and hygiene.
- Ensure that the selected hearing protection is compatible with other protective equipment such as hard hats, dust masks, and eye protection.
- Provide a range of hearing protection so that employees can select the one that suits them best.
- Do not provide hearing protection that cuts out too much noise. This can cause a feeling of isolation, and a subsequent unwillingness to wear it.
- Do not make the use of hearing protection compulsory in areas that do not require it, or introduce a “blanket” approach. Rather target its use, and only encourage employees to wear it when they need to.

MAINTENANCE

To ensure that hearing protection remains serviceable, and continues to work effectively you should check that:-

- It remains in good, clean condition.
- Earmuff seals are undamaged.
- The headband tension is not reduced.
- No unofficial modifications are made.
- Compressible earplugs are soft, pliable, and clean.

Supervisors should set an example by the wearing of hearing protection at all times whilst in a hearing protection zone, and should carry out spot checks to ensure that rules are being followed, and that hearing protection is being used correctly by employees.

TYPES OF HEARING PROTECTION

EARMUFFS

- Make sure that earmuffs totally cover the ears.
- Make sure that earmuffs fit tightly with no gaps between the seal and your head.
- Do not stretch the headband.
- Do not trap hair, jewellery, glasses, hats, leads from personal stereos etc. under the seal.
- Keep the seals and foam inside the earmuffs clean.
- If you see splits or cracks in the seals ask for another pair.

EARPLUGS

- Insert earplugs properly - ask for instructions.
- If you have any ear problems or infections, ask for medical advice before use. Earmuffs will almost certainly be a better option.
- Keep earplugs clean.
- Follow manufacturers instructions for washing earplugs.
- Only use disposable earplugs once, and then throw away.
- Ensure that you have clean hands before inserting earplugs.
- Replace earplugs at regular intervals.

SEMI-INSERTS / CAPS

- Follow the same guidance as for earplugs and make sure any headband retains its tension.

REFERENCES

Regulations/ACoPs:

HSE Guidance: Protect your Hearing IND(G)299
Noise at Work IND(G)362(rev1)

GUIDANCE NOTE	HEAD PROTECTION	Code: P008	Issue: A

The following is part of the construction (Head Protection) Regulations

Every employer shall ensure so far as is reasonably practicable that each of his employees who is at work on operations or works to which these Regulations apply wears suitable head protection, unless there is no foreseeable risk of injury to his head other than by his falling.

Every employer, self-employed person or employee who has control over any other person who is at work on operations or works to which these Regulations apply shall ensure so far as is reasonably practicable that each such other person wears suitable head protection, unless there is no foreseeable risk of injury to that other person other than by his falling.

An exemption under the Employment Act for turban-wearing Sikhs means that they do not need to wear head protection while on a construction site if they are wearing a turban. Therefore, the duties on employers and the self-employed person in these Regulations to provide head protection, and ensure that it is worn, do not apply in connection with the wearing of head protection by a turban-wearing Sikh.

No other workers are exempt from the Regulations; this includes Sikh construction workers if they are not wearing their turbans.

In most cases, suitable head protection will mean an industrial safety helmet conforming to the current British Standard or equivalent standard.

Some helmets are produced so additional safety attachments can be implemented for the specific task at hand:

- Ear muffs to reduce the exposure to excessive noise levels.
- Visors of fenders to protect the eyes or face.
- Chin straps to keep the helmet in place.
- Additional comfort features such as sweat bands.

The design of the helmet may vary dependant on the associated trades scope of work such as rope access techniques, tree surgeons etc.

You can use different colour helmets to detect certain trades such as:

- Black for supervisor.
- Orange for slinger banksman.
- Green for first aider.
- Red for fire marshal etc.

Head protection must be maintained and in good condition. It should be stored in a safe place which is not in direct sunlight or in excessive temperatures. It should be inspected on a regular basis for defects and should normally be replaced at intervals designated by the manufacturer.

It is recommended that any issue of PPE to an operative is recorded in a register as this is proof that the associated PPE has been issued.

GUIDANCE NOTE	TRANSIENT WELFARE FACILITIES	Code: Q004	Issue: A

INTRODUCTION

This information sheet is aimed at employers and the self-employed in construction and those who control construction work. It gives guidance on the welfare facilities which should be made available to workers on transient construction sites. For the purposes of this information sheet, a transient construction site is where short duration construction work is carried out by people working at one or many locations (typically short duration work covers work of up to a week's duration). For example, emergency works, small-scale maintenance at fixed premises, maintenance work carried out by or on behalf of utilities, etc. Construction work of a longer duration carried out while moving over a continuous geographical area, e.g. major road-works, cable laying contracts, etc, is also considered a transient construction site.

Duties

Whoever has overall control of the construction site is responsible for ensuring that the legal requirements for welfare are met. If you are an employer or are self employed you have a duty to ensure that everyone working under your control is provided with suitable welfare facilities. In practice, the principal contractor or main contractor may decide to provide or arrange common facilities for everyone.

Planning

The availability of welfare facilities, their location and maintenance need to be considered at the planning and preparation stages of every construction project. Where the Construction (Design and Management) Regulations 2007 apply, welfare provision needs to be considered in both the pre-tender and construction phase health and safety plans. Matters to be considered when planning the welfare provision include:

- The work to be carried out and the health risks associated with it;
- The duration and number of different locations;
- The number of people working at different locations;
- The distance from welfare facilities.

General requirements

Welfare facilities include toilets, washing facilities, changing and rest areas, drinking water and eating facilities. In addition to the provision of welfare facilities, regular maintenance and cleaning of them will be required. Particularly dirty work hazardous to health, e.g. sewer maintenance, may require the provision of additional washing and changing facilities. Detailed information on recommended standards for welfare facilities is contained in HSE Construction Information Sheet No 18(rev1).

Use of private and public facilities

Where the construction activity is a long way from central facilities, use of facilities in private premises such as in cafes is not considered suitable as permanent alternative arrangements. The use of private facilities may be acceptable in limited circumstances, e.g. where there is no alternative and the work is of no more than a week's duration. Permission, preferably in writing, should be obtained from the proprietor in advance of the work starting. Use of public toilets is acceptable only where it is impractical to either, return to facilities provided at the main base, use those at satellite compounds, or use a portable installation at the worksite. Where public or private toilets are used they need to be readily accessible to the worksite, open at all relevant times, be at no cost to the employee, be of an acceptable standard in terms of cleanliness and have hand-washing facilities. Workers need to be made aware of the arrangements to use them and be informed of their location in advance of the work starting.

Available options

For the purposes of this guidance note, the following table gives an indication of the options available, in order of preference, for providing welfare facilities for transient construction sites.

Type of Facility	Acceptable Provision
Toilets	(i) fixed installation: • at their base location • at the satellite compound • on site (ii) portable installation on site (iii) suitably designed vehicle incorporating a chemical toilet (iv) fixed installation near site (includes public toilets) (v) portable installation near site (vi) pre-arranged use of private facilities
Washing Facilities Washing	(i) hand basins/bowls as part of installations as above (ii) hand-washing facilities made available within the work vehicle with a supply of clean hot and cold, or warm water (running water so far as is reasonably practicable) (iii) provision of non-alcoholic wet wipes as an interim measure or in addition to washing facilities
Rest Areas	fixed installation: •at their base location •at the satellite compound •on site (ii) suitable container of drinking water adequately labelled on vehicle (iii) boiling water for hot drinks
Drinking Water	fixed installation: •at their base location •at the satellite compound •on site (ii) suitable container of drinking water adequately labelled on vehicle (iii) boiling water for hot drinks
Area for Changing and Storing Clothing	i) fixed installation: •at their base location clothing • at the satellite compound •on site (ii) on vehicle if appropriate

Examples

Below are some examples of the welfare facilities actually provided at some different types of transient construction worksites. These examples show that for all the main types of transient construction work, adequate welfare provision can be planned for and provided.

- A contractor in control of motorway widening work, which extended over 5 miles, sited fixed welfare facilities to the standard outlined in Construction Information Sheet 18(rev1) Provision of Welfare Facilities at fixed construction sites at its main base which was located at one end of the project. Transport was made available to carry workers to and from these facilities enabling use of them at the start and end of each shift and at mealtimes. Because of the size and nature of the project the need for additional facilities was identified in the planning phase and portable units, including chemical toilets with hand-washing basins, were sited at intervals along the length of the job. The contractor arranged for daily cleaning and weekly maintenance of all the welfare facilities.

- A contractor who was laying cable TV in a suburban area, which involved gangs of three to four workers working within a 10 mile radius of the main depot, provided portable welfare facilities, comprising toilets and hand-washing facilities at satellite compounds. These were placed so that they were accessible, in normal traffic conditions, within a 10 minute travel time period of where people were working. In addition, there was also a full range of welfare facilities, including showers, at the main depot for use at the start and end of each shift. Work vehicles were equipped with additional hand-washing facilities and seating.

- A contractor who carried out short-term road repair work using gangs of three workers provided a self-contained toilet which was towed by the work vehicle. This supplemented the provision of facilities available at the main depot. Hand-washing facilities consisting of a basin, soap and towels, a container for used disposable towels and a means of heating water, were provided in the work vehicle.

- Two county councils in control of mobile minor road-works provided toilet, mess and washing facilities incorporated into a suitably equipped vehicle.

- A contractor involved in small-scale maintenance work at occupied premises formally arranged with the clients, before the work started, for the workers to use the welfare facilities on the premises.

GUIDANCE NOTE	CONTRACTOR POST APPOINTMENT VETTING	Code: S005	Issue : A

CONTRACTOR HEALTH AND SAFETY COMPETENCE ASSESMENT ONGOING - REVIEW

Name of Company:
Address:

Tel: **Fax:**
E-Mail Address:
Nature of Business:
Last assessment Date: **Last Assessment Grade:**

Has the number of direct employees changed since the last assessment?	**Yes/No**
If yes and you now employ five or more direct employees please attach a copy of your Health and Safety Policy Statement. *(describe the health and safety responsibilities of management, and provide an index listing of your general arrangements and health and safety procedures)* **Also please attach a copy of your Environmental Policy, Policy Statement**	
Has your Health & Safety Policy been reviewed / updated since the last assessment? *If yes please supply details*	**Yes/No**
Has your Environmental Policy been reviewed / updated since the last assessment? *If yes please supply details*	**Yes/No**
Please supply evidence and details of any training courses or Health & Safety courses attended by employees since the last assessment.	
Please supply evidence and details of any training courses or Health & Safety courses attended by Management / Supervisory staff since the last assessment.	
Have your procedures for Informing staff, consulting staff and discussing with staff in relation to Health & Safety matters changed since the last assessment? *If yes please supply details*	**Yes/No**

Please provide any accident details since the last assessment.

Has your vetting procedure for Contractors or Sub-Contractors changed since the last assessment?	**Yes/No**
Any other comments that you would like to bring to our attention regarding Health & Safety. (Consider the work you have undertaken for this organisation since the last assessment; achievements, how you have managed risks associated with projects and how you have overcome any shortcomings)	

Name of person completing questionnaire:

Job title:

Date of completion:

Required action (for assessor's use only):

- **Review of H&S performance since last assessment date:**
- **Remedial Actions from Competency Assessment**

Grading:

Evaluated by:

……

Date: