

# **Health, Safety and Welfare in the Workplace**



## Subjects Covered

1. HASWA
2. PPE
3. RPE
4. LEV
5. Safety Signs
6. Top 10 Safety Risks
7. Top 5 Health Risks
8. RIDDOR
9. Disposal of Waste Materials
10. Fire Safety
11. Workplace Behaviour
12. Electricity at Work Regulations 1989
13. Visual Inspection
14. Working On-Site

## **1. THE HEALTH AND SAFETY AT WORK ACT 1974**

This act was a milestone in bringing in laws dealing with health, safety and welfare of persons at work.

Duties are placed on all persons connected with Health and safety at work, whether as employers, employees, self-employed workers, manufacturers or suppliers of plant and materials. Protection is also given to members of the public affected by the activities of persons at work.

This act is aimed at people and their activities, rather than at factories or construction sites and the processes carried out there.

The purpose of the act is to provide a legal framework to encourage high standards of Health and Safety at work.

### **What Are the Aims Of The Act?**

- To secure the Health, Safety and Welfare of people at work
- To protect other people against the risk to health or safety arising from the activity of people at work
- Controlling the keeping and using of dangerous substances and preventing people from unlawfully having or using them
- Controlling the release into the atmosphere of noxious or offensive substances from prescribed premises

### **Employers' Responsibilities**

Employers have a general duty under the HASWA to ensure, so far as is reasonably practical, the health, safety and welfare at work of their employees.

The HASWA specifies FIVE areas that in particular are covered by the employers' general duties:

- To provide and maintain machinery, equipment and other plant and systems of work that are safe and without risk to health
- Ensure ways in which particular articles and substances (e.g. machinery and chemicals are used, handled, stored and transported are safe and without risk to health)
- Ensure any place under their control and where employees work is kept in a safe condition and does not pose a risk to health, this includes ways in and out of the workplace, heating, lighting and adequate ventilation
- Employers must also provide adequate arrangements for welfare at work, this would include seating, washing and toilets
- Provide information, instruction, training and supervision necessary to ensure health and safety at work

### **Employees' Responsibilities**

- You must take care of your own health and safety and that of your work mates
- You must not misuse or interfere with anything provided for your health and safety
- Co-operate with your employer to enable him to comply with all safety laws.

## 2. WHAT IS PPE?

PPE is equipment that will protect the user against health or safety risks at work. It can include items such as safety helmets and hard hats, gloves, eye protection, high-visibility clothing, safety footwear and safety harnesses.

Hearing protection and respiratory protective equipment provided for most work situations are not covered by these Regulations because there are other more specific regulations that apply to them. However, these items need to be compatible with any other PPE provided.

The Employment Act 1989 gives an exemption for turban-wearing Sikhs working on construction sites from the need to wear head protection.

### What Do the Regulations Require?

PPE should be used as a last resort. Wherever there are risks to health and safety that cannot be adequately controlled in other ways, the Personal Protective Equipment at Work Regulations 1992 require PPE to be supplied.

The Regulations also require that PPE is:

- properly assessed before use to make sure it is fit for purpose;
- maintained and stored properly;
- provided with instructions on how to use it safely;
- used correctly by employees.

### Assessing Suitable PPE

To make sure the right type of PPE is chosen, consider the different hazards in the workplace and identify the PPE that will provide adequate protection against them; this may be different for each job.

Ask your supplier for advice on the types of PPE available and their suitability for different tasks. In some cases, you may need to get advice from specialists or from the PPE manufacturer.

Consider the following when assessing suitability:

- Does the PPE protect the wearer from the risks and take account of the environmental conditions where the task is taking place? For example eye protection designed to protect against agricultural pesticides may not offer adequate protection when using an angle grinder to cut steel or stone.
- Does using PPE increase the overall level of risk or add new risks, eg by making communication more difficult?
- Can it be adjusted to fit the wearer correctly?
- What are the needs of the job and the demands it places on the wearer? For example, the length of time the PPE needs to be worn, the physical effort required to do the job or the requirements for visibility and communication.
- If someone wears more than one item of PPE, are they compatible? For example, does using a respirator make it difficult to fit eye protection properly?

## The Hazards and Types of PPE

### Eyes

Hazards: Chemical or metal splash, dust, projectiles, gas and vapour, radiation.

Options: Safety spectacles, goggles, face-shields, visors.

Note: Make sure the eye protection has the right combination of impact/dust/ splash/molten metal eye protection for the task and fits the user properly.



### Head

Hazards: Impact from falling or flying objects, risk of head bumping, hair entanglement.



Options: A range of helmets, hard hats and bump caps.

Note: Some safety helmets incorporate or can be fitted with specially-designed eye or hearing protection. Don't forget neck protection, eg scarves for use during welding. Do not use head protection if it is damaged – replace it.

### Breathing

Hazards: Dust, vapour, gas, oxygen-deficient atmospheres.

Options: Disposable filtering face-piece or respirator, half- or full-face respirators, air-fed helmets, breathing apparatus.



### Protecting the Body

Hazards: Temperature extremes, adverse weather, chemical or metal splash, spray from pressure leaks or spray guns, impact or

penetration, contaminated dust, excessive wear or entanglement of own clothing.



## Hands and Arms



Hazards: abrasion, temperature extremes, cuts and punctures, impact, chemicals, electric shock, skin infection, disease or contamination.

Options: Gloves, gauntlets, mitts, wrist-cuffs, armllets.

## Feet and Legs

Hazards: Wet, electrostatic build-up, slipping, cuts and punctures, falling objects, metal and chemical splash, abrasion. Options: Safety boots and shoes with protective toe caps and penetration-resistant mid-sole, gaiters, leggings, spats.



## CE Marking



Ensure any PPE you buy is 'CE' marked and complies with the requirements of the Personal Protective Equipment Regulations 2002. The CE marking signifies that the PPE satisfies certain basic safety requirements and in some cases will have been tested and certified by an independent body.

### 3. WHAT IS RESPIRATORY PROTECTIVE EQUIPMENT (RPE)?

Respiratory Protective Equipment (RPE) is a particular type of personal protective equipment (PPE) designed to protect the wearer from breathing in harmful substances or from oxygen-deficient atmospheres when other controls are either not possible or insufficient on their own.

Work activities may result in harmful substances contaminating the air in the form of dust, mist, vapour, gas or fume. For example, when:

- cutting a material such as stone or wood;
- using a product containing volatile solvents;
- handling a dusty powder;
- welding stainless steel.



#### **4. LOCAL EXHAUST VENTILATION**

Local exhaust ventilation should:

- collect or contain the airborne contaminant;
- carry it away from workers for treatment and/or discharge to a safe place; and
- ensure adequate control of exposure and where applicable, below relevant workplace exposure limit (WEL).

##### **Thorough LEV Examination and Test**

Most LEV needs a statutory test at least once every 14 months to make sure it works well.

Exceptions to this are given in Schedule 4 of the COSHH Regulations.

The test must be done by a competent person, testing against standards in the LEV commissioning report.

- You must implement the report recommendations.
- Keep records of all examinations and tests for at least five years.

##### **Installation and Commissioning**

The LEV supplier should give you three documents:

A user manual describing what the LEV is designed to control, and how it achieves control. It should also contain the following:

- the LEV description, with diagrams;
- the LEV performance from commissioning;
- checks, maintenance and parts replacement schedules;
- description of the statutory 'thorough examination and test' and exposure targets;
- signs of wear and control failure to look out for;
- description of how operators should use the LEV so it works effectively; and
- list of replaceable parts.
- A logbook that includes:
  - schedules for regular checks and maintenance;
  - records of checks, maintenance, replacements and repairs; n checks that the LEV is being used in the right way; and
  - the name of the person making the 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 air velocities at stated test points; n calculations made;
  - written descriptions of commissioning, the tests made, and the outcome along with any air sampling results; and
  - a description of how operators should use the LEV so that it works effectively.



## 5. SAFETY SIGNS AND SIGNALS

The Health and Safety (Safety Signs and Signals) Regulations 1995 implemented a European Council Directive on minimum requirements for the provision of safety signs at work. The Directive standardised safety signs throughout EU member states so that wherever a particular safety sign is seen it provides the same message.

### What Do the Regulations Require?

The Regulations require employers to use a safety sign where there is a significant risk to health and safety that has not been avoided or controlled by the methods required under other relevant law, provided use of a sign can help reduce the risk. Safety signs are not a substitute for those other methods of controlling risks such as engineering controls and safe systems of work.

They apply to all workplaces and to all activities where people are employed, but exclude signs used in connection with transport or the supply and marketing of dangerous substances, products and equipment.

The Regulations require, where necessary, the use of road traffic signs in workplaces to regulate road traffic.

### What Is a Safety Sign?

The Regulations cover a variety of methods of communicating health and safety information in addition to the traditional safety sign or signboard. The terms used in the Regulations mean the following:

- safety and/or health sign – a sign providing information or instruction about safety or health at work by means of a signboard, a colour, an illuminated sign or acoustic signal, a verbal communication or hand signal;
- signboard – a sign which provides information or instructions by a combination of shape, colour and a symbol or pictogram which is rendered visible by lighting of sufficient intensity. In practice many signboards may be accompanied by supplementary text (eg 'Fire exit' alongside the symbol of a moving person). Signboards can be of the following types:
  - prohibition sign – a sign prohibiting behaviour likely to increase or cause danger (eg 'no access for unauthorised persons')
  - warning sign – a sign giving warning of a hazard or danger (eg 'danger: electricity');
  - mandatory sign – a sign prescribing specific behaviour (eg 'eye protection must be worn');
  - emergency escape or first-aid sign – a sign giving information on emergency exits, first-aid, or rescue facilities;
  - safety colour – a colour to which a specific meaning is assigned (eg yellow means 'be careful' or 'take precautions');
  - symbol or pictogram – these appear in Schedule 1, although some variation in detail is acceptable provided the meaning is the same. They are for use on a signboard or illuminated sign (e.g. the trefoil ionising radiation warning sign);

- illuminated sign – a sign made of transparent or translucent materials which is illuminated from the inside or the rear to give the appearance of a luminous surface (eg many emergency exit signs);
- acoustic signal – a sound signal which is transmitted without the use of a human or artificial voice (e.g. fire alarm);
- verbal communication – a predetermined spoken message communicated by a human or artificial voice;
- hand signal – a movement or position of the arms or hands giving a recognised signal and guiding persons who are carrying out manoeuvres which are a hazard or danger to people;
- fire safety sign

### Prohibitory Signs

- Round shape;
- Black pictogram on white background, red edging and diagonal line (the red part to take up at least 35% of the area of the sign).



No smoking



Smoking and naked flames forbidden



No access for pedestrians



Do not extinguish with water



Not drinkable



No access for unauthorised persons



No access for industrial vehicles



Do not touch

## Warning Signs

- Triangular shape;
- Black pictogram on a yellow background with black edging (the yellow part to take up at least 50% of the area of the sign).



Flammable material or high temperature\*



Explosive material



Toxic material



Corrosive material



Radioactive material



Overhead load



Industrial vehicles



Danger: electricity



General danger



Laser beam



Oxidant material



Non-ionising radiation



Strong magnetic field



Obstacles



Drop



Biological risk\*



Low temperature



Harmful or irritant material†

## Mandatory Signs

- Round shape;
- White pictogram on a blue background (the blue part to take up at least 50% of the area of the sign).



**Eye protection must be worn**



**Safety helmet must be worn**



**Ear protection must be worn**



**Respiratory equipment must be worn**



**Safety boots must be worn**



**Safety gloves must be worn**



**Safety overalls must be worn**



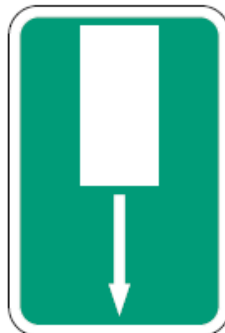
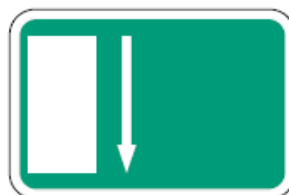
**Face protection must be worn**



**Safety harness must be worn**

### Emergency Escape or First-Aid Signs

- Rectangular or square shape;
- White pictogram on a green background (the green part to take up at least 50% of the area of the sign).



First-aid poster



Stretcher



Safety shower



Eyewash



Emergency telephone for first-aid or escape

## Firefighting Signs

- Rectangular or square shape;
- White pictogram on a red background (the red part to take up at least 50% of the area of the sign).



Fire hose



Ladder



Emergency fire  
telephone



Fire extinguisher

## **6. TOP 10 SAFETY RISKS**

1. Fall From a Ladder
2. Fall through a Fragile Roof
3. Lifting Operations
4. Struck by Plant
5. Overturning Plant
6. Fall from Scaffolding
7. Fall through an Internal Void
8. Asphyxiation Poisoning
9. Crushed by Falling Excavation
10. MEWP Crushing Entrapment

## **7. TOP 5 HEALTH RISKS**

1. Asbestos
2. Manual Handling
3. Noise
4. Silica
5. Vibration

## **8. RIDDOR - REPORTING OF INJURIES, DISEASES AND DANGEROUS OCCURRENCES REGULATIONS 2013**

RIDDOR puts duties on employers, the self-employed and people in control of work premises (the Responsible Person) to report certain serious workplace accidents, occupational diseases and specified dangerous occurrences (near misses).

If you are an Employer

If you are an employer, you must report any work-related deaths, and certain work-related injuries, cases of disease, and near misses involving your employees wherever they are working.

If you are Self Employed

If you are working in someone else's work premises and suffer either a specified injury or an over-seven-day injury, then the person in control of the premises will be responsible for reporting, so, where possible, you should make sure they know about it.

If there is a reportable accident while you are working on your own premises or in domestic premises, or if a doctor tells you that you have a work-related disease or condition, then you need to report it.

### **Types of Reportable Incidents**

Deaths and Injuries

If someone has died or has been injured because of a work-related accident this may have to be reported. Not all accidents need to be reported, other than for certain gas incidents, a RIDDOR report is required only when:

- The accident is work-related
- It results in an injury of a type which is reportable
- Types of reportable injury
- The death of any person

### **Types of Reportable Injury**

The Death of any Person

All deaths to workers and non-workers, with the exception of suicides, must be reported if they arise from a work-related accident, including an act of physical violence to a worker.

Specified Injuries to Workers

The list of 'specified injuries' in RIDDOR 2013 replaces the previous list of 'major injuries' in RIDDOR 1995. Specified injuries are (regulation 4):

- fractures, other than to fingers, thumbs and toes
- amputations
- any injury likely to lead to permanent loss of sight or reduction in sight
- any crush injury to the head or torso causing damage to the brain or internal organs



- serious burns (including scalding) which:
  - covers more than 10% of the body
  - causes significant damage to the eyes, respiratory system or other vital organs
- any scalping requiring hospital treatment
- any loss of consciousness caused by head injury or asphyxia
- any other injury arising from working in an enclosed space which:
  - leads to hypothermia or heat-induced illness
  - requires resuscitation or admittance to hospital for more than 24 hours

## 9. DISPOSAL OF WASTE MATERIALS

Most engineering sites produce significant waste, which if allowed to accumulate, can create new, or complicate existing, health and safety hazards. These range from basic nails in wood to attracting vermin. There are three types of waste that need to be controlled:

### **Non-Hazardous General Waste:**

This can be termed as day to day waste and is disposed off at a suitable refuse tip, contents include paper, timber, cardboard, food waste, cardboard etc.

### **Hazardous Waste:**

This can be paint, hydrocarbons, etc. The disposal of this class of waste is highly regulated and can only be undertaken at a licensed tip by an approved, licensed carrier.

### **Recoverable Waste:**

Waste such as scrap metals, timber, paper and hydrocarbons can be recovered through specific processes, if there is a viable facility, available to us, to recover these materials and process them back into useable resources this will always be undertaken.

Sourcing suitable recycling means for waste will always be a priority to site management. Recycling our waste means that we are conserving natural resources and minimising the quantity of materials sent to landfill.

## 10. GENERAL FIRE SAFETY

The Regulatory Reform (Fire Safety) Order 2005 (FSO) sets out the law on construction site general fire safety. The FSO requires that a 'responsible person' must carry out, and keep up to date, a risk assessment and implement appropriate measures to minimise the risk to life and property from fire. The responsible person will usually be the main or principal contractor in control of the site.

### Fire Fighting Equipment

As well as providing fire extinguishers for specific activities, such as hot work or LPG storage, they should also be located at identified fire points around the site. Unless the equipment itself is predominantly red in colour and the location self-evident, identification of the fire point can be achieved by providing a stand which is substantially red in colour, or providing an appropriate safety sign (ie one which complies with the Health and Safety (Safety Signs and Signals) Regulations 1996 or BS 5499: Part 1: 2002. Fire extinguishers should be located on hooks or stands to keep them above ground level.

The primary purpose of fire extinguishers is to tackle incipient fires to prevent them becoming larger, or to aid an escape. Putting out larger fires is the fire service's role and, as such, should not be tackled by site workers.

The extinguishers should be appropriate to the nature of the potential fire. For:

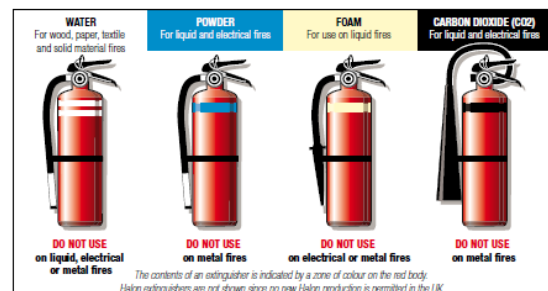
- wood, paper and cloth, use a water, foam or multi-purpose dry powder extinguisher;
- flammable liquids, use a dry powder or foam extinguisher; and
- electrical items, use a carbon dioxide (CO<sub>2</sub>) or dry powder extinguisher.

Extinguishers should conform to a recognised standard, such as BS EN 3–7: 2004. It is also important that there is an appropriate scheme to ensure they are regularly checked and properly maintained. This is not only to ensure that they are available and ready for use, but that accidents do not occur to the person using them.

Fire extinguishers and hose reels need to be inspected at least annually in accordance with a recognised procedure, such as that in BS 5306: Part 3, 2009 and BS 5306: Part 1, 2006 respectively. The work should be carried out by a competent person who has received appropriate training. The date and results of the examinations should be recorded, often on a service sticker attached to the individual piece of equipment, so that the particular extinguisher or hose reel checked is identifiable.

The number and type of extinguishers present depends on the fire hazard. For a typical spread of fire hazards, the following is considered to provide a reasonable level of cover per 200 m<sup>2</sup> of floor area, with no fewer than two each of (a) and (b) on each floor:

- one 9 litre water or foam; and
- one CO<sub>2</sub> extinguisher (at least 1.1 kg).



## 11. WORKPLACE BEHAVIOUR

'Human factors refer to environmental, organisational and job factors, and human and individual characteristics which influence behaviour at work in a way which can affect health and safety'. A simple way to view human factors is to think about three aspects: the job, the individual and the organisation and how they impact on people's health and safety-related behaviour.

### **The Job**

Tasks should be designed in accordance with ergonomic principles to take into account limitations and strengths in human performance. Matching the job to the person will ensure that they are not overloaded and that the most effective contribution to the business results. Physical match includes the design of the whole workplace and working environment. Mental match involves the individual's information and decision-making requirements, as well as their perception of the tasks and risks. Mismatches between job requirements and people's capabilities provide the potential for human error.

### **The Individual**

People bring to their job personal attitudes, skills, habits and personalities which can be strengths or weaknesses depending on the task demands. Individual characteristics influence behaviour in complex and significant ways. Their effects on task performance may be negative and may not always be mitigated by job design. Some characteristics such as personality are fixed and cannot be changed. Others, such as skills and attitudes, may be changed or enhanced.

### **The Organisation**

Organisational factors have the greatest influence on individual and group behaviour, yet they are often overlooked during the design of work and during investigation of accidents and incidents. Organisations need to establish their own positive health and safety culture. The culture needs to promote employee involvement and commitment at all levels, emphasising that deviation from established health and safety standards is not acceptable.

## 12. ELECTRICITY AT WORK REGULATIONS 1989

This legislation places legal implications on employers to ensure the safety of electrical devices in the workplace.

The regulations dictate that all portable equipment must be inspected regularly and tested to ensure that it is safe for use. 'Portable equipment' means any electrical item that can be moved, which means that this regulation covers items from computer systems and printers to kettles and televisions.

### **PAT Testing**

This is often referred to as portable appliance testing (PAT). There are three parts to the testing:

- visual inspection
- earth continuity test
- insulation test

The IEE Wiring Regulations (BS 7671) are the national standard to which all domestic and industrial wiring must conform.

### 13. VISUAL INSPECTION

Prior to starting work on-site there are a number of things that may need to be visually inspected:

- The work area (look out for hazards)
- Inspect documentation (e.g., has the method statement been signed?)
- Materials\* and components to ensure they are not damaged prior to use
- Equipment\* and tools to be used
- Site survey
- The root of the installation to ensure there are no clashes with other services

\* Some of the materials and equipment you will be using, and therefore need to inspect, may include:

- Ductwork sections square / Round
- Fans
- Attenuators
- Damper (fire & smoke)
- Fixings e.g.
  - o Washers
  - o Square plates
  - o M8 or M10 nuts and bolts
  - o M8 or M10 threaded bar
  - o Foam gasket
  - o Mastic

## **14. WORKING ON-SITE**

### **Reporting Work Progress**

There are a number of different people to whom it may be necessary to report work progress:

- The client
- Your employer
- Other contractors

Methods of communication could vary depending on the information being relayed and the person(s) being communicated with:

- Informal or formal progress meetings (weekly, monthly etc)
- Verbal communication
- Written emails
- Agreed schedules of work

### **Protecting the Work Area/Property**

Whilst carrying out your work it is imperative that you protect the area in which you are working and any of the client's property that may be in the vicinity.

There are a number of fundamental ways this should be done:

- Use signs and barriers to set-up the work environment
- Use protective dust sheets
- Use boards for AHUs when working in plantrooms
- Wear PPE, for example, white gloves when working on a second fix
- Follow specifications for fixings

### **Reporting Damage**

On finding any damage to the client's property or the fabric of the building you should follow site procedures and company rules when reporting any damages.

### **Ordering Additional Materials**

Should you require additional materials, tools or other equipment for your job you need to undertake a quantity check of stores on-site, check the site survey drawing, then complete any equipment forms or material lists.

### **Storage**

When storing tools, equipment, materials and components on-site you should follow site rules and company procedures with the use of containers, site boxes, and follow PUWER and COSHH regulations.

## **Confined Space**

A confined space is a place which is substantially enclosed (though not always entirely), and where serious injury can occur from hazardous substances or conditions within the space or nearby (e.g., lack of oxygen).

The Confined Spaces Regulations 1997 apply where the risks of serious injury from work in confined spaces have been identified.

These regulations contain the following key duties:

- avoid entry to confined spaces, e.g. by doing the work from the outside;
- if entry to a confined space is unavoidable, follow a safe system of work; and
- put in place adequate emergency arrangements before the work start