

Risk Control Guide

# PLANT AND EQUIPMENT SAFETY

## Introduction

This Risk Control Guide provides plant and equipment information and guidance on some of the common risk exposures to which businesses are affected. There are a diverse range of exposures within various industries. This list is not intended to be exhaustive, but is intended to raise awareness.

This Guide is based on United Kingdom regulation and practice. References are from UK sources.

Whilst all equipment used at work ranging from a hand held knife to a 2000 tonne power press is classified as 'work equipment' and covered by the Provision and Use of Work Equipment Regulations 1998 (PUWER), specific guidance is also in place for certain equipment such as fork lift trucks and abrasive wheels. The supply and use of 'work equipment' is also covered by the requirements of the Health and Safety at Work Act 1974 and the Management of Health and Safety at Work Regulations 1999.

## Abrasive Wheels

Abrasive wheels are powered grinding wheels or cylinders used within a variety of industries for grinding and cutting metal, typically in areas such as within engineering or maintenance workshops. They are also widely used in the construction industry for cutting concrete and stone materials.

The majority of accidents involving abrasive wheels are due to unsafe systems of work, unsafe equipment or operator error. Harmful effects caused from using abrasive wheels can lead to cuts, abrasions, burns and flying particles.

There is also a significant risk of impact injury due to a damaged or incorrectly mounted abrasive wheel bursting when operating at high speed.

Abrasive wheels also generate significant levels of dust, noise and vibration.

Abrasive wheels should only be operated by persons who have been adequately trained. Precautions must be taken when using and mounting the grinding wheel. Mounting and 'dressing' (i.e. levelling or squaring off the cutting edge of an abrasive wheel) must only be carried out by persons who have been specifically trained and authorised to do so.

Further information and guidance is available at:

<http://www.hse.gov.uk/pubns/priced/hsg17.pdf> - Safety in the Use of Abrasive Wheels

<http://www.hse.gov.uk/pubns/books/l22.htm> - Safe Use of Work Equipment (PUWER)

## Fork Lift Trucks & Transport

The HSE states that every year there are over 5000 incidents in the UK involving transport in the workplace, of which 50 prove fatal. Estimates suggest up to one-third of all road traffic accidents involve someone who is at work at the time.

The effects can lead to damage of property, stock, plant and injury or death.

A significant number of incidents are caused by operator error, such as careless manoeuvring, speeding, unstable loading, inadequate maintenance and misuse of equipment.

All employers have a duty of care to their employees, visitors and contractors under the Workplace Health, Safety and Welfare Regulations 1992 and the Management of Health & Safety at Work regulations 1999, to ensure the health safety and welfare at work of their employees. This includes minimising the risk of transport and pedestrian collisions, also the risk of structural damage caused by vehicle collisions, and possible injury from suspended or falling loads, or unstable and incorrectly stacked goods.

Key considerations must be made to the following areas in line with legal obligations:

- Site ergonomics for vehicle movement (one way systems / smooth floor surfaces / lighting)
- Vehicle specification and limitations for use
- Driver competency and training (including refresher training)
- Pedestrian / vehicle separation
- Site rules and speed restrictions
- Maintenance and repair (including pre/ post use inspections)
- Statutory Examinations
- Driving Policy (mobile phone policy, smoking, drugs and alcohol)
- Use of restraints / speed restrictors

Further information and guidance is available from:

<http://www.hse.gov.uk/workplacetransport/> - Vehicles at work

<https://www.hse.gov.uk/workplacetransport/about.htm> - Workplace Transport Safety

## Fitness Equipment Safety

Fitness equipment can present accident hazards to users.

Accidents involving treadmills and other stationary training equipment, as typically found in gyms, are fairly common and whilst the vast majority of these accidents are usually minor in nature, serious bodily injuries can occur.

British Standards BS EN 957-5:2009 sets out specific requirements and standards relating to this equipment and include, but are not limited to:

- Providing a clear safety area
- Documented risk assessments being undertaken prior to use
- Medical Screening
- Health Commitment Statement, formerly Physical Activity Readiness Questionnaires
- Induction Training and Supervision
- Equipment Maintenance
- Regular documented inspections

Further information and guidance is available from:

<http://www.ukactive.com/> - The Fitness Industry Trade Association

## Lifting Operations and Lifting Equipment Regulations (LOLER)

The Lifting Operations and Lifting Equipment Regulations were implemented with the aim of reducing the risk to people's health and safety from lifting equipment provided for use within the workplace.

The failure of lifting equipment can lead to significant injuries, death and property damage by the very nature in which they are used to transport heavy goods.

Lifting equipment includes any equipment used at work for lifting or lowering loads such as cranes, forklift trucks, lifts, hoists, and mobile elevating work platforms. It also includes any attachments used for anchoring, fixing or supporting it such as chains, slings and eyebolts.

It does not cover escalators which are covered by more specific legislation, i.e. the Workplace (Health, Safety and Welfare) Regulations 1992.

There are various duties of employers and employees in relation to the safe installation, positioning, safe working loads, planning work, examination, training and competency. This includes the required frequency of statutory inspections for all lifting equipment.

Further information and guidance is available from:

<http://www.hse.gov.uk/work-equipment-machinery/> - Work Equipment Machinery

<http://www.hse.gov.uk/pubns/indg229.htm> - Using Work Equipment Safely

## Personal Protective Equipment (PPE)

PPE is defined as “all equipment (including clothing to protect against the weather) which is intended to be worn or held by a person at work and which protects him against one or more risks to his health or safety”. Examples of such would include safety helmets, gloves, eye and hearing protection, high-visibility clothing, safety footwear and safety harnesses.

PPE needs to have been "CE" marked. The CE mark signifies that the PPE conforms to all relevant British and European Standards, and satisfies certain basic safety requirements. In most cases the equipment will have been type-tested and certified by an independent body.

Personal protective equipment must be provided and used at work wherever there are risks to health and safety that cannot be adequately controlled in other ways. Because the effectiveness of PPE can be easily compromised, e.g. by not being worn or used correctly, it should always be considered as the last resort and used only where other precautions cannot adequately reduce the risk of injury.

Where inadequate or ineffective PPE is used this can lead to long term health effects such as loss of hearing, sight, limbs or occupational diseases such as asthma. Therefore not only must the correct standard of PPE be provided, it must be capable of fitting the wearer correctly, and must be compatible with any other equipment used or worn. The wearer must also be instructed in the correct fitting, wearing and care/maintenance of the equipment.

Employers have a legal duty to provide PPE and ensure employees are wearing it. Employees also have a legal duty to co-operate with their employer and wear such equipment.

Further information and guidance can be found at:

<http://www.hse.gov.uk/toolbox/ppe.htm> - Personal Protective Equipment

## Plant Isolation

Serious accidents, many resulting in fatalities, have occurred during maintenance, cleaning or other operations when plant that was thought to be isolated and safe has been inadvertently set into motion. Taking into account the nature of plant and machinery, the consequences of injuries are severe and usually result in loss of limbs, disability or loss of life.

Every employer has a duty to ensure work equipment is provided with suitable means to isolate it from all sources of energy. Isolation points must be clearly identifiable, readily accessible and appropriate measures must be undertaken to ensure re-connection does not pose a risk.

A failure in communication can often be a contributory factor when employees from different shifts are involved or works span several shift patterns. Guidance on the use of permit to work (PTW) systems and acceptable / unacceptable methods of isolation are available on the HSE website.

For more complex or hazardous situations such as:

- work on live electrical equipment and switchgear,
- entry into dangerous or confined spaces,
- work involving heat,

specific detailed permit to work (PWT) systems may be required.

In any event the system adopted should be clearly documented, approved and enforced by management and not completely left to the discretion of tradesmen, however skilled or experienced.

Isolation means establishing a break in the energy supply in a secure manner, i.e. by ensuring that inadvertent reconnection is not possible. For work being carried out by more than one person on isolated equipment, a locking device with multiple locks and keys should be provided. Isolation of electrical equipment is dealt with under Regulation 12 of the Electricity at Work Regulations 1989.

Where possible, means of dissipating stored energy should be provided. Other energy sources such as potential, chemical or radiological energy, which cannot be isolated, should be prevented from adversely affecting workers through guarding or other appropriate protective measures, which should be specified on the PTW.

Further information and guidance is available from:

<http://www.hse.gov.uk/pubns/books/hsg253.htm> - Safe Isolation of Plant and Equipment

## Pressure Systems

Pressure systems create a stored energy hazard associated with the containment of fluids or gases under pressure. In the event of pressure equipment failing it can lead to serious injury, death, explosion and environmental or property damage.

Examples of pressure systems include:

- Steam boilers and steam heating systems
- Pressurised hot water systems >100°C
- Process plant and piping, including valves, pumps, compressors, flexible hoses, etc.
- Fixed and portable air compressor sets
- Pressure cookers, autoclaves and retorts
- Heat exchangers and large refrigeration or air conditioning plant
- Gas loaded hydraulic accumulators

The Pressure Equipment Regulations 1999 and The Pressure System Safety Regulations 2000 apply to designers, manufacturers, suppliers, importers, installers, users, competent persons and anyone making modifications. The regulations apply to installed or mobile systems comprising of one or more pressure vessels, associated pipework and protective devices containing steam or a fluid or mixture of fluids, at a greater pressure than 0.5 bar above atmospheric pressure.

Transportable gas containers fall within the scope of the Carriage of Dangerous Goods and use of Transportable Pressure equipment Regulations 2009.

Further information and guidance is available from:

<http://www.hse.gov.uk/pubns/indg261.htm> - Pressure Systems a Brief Guide to Safety

## Safe Use of Knives

Knives are used within many industries such as packing and warehousing, carpentry, abattoirs, agricultural, butchery, plastics, textiles, catering, fish and poultry trades. Knife accidents involve cutting or stabbing of the non-knife hand and forearm, while accidents that are more serious occur as a result of stabbing injuries to the body.

Whilst this information is designed to give guidance in the safe use of knives, there may be other legislation, especially that concerning food hygiene which governs the selection of materials for the construction, storage and cleanliness of knives and protective equipment.

Employers must assess the risks to employees and others that may be affected by their work. Employees must not endanger themselves or others and must use safety equipment provided. Employers must ensure employees are trained in the safe use of knives, dangers, use of personal protective clothing and sharpening.

Where possible knives with retractable or enclosed/protected blades should always be used.

Further information and guidance is available from:

<http://www.hse.gov.uk/pubns/ppis12.pdf> - How to Reduce Knife Injuries

<http://www.hse.gov.uk/textiles/hand-knives.htm> - Knives within Textile Industry

<http://www.hse.gov.uk/catering/knives.htm> - Safe Use of Knives in the Kitchen

<http://www.hse.gov.uk/food/slaughter.htm> - Injuries within the Meat, Poultry and Fish Industry

## Safe Use of Ladders

The use of ladders is a hazardous and potentially fatal activity if not properly managed. A significant number of injuries occur every year in relation to falls from height, involving ladders and stepladders.

The effects of failing to adequately assess the task could lead to minor or serious disability, including the loss of life. Causes of accidents are mainly due to failure to appreciate the potential risk, inadequate equipment and inappropriate use. The use of ladders creates a number of dangers whereby the use of tools, equipment and mobility and hand holds are restricted.

Ladder work and all work at height is controlled by the Work at Height Regulations 2005. This guidance relates specifically to ladders, which are intended to be used only as a means of access or for brief, minor work.

Consideration must always be given to using more suitable access equipment such as tower scaffolds or mobile elevated working platforms (MEWP) in preference to ladders.

Further information and guidance is available from:

<http://www.hse.gov.uk/pubns/indg455.htm> - Safe Use of Ladders and Stepladders

<https://www.hse.gov.uk/work-at-height/types-of-equipment.htm> - Access Equipment

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