

H&SAWA 1974

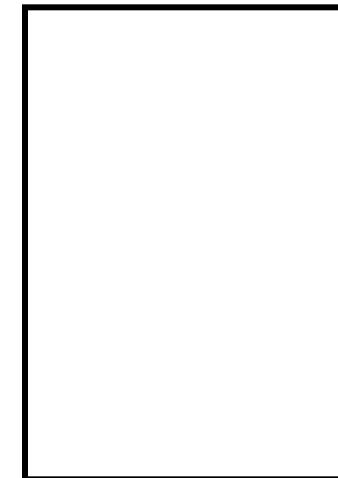
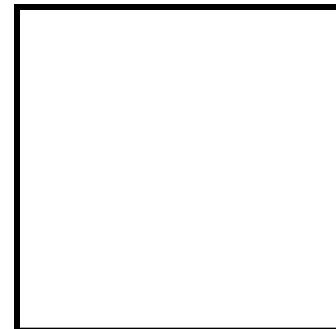
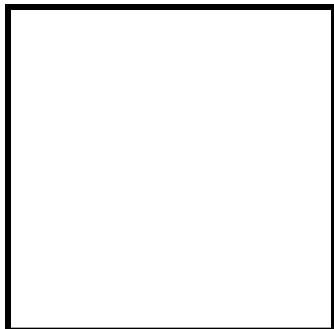
- ❖ The Health & Safety at Work Act places responsibilities on employers to ensure health safety & welfare at work for all employees and the general public that may be affected by the work!
- ❖ Employers should have a health & safety policy statement if they employ 5 or more people. The policy should be in writing.
- ❖ The supply of PPE would always be recorded in a company safety policy.
- ❖ The Act also puts the emphasis on health & safety being the employers responsibility, therefore the employer needs to provide items such as hard hats safety footwear & other general PPE equipment as well as maintain all machinery and equipment.
- ❖ Harmful substances released in to the atmosphere are covered in HASAWA 1974. The word noxious means harmful or poisonous.

HASAWA 1974

- ❖ Health & Safety legislation that covers general health & safety responsibilities of the employer & employers throughout the workplace are all covered in the **Health & Safety at Work Act 1974**.
- ❖ This legislation is monitored by the **HSE: Health & Safety Executive through inspectors**.
- ❖ **The HSC: Health & Safety Commission** have now merged with the HSE.
- ❖ Any breech of the regulations could see **employers or employees being prosecuted**.
- ❖ The HSE inspectors can issue companies with an **improvement notice** allowing them a certain amount of time to address H&S problems.
- ❖ **Prohibition notices** can be issued and the HSE **can request work stops immediately, until it is deemed safe**.

Site Electricity

- ❖ All electrical equipment used on site should be 110volt.
- ❖ The colour code for 110volt supply is yellow.
- ❖ Lead lights, temporary site lighting, drills, extension leads, circular saws etc all come with yellow male to female circular plugs.



Electrical Safety Test (formerly PAT Testing) on site electrical equipment

- ❖ All portable 110 volt & 240 volt electrical equipment should be tested **every 3 months by a competent person.**
- ❖ All tested equipment should hold an **in-date sticker** normally found on the plug or the appliance itself.
- ❖ If all this is in place safety regulations identify that the user **need only visually inspect the appliance & check for signs of damage.**



Electrical Safety on Site

- ❖ Before working on any electrical system the Electricity at Work Regulations state suitable precautions need to be taken to prevent injury therefore the system must be **safely isolated**.
- ❖ Many extension leads & transformers contain RCDs or RCBs **these are designed to “trip out” if there is any current leakage.**
- ❖ **Residual Current Devices** can be checked for correct operation by pressing a button on the front of the device to make sure it will trip out.
- ❖ 110 volt Transformers should be used on site as it **steps the electricity down from 240 volt to 110 volt making it a safer working environment.**

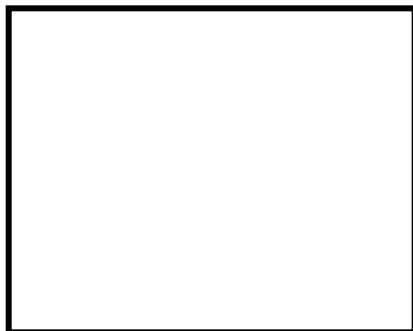
Safe use of Electricity

- ❖ The colour codes for conductors from 1st April 2006 have changed:



Brown for Live
Blue for Neutral

- ❖ Electricity entering the house is between **230 and 240 volt AC** alternating current at 50 hertz per second.



Temporary Earth continuity bonding leads used to maintain earth continuity when removing a section of pipe.

Manual Handling

- ❖ The manual handling operations regulations 1992 suggests that we should base all safe lifts by hand on monitoring & evaluating the lift by carrying out **risk assessments before we start, and assess what is involved in the whole task.**
- ❖ Before we start to lift the heavy load we should **plan the lift & check the lift route.**
- ❖ Then using the **kinetic lifting method** we can carryout the lift, with a straight back and knees bent.
- ❖ Remember your safe suggested weights from any given height and if in doubt refuse to lift the object.

Risk Assessment.

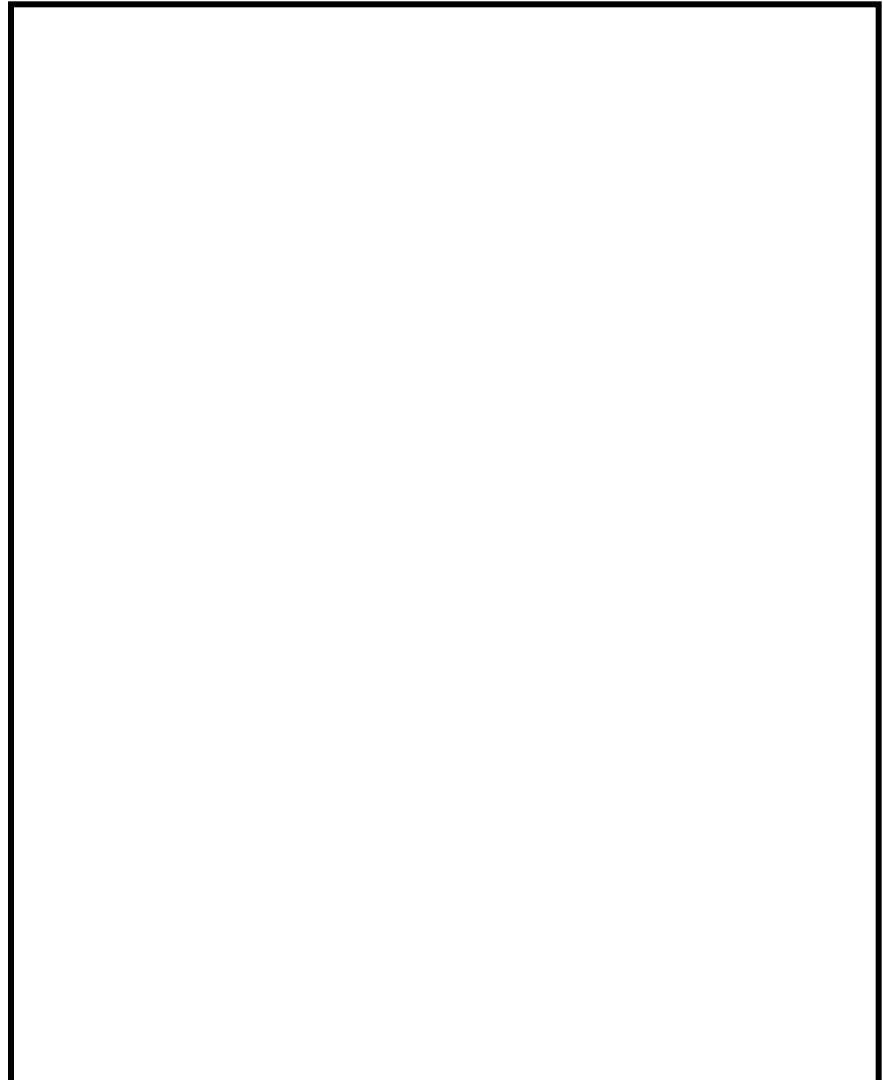
There are 5 steps to risk assessments: = RISK EXPOSURE

1. Look for hazards
2. Decide who or what might be harmed
3. Evaluate the risks, present precautions and action needed.
4. Record your findings.
5. Review and revise your findings regularly.

- The Management of Health and Safety at Work regulations 1999 legally require employers to make decisions about the hazards, significant or not, faced in the work place.

How to correctly erect a ladder?

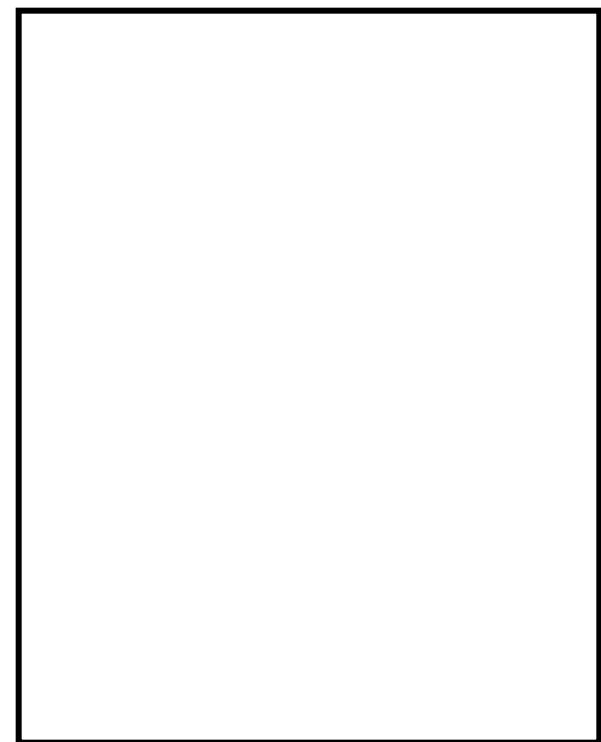
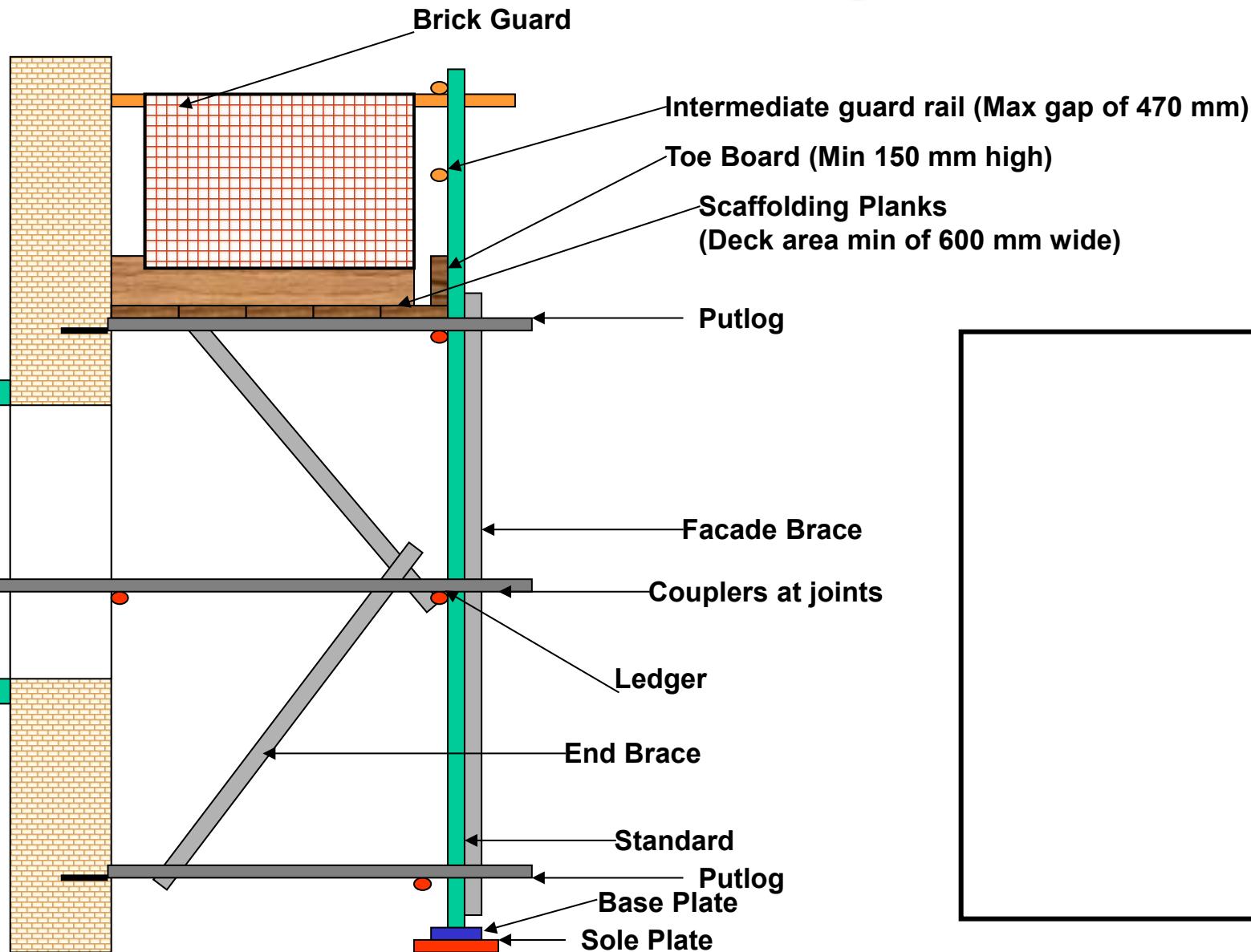
- ❖ The correct ratio for a ladder is **1 metre out for every 4 metres up.**
- ❖ The base should be **staked** if on soft ground.
- ❖ The top should be **lashed to the scaffold.**
- ❖ The ladder should extend past the step off platform by **5 rungs or 1 metre.**
- ❖ **Regular safety inspections** should be recorded for ladders & scaffolds.
- ❖ The correct angle = **75 degrees**
- ❖ They should be **checked by the user** before being used.



Construction {Health Safety & Welfare} Regulations

- ❖ All the general safety requirements for scaffolds are laid down in these Regulation's, they are also covered by **working at height regulations 2005**.
- ❖ Scaffolding should be checked, at **Regular intervals not exceeding 7 days by a site agent/foreman**.
- ❖ After severe weather conditions.
- ❖ Employers should also provide **toilet facilities** clothes drying facilities & mess room facilities.
- ❖ These regulations also make specific references to **working at heights**, outlining the need for a **harness if working over 2 metres**.
- ❖ Scaffolding can only be erected by a **trained certificated competent person**

scaffolding



Step Ladders

- ❖ The top step of the step ladder should not be worked from unless it is designed for purpose.
- ❖ So generally knees are kept below the top tread of the ladder.
- ❖ The condition of the steps and weight capacity should be checked before use.
- ❖ In commercial properties the dated inspection sticker should be checked before use.
- ❖ Avoid locating this type of aluminium step ladder next to live electricity supplies.

Tower scaffolds

Why guard rails?

- ❖ The distance from the guard rail to the work platform must be between 400mm to 700mm.

Must
be
fitted

- ❖ The maximum height of the tower is relative to the smallest base length and should be no more than 3 times.

- ❖ The maximum height a specifically designed tower scaffold can go is 12 metres.

- ❖ However normal tower scaffolds must be tied in to the building when they reach 9 metres.

What do toe boards prevent?

COSHH



Control of Substances Hazardous to Health Regulations 2002

- ❖ Many dangerous substances are identified by their **packaging / labelling on the container** with COSHH symbols for toxic, irritant etc.
- ❖ Any person using hazardous materials hazardous to health must be provided with proper information, instruction & training under COSHH regulations.
- ❖ All plumbing products have **COSHH data sheets** which should be stored in a COSHH data file these should be backed up with risk assessments.
- ❖ These risk assessments assess the levels of risk & potential hazards to the safety of operatives that may be present in work operations. The employer is responsible for assessing these risks.
- ❖ Risk assessment =the dangers of work compared to the likelihood of an accident taking place.

COSHH

- ❖ All plumbing products have **COSHH data sheets** which should be stored in a **COSHH data file**.
- ❖ these should be backed up with **COSHH risk assessments** to provide guidance on potentially hazardous work activities.
- ❖ Risk assessments help to identify what might go wrong on the job before it happens.
- ❖ These risk assessments assess **the levels of risk to the safety of operatives that may be present in work operations**

There are three ways hazardous substances can enter the body:

- Inhalation
- Absorption
- Ingestion

COSHH Categories

- **Irritant** = A substance that causes inflammation through prolonged contact with the skin. {e.g. solvent cleaners / cements are bad for your hands and can cause dermatitis. Also loft insulation can be an irritant}



IRRITANT

- **Toxic** = A substance that can poison someone. e.g. hydrogen sulphide and cyanide.
- Polystyrene gives off toxic fumes when burnt



Very Toxic

- **Corrosive** = A substance that burns {e.g. acids or alkalis}. Working with dangerous chemicals

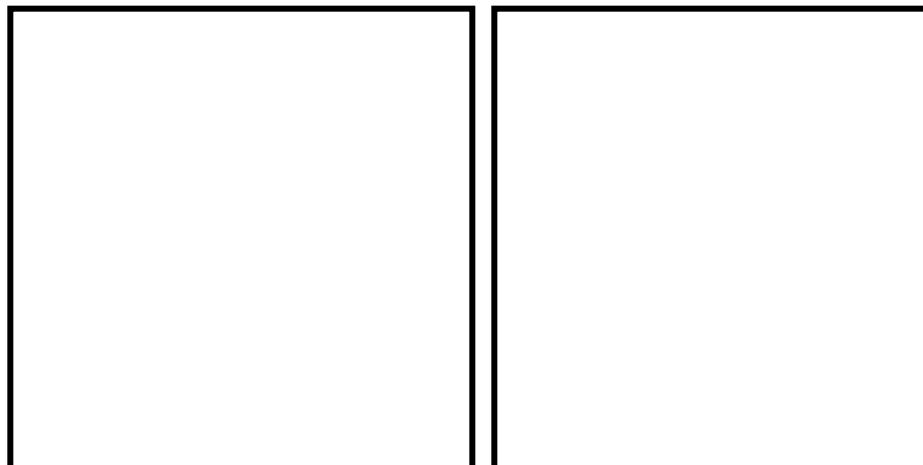


Corrosive

RIDDOR

Reporting of Injuries, Diseases & Dangerous Occurrences Regulations 1995:

- ❖ **Serious or fatal accidents** must be reported to the HSE, RIDDOR forms must follow within a 10 day period, **the employer** has a legal duty to do this.
- ❖ If an employee is off work due to an accident for **more than 3 working days** the HSE need to be notified within 10 days and a F2508 form needs to be filled out & returned to the HSE.



Control of Noise at Work Regulations 2005

Volume of noise is measured in Decibels:

Lower daily weekly limit 80dB upper 85dB

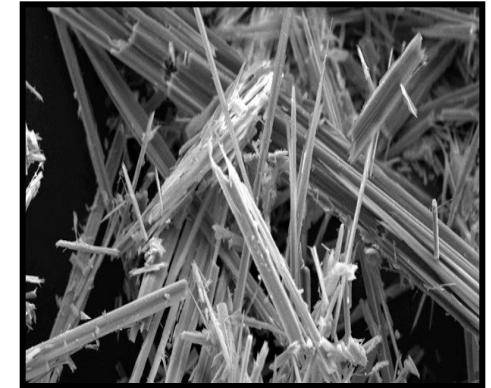
must not exceed 87dB without protection to
ears!

Asbestos {Chrysotile material}

- This is covered extensively by the control of Asbestos at work regulations 2002:
- When asbestos is discovered in a work situation it should only be removed by a licensed Asbestos contractor.
- Unless on small works that take one person less than 1 hour in a 7 day period.
- Asbestos is dangerous to health & failure to wear proper protective clothing & respiratory equipment can lead to Chronic illnesses, eventually leading Mesothelioma a form of lung cancer.
- All asbestos waste which is removed should be double bagged sealed labelled & put into lockable asbestos containers & taken to a licensed waste disposal site.
- Asbestos along with brick dust & cement dust all form airborne contamination & cause dangers to our health.
- Specialists should take air samples before giving the all clear to work in voids that once contained asbestos,

Asbestos {Chrysotile material} cont

- Plumbers should be aware of asbestos in **houses built before 1980:**
- On discovering any item which may contain asbestos work should stop and the operative needs then to find out how the work can be carried out safely.
 - Asbestos guttering
 - Asbestos flues
 - Asbestos cement based pipe insulation
 - Asbestos CWSC
- **Asbestos along with brick dust & cement dust all form airborne contamination & cause dangers to our health.**





LPG Safety



- ❖ Liquefied Petroleum Gas is very volatile gas, it comes in 2 forms Propane & Butane.
- ❖ Its **heavier** than air & will accumulate at ground level, can easily fill drains if leakages are present & it has been incorrectly stored,
- ❖ Bottles should be stored outside the building upright in a well ventilated locked secure compound.
- ❖ Suitable regulators need to be fitted to LPG equipment & bottles need to be sized correctly to prevent a high draw off rate otherwise the control valves could become frozen, which may lead to freeze burns.
- ❖ Empty bottles should always be returned to the LPG supplier.
- ❖ 2 dry powder Fire extinguishers should be carried in vans containing LPG.
- ❖ Care should also be taken when working in excavations with LPG a competent person should regularly inspect progress.

Lead Burning Safety

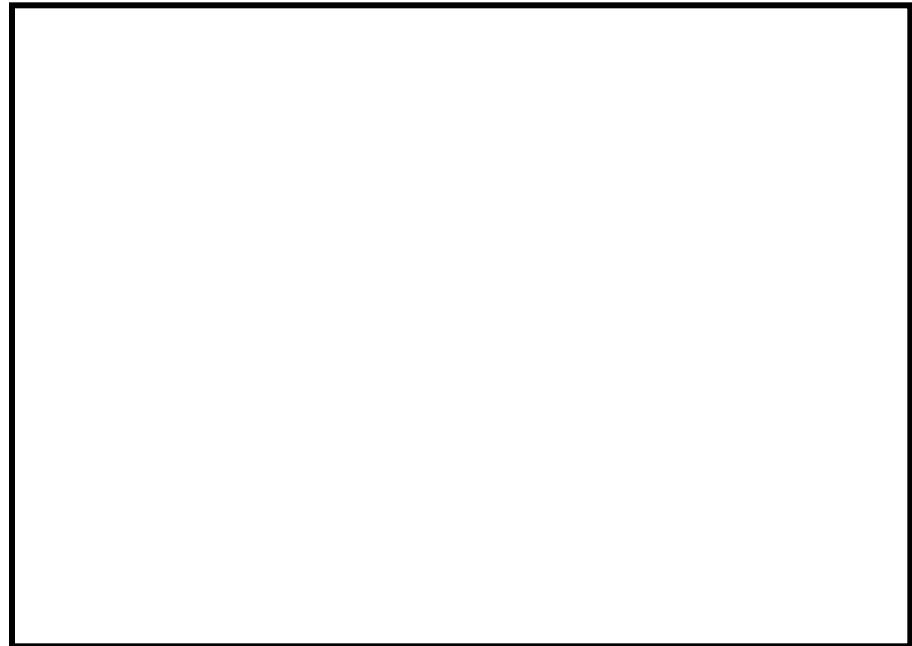
- ❖ When lead burning inside a building local Mechanical extract systems should be provided.



- ❖ Clear goggle eye protection & barrier cream or hand protection should be worn at all times.
- ❖ An employer must provide eating drinking & smoking areas away from the work site for employees continuously engaged in lead welding fabrication, when removing old lead assess the risk first?
- ❖ In certain situations " permit to work" should be obtained when carrying out hot work such as lead burning on period grade 2 listed dwellings for example.
- ❖ Oxygen and Acetylene equipment should be kept secure and upright during use.

Excavations

- ❖ When carrying out work in excavations the sides of deep excavations **over 1.2metres** need to be supported against collapse!
- ❖ In loose ground they should always be supported, where there is a risk of collapse.
- ❖ Around shallower trenches a barrier should be present to prevent public access.
- ❖ **Vehicle stop blocks** should also be situated when operatives are working in excavations.
- ❖ Excavations in excess of 1.2metres in depth should also have guard rails erected at the edge of the excavation.



- ❖ Excavations should be checked by a competent person at the start of each day.
- ❖ When working in confined spaces always consider other alternatives first.

Accident Reporting

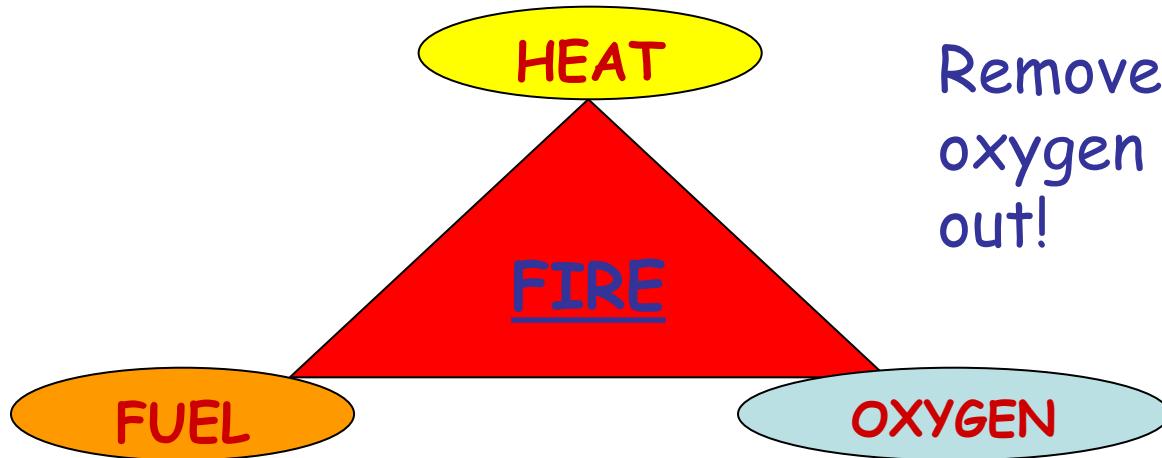
- ❖ All minor accidents on site should be reported into the accident book regardless of how minor, by the injured plumber himself if he is well enough to do so, or a person acting on his behalf.
- ❖ Accidents resulting in the injured person being absent from work for **more than 3 days** need to be reported to the **HSE** this is a legal requirement.
- ❖ Accident books should be kept secure by employers once the site is completed why?



Accident Reporting

- ❖ Accidents can be prevented by employees being vigilant and reporting **any unsafe conditions to the correct person on site**
- ❖ Any equipment that may have caused an accident should be **made safe secured off or boxed & made available to the HSE for a conducted investigation!**
- ❖ By keeping a site & individual workspaces tidy accidents can be avoided.

Fire Triangle

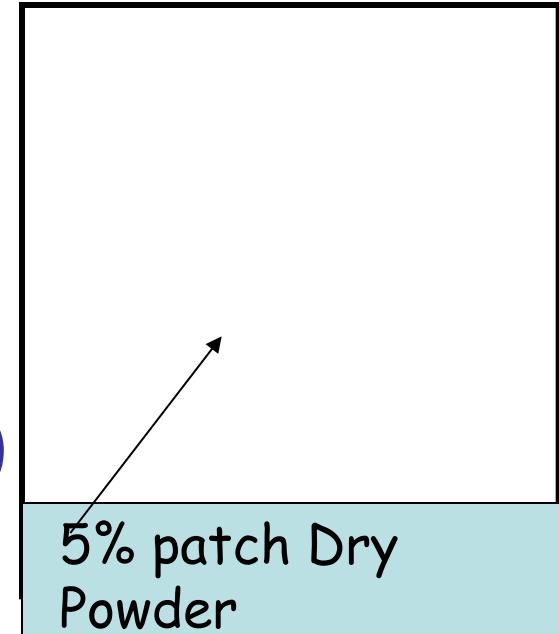


Remove heat, fuel or oxygen & the fire will go out!

- ❖ Care should be taken with Co2 fire extinguishers when in use as the **nozzle can cause freeze burns to hands**.
- ❖ In period building's **a hot work permit** normally needs to be issued to operatives before work commences.
- ❖ Care should be taken with class B fires **as oil doesn't mix with water when alight it explodes so never use water extinguishers**.

Fire Extinguishers

- **RED** = Water.
- **BLUE** = Dry powder.
- **BLACK** = Carbon Dioxide.
- **CREAM** = Foam.
- **GREEN** = Halon.(no longer made)



- It should be noted that all new fire extinguishers are red with just a **5% patch** on the side of the extinguisher containing the colour codes above this was done to bring us in line with European standards.

Note: Where LPG is transported on a van **2 Dry Powder extinguishers** are needed one for the hold of the van & one for the driving cockpit!

Categories of Fire

- ❖ **CLASS A** = Wood / paper solid fuel fire.
- ❖ Best treated with **water** {not when near electrics}

- ❖ **CLASS B** = Oil fire {paints etc}.
- ❖ Best treated with **dry powder or carbon dioxide**. { never use **water**}

- ❖ **CLASS C** = Gas fire.
- ❖ Best treated with **dry powder**.
- ❖ **CLASS D** = Molten metals fire.
- ❖ Best treated with **dry powder**.
- ❖ **ELECTRICAL** = which does not have a class as it can fall into all of the above categories.
- ❖ Best treated with **carbon dioxide or dry powder**. {never use **water as it can carry a current back to the extinguisher**}.

- ❖ **NOTE:** Care should be taken when using **carbon dioxide or Halon** in a small confined room as it can cause **asphyxia**.

Fire Emergency procedures

- ❖ If a fire breaks out in a building **set off & raise the alarm or otherwise warn others to evacuate the building & follow the emergency procedure.**
- ❖ When contacting the fire brigade give them the location of the fire adding **useful information such as the building contains gas canisters e.g. LPG.**
- ❖ Upon working in a building & hearing a fire alarm you **should leave the building as quickly as possible closing any doors that you pass through on the way out so as to contain the fire.**
- ❖ For very small contained fires **portable extinguishers should be directed at the base of the fire any smouldering debris should be taken out of the building.**

Fire Evacuation & fire fighting

- ❖ When fire alarms sound occupants of the building should make there way to the designated safe **assembly point**.
- ❖ Once outside if you are responsible enough phone the fire brigade & inform them of the **address of the incident**.
- ❖ For very small contained fires **portable extinguishers** should be **directed at the base of the fire**, & put out calmly.
- ❖ Once evacuated you should wait at **the assembly point a safe designated area for all workers and make sure everyone is accounted for!**
- ❖ **The employer** is responsible for fire inductions and making everyone aware of what to do in the event of a fire & **provide emergency phone numbers**.
- ❖ The site should be should be kept **free from obstructions to allow emergency vehicles access and any casualties made safe**.

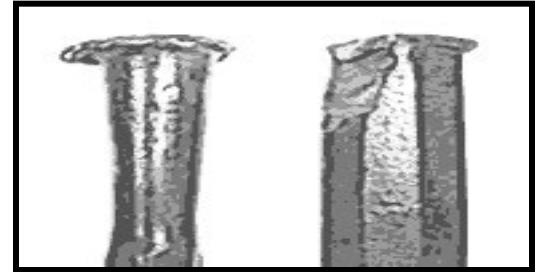
Provision & Use of Work Equipment Regulations 1998

- ❖ These regulations cover the use of **hand tools**.
- ❖ As well as all types of work equipment such as **110v transformers**.
- ❖ They deal with dangerous parts of machinery.
- ❖ Roll over protections.
- ❖ Visibility.
- ❖ Inspection.





Tools on Site



- ❖ Cold chisels should have their heads ground regularly to prevent damaged hands & **the potential risk of flying splinters.**
- ❖ Powered threading machines should be checked for correct operation and all safety devices are working before use.
- ❖ Operatives should not use a powered pipe threading machine if they have not been trained and proved competent on the equipment.
- ❖ Circular saws are dangerous and although there is no age limit on using one the operative must be trained and competent.
- ❖ Battery operated tools prevent the least safety hazard when used on site.
- ❖ Hammers and bolsters are the safest way to remove and lift floorboards.
- ❖ Any faults occurring during use on power tools should be reported to your immediate supervisor and work stopped immediately.



Specialist tools on site

- ❖ Specialist tools on site such as **threading machines, cartridge operated fixing tools** etc need the operative to have received sufficient information, instruction & training must have been provided to prove " **competence**"!
- ❖ **Cartridge fixing tools have different colour cartridges** for more strength of explosion when firing in to different materials.
- ❖ Other specialist equipment such as **bench grinders & abrasive wheels** need **certificated operatives who have been specially trained and competent** to change & dress the equipment, operatives without certification should leave this equipment alone!!
- ❖ Power tools such as **circular saws** have guards fitted for safety purposes these should not be removed.
- ❖ **Dust extraction systems** should be fitted to angle grinders when cutting chases in walls in building why?

Competent person

A person who has been trained, assessed and gained a certificate to prove competency.

- Cartridge fixing device
- Unvented installation
- Local authority installation
- Site vehicles
- First aid.

If you are using any specialist piece of equipment on site, training must have been completed, and you must have been proved **competent**, or you must be in possession of a certificate which denotes you as a **certified operative**.

PPE

Personal Protective Equipment:

- ❖ The plumbing employer has a responsibility under HASAWA 1974 to provide PPE for employees.
- ❖ Plumbers & other craft operatives would be expected to wear hard hats & safety boots on a new build site every working day provided by their employer!
- ❖ There are no exceptions for not wearing PPE on site it should be worn all the time.

PPE

- Personal Protective Equipment.
- When working with soot upon removing old boilers its wise to wear **dust masks** to prevent the inhalation of sulphur.
- **Water proof gloves** should be worn at all times when working on below ground drainage & sewers to prevent naked flesh coming into contact with human effluent.
- **Weil's disease** can also be caught from sewer rats so make sure you wear gloves.
- **Gloves** should also be worn by plumbers that are prone to skin diseases to prevent **dermatitis**, & during **fibre glass laying** to prevent irritation.
- Safety goggles should be worn when **drilling or hitting chisels with a club hammer** where flying steel splinters may damage the eye!!
- Major legislation has been brought in & site agents regularly check **hard hats & steel toe cap safety boots** are being worn on new build sites.

Construction (Design & Management) Regulations 1994

CDM Regulations:

- ❖ IMPLEMENTED TO MAKE MANAGEMENT OF CONSTRUCTION SITES SAFER THE REG'S COVER:
- ❖ Make sure health & safety is taken into account & managed throughout all stages of the project.
- ❖ From conception
- ❖ Design
- ❖ Planning
- ❖ Site work
- ❖ Maintenance/ repair to a structure
- ❖ It effects everyone, client designer contractors all play there part in contributing towards H&S.



First Aid on Site

- ❖ First aid legislation requires every employer to make available to **all plumbers going on site a first aid box / kit** for employees to use in case of emergencies.
- ❖ All minor burns should be **cooled with clean cold water**.
- ❖ In the event that you have to deal with a broken arm or leg on site the break should **be properly supported at all times**.
- ❖ Where a casualty is found & is unconscious he/she should be placed in the **recovery position** to avoid choking.



- ❖ When working with chemicals eye protection should be worn in the event that chemicals come into contact with the eye, the eye should be well rinsed with **clean sterile water**.

First Aid on Site

A first aid boxes provision is based on **risk assessment**.

The HSE recommend that it should contain **adhesive dressings**, but not tablets.



- ❖ In the event of you finding a casualty still contacted to electrical equipment before first aid can be given the casualty should be **removed from the current via a piece of non conductive material e.g. wood or a broom handle**.

- ❖ If a casualty is found to have suffered a heart attack the situation should be assessed before carrying out **CPR Cardio Pulmonary Resuscitation (SEE NEXT SLIDE)**.

Common trade injuries & first aid

- ❖ Plumbers are particularly prone to damaging their knees through **open joist work. Wear knee pads!**
- ❖ In the past their **knees have been vulnerable** through the use of bending copper tube with bending springs.
- ❖ Remember only qualified first aiders should be administering first aid on site so **in an emergency send for a first aider. Don't administer first aid if you're unqualified.**
- ❖ Safety boots should be worn at all times to prevent foot injuries such as treading on nails, crushed toes etc. In the event of either of these happening **a qualified first aider should be sent for.**

Other legislation

Building Services Specific Legislation
(Water, gas, electricity, heating and ventilation, and telecommunication)

The Water Supply (Water Fittings) Regulations 1999

- Drinking water (contamination, waste, undue consumption, misuse and erroneous measurement).

The Gas Safety (Installation and Use) Regulations 1998

- Installation, maintenance and use of gas
- Prevent CO poisoning.

The 17th Edition IEE Regulations (BS7671)

- Design, installation, inspection and maintenance of electrical installations.

Other legislation

Provision & Use of Work Equipment Regulations

- PUWER
- All hand and power tools – **competent** person
- Guards and protection.

Construction (Health, Safety and Welfare) Regulations

- Site access and walkways
- Site mess huts, changing facilities, drying facilities
- Number of toilet facilities.

Health and Safety (First Aid) Regulations

- Adequate first aid facilities and competent person
- Any van on site must have a first aid kit.