IOR.org.uk
REFRIGERATION AIR CONDITIONING HEAT PUMPS

Back to Basics

Risk Assessment, Hazards and Personal Responsibility

John Ellis F.Inst.R

Assessing Risks and Hazards

IOR.org.uk
REFRIGERATION AIR CONDITIONING HEAT PUMPS

Requires a thorough and thoughtful process which analyses the work to be carried out and includes:

- Assessing risks and hazards
- Removing any necessary risks and hazards
- Mitigating any risks that cannot be removed to the lowest possible level

The purpose of the risk assessment process is to avoid risk to self, colleagues, general public, bystanders and the local and global environment.

Assessing Risks and Hazards

IOR.org.uk
REFRIGERATION AIR CONDITIONING HEAT PUMPS

- Competent persons are required to carry out risk assessment, to develop safe working procedures so that competent people can work safely.

- It could be said that if a person is not competent to do a job they are not competent to carry out the risk assessment.

- Over the last 10 years the number of Level 2 qualified technicians has reduced because the LEGAL minimum requirement is FGas Certification.

IOR.org.uk
REFRIGERATION AIR CONDITIONING HEAT PUMPS

Generic Risk Assessment

Vs

Dynamic Risk Assessment

Refrigerant Hazards

TOXIC

FLAMMABLE

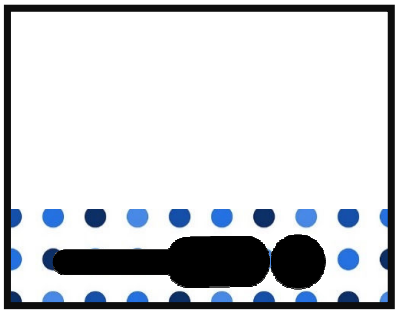
CORE BODY
TEMPERATURE 37 º C ish

Δt = 63K

R32

LIQUID BOILING AT -52 º C

Δt = 89K



HEAVIER THAN AIR

WATER BOILING 100 º C

Refrigerant Burns

IOR.org.uk
REFRIGERATION AIR CONDITIONING HEAT PUMPS

Hot Work

AIR

R290

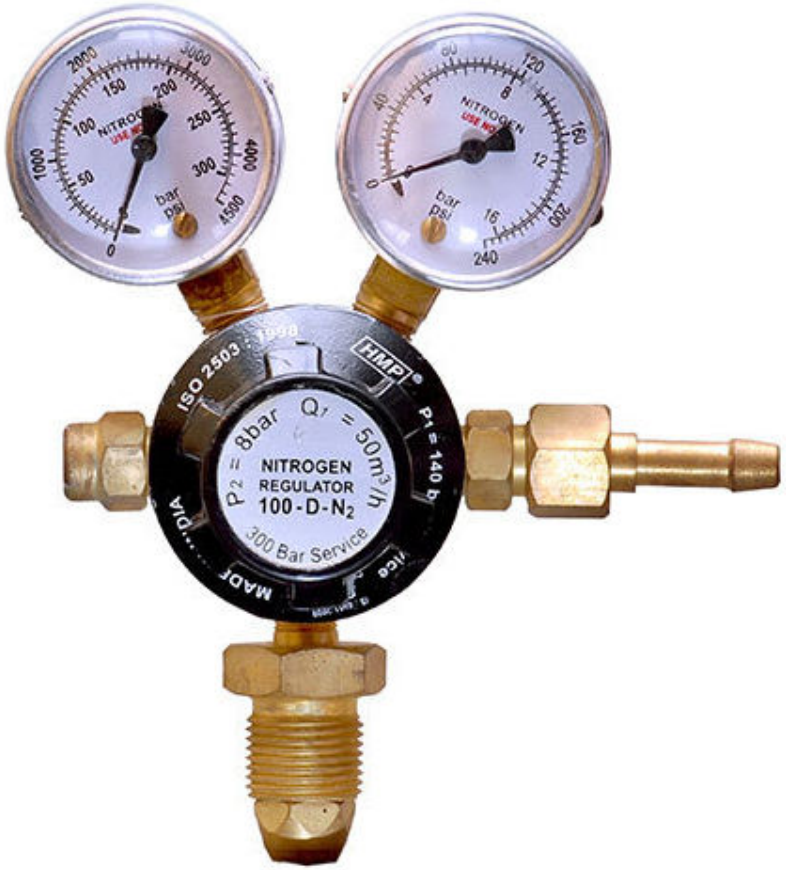
COMP CHANGE

DIESELLING

R134a

Working with OFN

IOR.org.uk
REFRIGERATION AIR CONDITIONING HEAT PUMPS



Working at Height
Some Bad Practice!

IOR.org.uk
REFRIGERATION AIR CONDITIONING HEAT PUMPS

Working at Height

IOR.org.uk
REFRIGERATION AIR CONDITIONING HEAT PUMPS

Ladders: The Task

Avoid side loading a step ladder:

- Position the steps so they face the work
- Or secure the steps at an appropriate point

If you need both hands when using a stepladder, you can use your knees or chest to maintain 3 points of contact - but only for brief periods.

Working at Height

IOR.org.uk
REFRIGERATION AIR CONDITIONING HEAT PUMPS

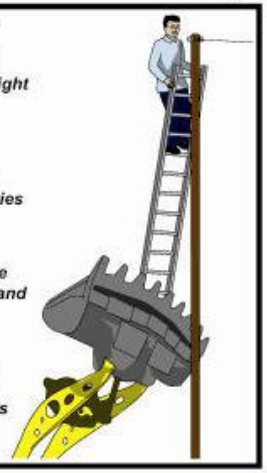
1. The Regulation

The Work at Height Regulations 2005 and the Work at Height (Amendment) Regulations 2007 apply to all those working at height where there is a risk of a fall.

Each year in the UK there are approximately 50 fatalities and over three thousand major injuries caused by falls.

The regulations have been made in order to try to prevent death and injury from falls at work.

The regulations cover working "at height" meaning the person could be at risk of falling, so this may be below ground level.



2. Duty of Care

The regulations place a duty of care on all employers, the self employed and those in control of others work to the extent that they control the work.

There are three main principles

- Avoid work at height whenever possible.
- If work at height cannot be avoided then use equipment to prevent falls.
- Where the risk of a fall cannot be completely eliminated then use other measures to minimize the risk, such as fall arrest equipment.

Those in control of work must ensure that:

- Work at height is properly planned and organised.
- Where applicable weather conditions are considered.
- Those involved in work at height are fully trained and competent.
- The work area and equipment have been inspected and are safe.
- The work has been risk assessed.
- An emergency plan is in place in case of an accident.

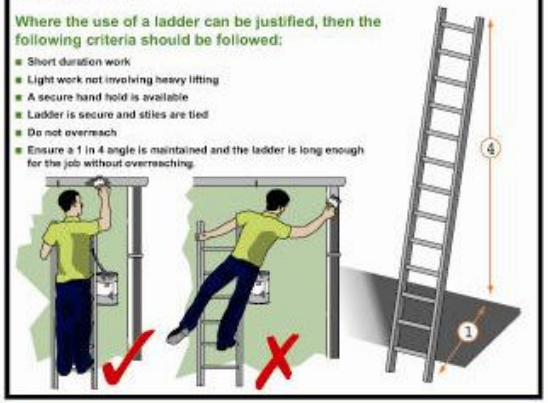
THINK: Access, Equipment, Weather, Emergency Procedures.

3. Ladders

Ladders and stepladders are the most commonly used pieces of access equipment. Before using a ladder an assessment should be made as to the suitability of a ladder for the task involved or whether an alternative piece of equipment may be used which is safer.

Where the use of a ladder can be justified, then the following criteria should be followed:

- Short duration work
- Light work not involving heavy lifting
- A secure hand hold is available
- Ladder is secure and stiles are tied
- Do not overreach
- Ensure a 1 in 4 angle is maintained and the ladder is long enough for the job without overreaching.



4. Mobile Elevating Work Platforms (MEWPS)

Where it is not possible to carry out work at height from an existing structure then mobile access equipment can be used.

- Before a mobile platform is used the risk of an accident must be assessed, the work must be planned, and the operator fully trained in its operation.
- The equipment should have a current inspection report and the area around the platform be clear of obstruction, if outside then the weather conditions should be considered as high winds can make them unstable.
- When using the platform, it should be kept clear of overhead cables and the ground should generally be level.
- Ensure that workers do not climb out of the carrier and that limbs are kept clear of passing traffic or other obstacles.
- For additional safety where a risk of a fall is still a possibility ensure that the worker is secured to the carrier with a harness.
- After use, ensure that the power is switched off and the keys removed.
- Tools and other equipment should be cleared out of the carrier and if the platform is being left unattended it should be made as inaccessible to vandals as possible.

5. Scaffolding

Scaffolding should be one of the safest forms of access to working at height. This will only be the case however if suitable precautions are considered.

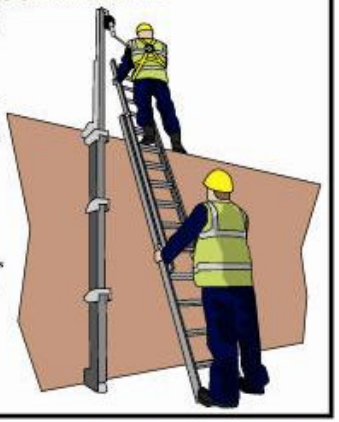
- Scaffolding should be planned, designed and erected by competent people.
- Scaffolders should adopt safe working methods and wear harnesses during the erection phase.
- The ground should be level and firm enough to support the scaffolding and the area should be clear of passers by and obstacles whilst being constructed.
- The scaffold structure should be braced and tied into a permanent structure.
- The scaffold must be able to support the load and be appropriate for the work involved.
- Work areas should be fully boarded, a minimum of 600mm wide, loading areas should have fall protection gates and guard rails and toe boards should be installed to prevent falls.
- Scaffolding should always be checked if conditions change e.g. in high winds

THINK: Access, Equipment, Weather, Emergency Procedures.

6. Fall Arrest

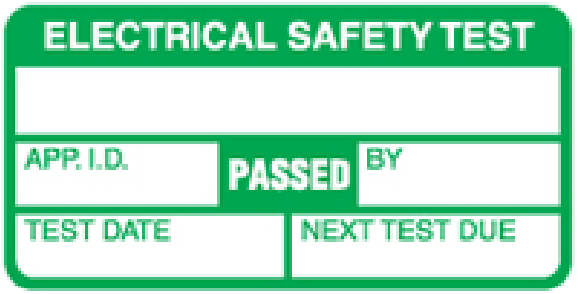
Measures should be in place to prevent falls if work at height cannot be avoided. If using work equipment such as MEWPS is not possible then the use of a safety harness is required to prevent injury should a worker fall.

- The use of a safety harness is only acceptable for short duration work, and the lanyard must be kept as short as possible preventing the worker from getting close to the danger area.
- Where it is necessary to work near to an open edge and there is no alternative option then a harness can be used to arrest a fall as a last resort.
- This should only be done where a secure anchor point can be found and that all operatives are fully trained and are wearing the harnesses correctly.
- Before using a safety harness ensure it has been thoroughly inspected as many man-made fibres perish over time especially if not stored properly in a clean dry area.
- An emergency plan should be in place, with a method to recover anyone who does fall.



Electrical Fault Finding

IOR.org.uk
REFRIGERATION AIR CONDITIONING HEAT PUMPS

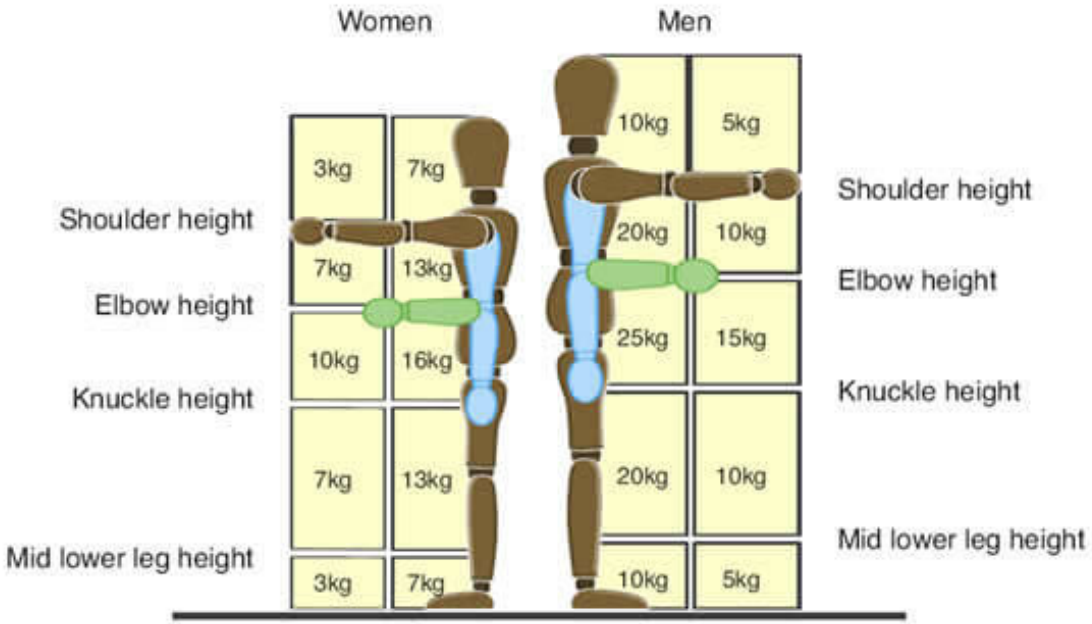


Manual Handling

IOR.org.uk
REFRIGERATION AIR CONDITIONING HEAT PUMPS

Manual Handling

IOR.org.uk
REFRIGERATION AIR CONDITIONING HEAT PUMPS



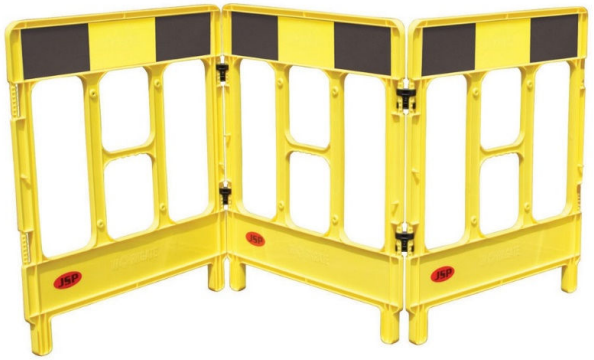
Assessing Risks and Hazards

IOR.org.uk
REFRIGERATION AIR CONDITIONING HEAT PUMPS

"Customers often climb over the barriers to do their shopping"

Managing Bystanders

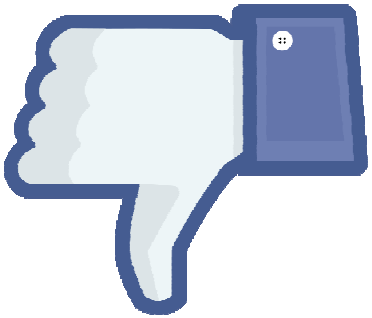
IOR.org.uk
REFRIGERATION AIR CONDITIONING HEAT PUMPS



What more can I do?

Least Favourite Jobs
(taken from a straw poll of our students)

IOR.org.uk
REFRIGERATION AIR CONDITIONING HEAT PUMPS



- Working single handed when two people are required
- Changing large compressors in areas which may be challenging; height/confined spaces
- Awareness of near miss procedures which are not enforced or actioned
- Working at height e.g. going up galley ladders with a tool bag getting stuck
- Hot works
- Pressure testing
- Working in areas where members of the public are present they ignore barriers or signage

Basic Requirements of Risk Assessment

IOR.org.uk
REFRIGERATION AIR CONDITIONING HEAT PUMPS

Risk assessments must be:


Carried out by competent person


Site specific for the job including current conditions


Dynamic


Task based

IOR.org.uk
REFRIGERATION AIR CONDITIONING HEAT PUMPS

The opposite of competence is incompetence.

You cannot be nearly competent.

You cannot be nearly safe!