

3.8 RISK ASSESSMENTS

Risk Assessment – Health and Safety Law

General Duty on Employer

The Management of Health and Safety at Work Regulations 1999 place a general duty on employers to assess all risks to employees and 'others' that arise as a result of work activity.

'Others' includes the employees of another employer where, for example, work is being undertaken on a customer's premises. It also includes members of the public where work could put members of the public at risk.

Specific Risks

Requirements to assess specific risks are covered in other Regulations. The Approved Codes of Practice and/or Guidance Notes that accompany the Regulations give help on when and how this needs to be done. Examples of specific Regulations include:

- Control of Substances Hazardous to Health Regulations
- The Control of Noise at Work Regulations (Introduced April 2006)
- Display Screen Equipment Regulations
- Manual Handling Operations Regulations
- Fire Precaution Workplace Regulations
- Confined Spaces Regulations

General Requirement of a Risk Assessment

- It must be 'suitable and sufficient'
- Carried out by / under the supervision of a competent person
- Significant findings documented where employer has 5 or more employees
- Assessments should be reviewed periodically

HSE Guidance on Risk Assessment

Useful guidance on risk assessment has been published by the Health and Safety Executive (HSE) in a free publication entitled 'Five Steps to Risk Assessment'. This is available from the HSE website or from HSE Books.

It is suggested readers obtain a copy of the publication and read it in conjunction with this paper.

HSE Terminology – 'Hazard' and 'Risk'

The HSE define a 'hazard' as 'something that has the potential to cause harm'. A 'risk' is defined as 'the likelihood that the potential for harm is realised'.

A hazard can be something that could give rise to danger – for example electricity. The risk is how likely it is that a person might get an electric shock whilst carrying out work on a particular task involving electricity.

A hazard can also be a particular work activity in itself such as:

- Installing a machine
- Operating a machine
- Working at height

If we consider working at height as a hazard one associated risk is how likely it is that a person might fall from a ladder whilst painting a house.

Carrying out a Risk Assessment – the Basics

Conducting a risk assessment starts with asking 3 simple questions in relation to a hazard – remember the hazard could well be the work activity itself.

1. What could go wrong or how might harm occur whilst we are doing this job?
2. How likely is it to go wrong – given the circumstances?
3. How bad would the injury be if it did go wrong?
(Estimating likelihood and extent of the injury will be dealt with later.)

Consideration can then be given as to whether the risk is acceptable. Ideally risks should be eliminated. For example, if there is a risk of electric shock whilst servicing a machine, the risk of shock can be eliminated through effective electrical isolation. If the risk cannot be eliminated then it should be reduced to an acceptable level by introducing suitable risk controls.

Risk Controls

The Approved Codes of Practice that accompany Regulations suggest risk controls in an order of preference – a hierarchy. This is shown below.

- Elimination
- Substitution – a mobile tower is safer than a ladder
- Barriers, guards
- Use of rules, procedures – permit to work prior to starting job
- Warning signs
- Use of Personal Protective Equipment

Risk Assessment – Through Task Analysis

In order to explain the general principles of risk assessment we shall use an example of work which most people will be familiar with.

Let's suppose that you and your partner have recently purchased a large Victorian semi-detached house. You wish to restore some of the rooms to the Victorian style and plan to start with the hall, stairs and landing.

Tasks will include:

- Lifting existing carpets.
- Stripping paint from woodwork for re-varnishing.
- Removal of wallpaper / re-papering.
- Washing ceilings re-painting with emulsion.
- Sanding floor for re-staining.

Tools, equipment, materials:

- Assorted hand tools – brushes, scraper, wire wool
- Power tools – hot air paint stripper, industrial sander (hired in) portable sander, electric wall paper steamer (stripping paper)
- Ladders
- Paint /varnish stripper, various paints, wood stain and varnish.

If each task, listed above, is considered to be a hazard then a complete risk assessment can be conducted by brainstorming what could go wrong at each stage.

Lifting the carpets – what could go wrong, how might harm occur?

- Manual handling injury
- Accidentally kneeling on carpet grippers

Stripping paint from woodwork for re-varnishing – what could go wrong?

- Chemical burn from stripper
- Burns from hot-air stripper...and so on.

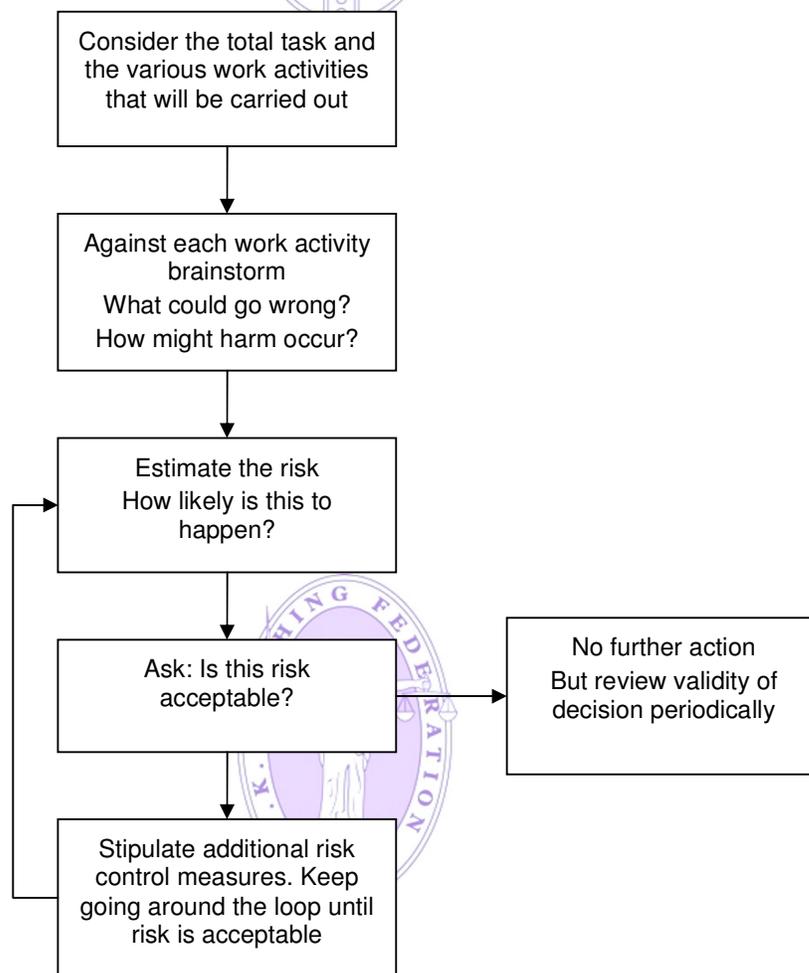
The process involves going through each operation in a systematic way so we can identify what could go wrong.

Consideration then needs to be given as to how likely it is to go wrong as well as how serious the injury, or other outcome, might be.

Thought then needs to be given as to whether the risk is acceptable – is it as low as we can get it?

If the risk is not acceptable then thought needs to be given to the additional risk controls that can be introduced to get the risk down to an acceptable level.

The flow chart below may be helpful.



The risk assessment in the flow chart is often a two-stage process; if the risk is not acceptable and additional risk controls are specified. A record is made of the 'initial risk' – before additional controls were specified. An assessment is then made with the specified controls in place – this is the 'residual risk'. (See Risk Assessment Form)

Estimating Likelihood and Severity

Various systems have been devised. Some organisations put numerical values on likelihood and severity. The overall risk is Likelihood Factor multiplied by the Severity Factor. Some organisations prefer to rank likelihood and severity in terms of high, medium and low. Example of a numerical scheme is given below.

Likelihood – some organisations use a 1 – 5 rating. Guidance may be given on how to apply these.

1. Very unlikely to occur – might occur once
2. Unlikely to occur
3. Likely to occur
4. Very likely to occur
5. Certain to occur



Severity – when estimating severity it is important to base the estimate on the extent of an injury that will typically occur from a given event. The worst possible case scenario should not be used.

1. Minor injury with no lost time
2. Injury up to 3 days off work
3. Reportable injury under RIDDOR
4. Major injury/long term absence
5. Fatality

Under this system the lowest risk (Likelihood x Severity) has a factor of 1. The highest risk has a factor of 25. This would represent an unacceptable risk rating.

Quantitative Assessment

NUMERICAL VALUE	LIKELIHOOD	SEVERITY
1	Very Unlikely	Minor Injury with no time off
2	Unlikely	Injury and/or up to 3 days off
3	Likely	Reportable event - RIDDOR
4	Very Likely	Major injury/long term absence
5	Certain	Death

Likelihood	Risk rating: Likelihood x Severity				
5	5	10	15	20	25
4	4	8	12	16	20
3	3	6	9	12	15
2	2	4	6	8	10
1	1	2	3	4	5
Severity	1	2	3	4	5



Health
Severity - do not overlook the impact some work activity can have on health. Some problems will have a rapid effect others may take years to develop.

The chart above has been adapted from practices in the offshore oil and gas industry. The Safety Management System of a company may stipulate. Tasks in the red area must not proceed. Tasks in the brown area can only proceed when the method has been thoroughly reviewed by a Senior Manager. Jobs in the green area can go ahead.

Risk Assessment Form

Below is an alternative form to the one suggested by the HSE in 'Five Steps to risk assessment':

Task Analysis Risk Assessment Form

Assessed by:
Assessment Date:
Review Date:

Detail of task:

HAZARD Activity Equipment Substance	RISK What could go wrong? How could harm occur?	Initial Risk			CONTROL MEASURES	Residual Risk		
		L	x	S = R		L	x	S = R

