Heriot-Watt University
School of Engineering and Physical Sciences

Guide to Risk Assessment Requirements

Introduction

Risk assessment, an essential part of safety management, is required by law in the UK. All EPS activities that carry an associated health and safety risk must be risk assessed and the results of the assessments made available to those who might be affected, with a reference copy filed by the School. According to HSE's *Five Steps to Risk Assessment*,

"A risk assessment is nothing more than a careful examination of what, in your work, could cause harm to people, so that you can weigh up whether you have taken enough precautions or should do more to prevent harm. The aim is to make sure that no one gets hurt or becomes ill."

So, the important thing about a risk assessment is that it is an opportunity to think about the work activity concerned to make sure that risks are controlled adequately. Although risk assessment is a legal requirement, writing an assessment predominantly to achieve legal compliance is missing the point and the quality of such assessments is often poor, particularly if the assessment is not translated into effective action to prevent illness or injury.

Legal Basis

Some safety regulations, such as the Control of Substances Hazardous to Health (COSHH) Regulations 2002, the Dangerous Substances and Explosive Atmospheres Regulations (DSEAR) 2002 and the Control of Noise at Work Regulations 2005 make a "suitable and sufficient" risk assessment an explicit requirement. Others, such as the Manual Handling Operations Regulations (MHOR) 1992 and the Lifting Operations and Lifting Equipment Regulations (LOLER) 1998 are worded to suggest that risk assessment is required. However, there is a general requirement for risk assessment under the Management of Health and Safety at Work Regulations (MHSWR) 1999, which state that:

"Every employer shall make a suitable and sufficient assessment of –

(a) the risks to the health and safety of his employees to which they are exposed whilst they are at work; and

(b) the risks to the health and safety of persons not in his employment arising out of or in connection with the conduct by him of his undertaking,

for the purpose of identifying the measures he needs to take to comply with the requirements and prohibitions imposed upon him by or under the relevant statutory provisions and by Part II of the Fire Precautions (Workplace) Regulations 1997."

This sets out a general requirement for risk assessment where no other explicit requirement exists. In cases where the requirement to risk assess an activity might be covered by more than one set of regulations (e.g. chemicals use would need risk assessment under both COSHH and MHSWR), a single risk assessment complying with the most stringent regulations will enable compliance with all; there is no need to prepare separate assessments. Under MHSWR, special consideration should be given to workers with particular vulnerabilities, such as young persons, and new or expectant mothers.

A requirement to carry out fire risk assessments for premises is described in MHSWR 1999 and the Fire (Scotland) Act 2005. A summary of risk assessment requirements in selected safety regulations is given in Appendix 1.

Risk Assessment Procedure

For most work within the University, the general procedure described in *Five Steps to Risk Assessment* will be appropriate. The stages to be followed, in order, are:

- Identify hazards. These should include anything with the potential to cause harm, whether or not it represents a significant risk; failure to identify hazards by dismissing them as insignificant early in the process is a common flaw in risk assessment. Hazards may be physical, chemical, biological, ergonomic or psycho-social (e.g. stress) in nature.

- Identify persons at risk. This usually includes the person carrying out the work activity, for obvious reasons, but co-workers, visitors, cleaners etc. should also be considered.

- Evaluate risk from each hazard. For certain types of activity, there are tools available to do this in a structured fashion. Otherwise risk may be classified qualitatively as low, medium or high, or evaluated semi-quantitatively using a consequence-probability (risk) matrix.

- Confirm effectiveness of existing control measures, or formulate new control measures to reduce risk to a tolerable level. Control measures consist of equipment and work practices designed to reduce risk, and may be classified as engineering (physical), procedural or behavioural. A hierarchical approach to control measures should be taken, so that complete elimination of hazard is preferred to engineering measures, which in turn are preferred to personal protective equipment (PPE) alone. See Appendix 2 for general principles from MHSWR.

- Write down the assessment and ensure it is available to those who might need to be aware of it.

- Review the assessment at regular intervals (annually is usually appropriate), or when there is significant change in the work activity. If nothing has changed, the assessment can simply be checked carefully then signed off.

Five Steps combines the evaluation and control measures stages. For some types of activity, e.g. manual handling, use of display screen equipment, assessment tools exist which incorporate the elements above but do not necessarily follow the *Five Steps* structure explicitly. For example, the Scottish Universities COSHH form provides a structured approach to COSHH assessment by prompting the assessor to consider various aspects of chemical use. Links to selected tools are given in Appendix 3.

The level of risk that might be regarded as tolerable may vary with the activity, but control measures should be designed to reduce residual risk (that remaining after application of controls) to low if at all possible. It may be helpful to remember the requirement to ensure safety and reduce risk "so far as is reasonably practicable" in the Health and Safety at Work Act 1974 and in numerous safety regulations, and the ALARP (as low as reasonably practicable) principle applied to risk reduction in the chemical industry. The expectation is that, unless risk is already negligible, control measures will be applied to reduce risk except where application of such measures would involve a gross disproportion between expenditure (in time, money and effort) and the safety benefits gained.

A risk assessment should cover all aspects of the work activity, not just the main focus of the work. For example, a COSHH assessment for the synthesis of a novel chemical should involve consideration not just of the reaction chemistry but also of the storage, transportation and disposal of chemicals, as well as any hazardous chemical properties.

The idea of a hierarchical approach to control measures is incorporated directly into some safety regulations, such as COSHH 2002, MHOR 1992 and the Provision and Use of Work Equipment Regulations (PUWER) 1998. There is an increasing tendency for safety regulations to specify factors that should be considered when conducting risk assessments.

The *Five Steps* approach will serve well for most activities, but risk assessment of work involving more complex equipment, such as pilot process plant, may include application of more advanced techniques such as HAZOP or quantitative risk assessment.

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Appendix 1 – Summary of Requirements of Key Regulations

Management of Health and Safety at Work Regulations (MHSWR) 1999

General requirement for "suitable and sufficient" risk assessment. A 'catch-all' for cases where risk assessment is not made an explicit requirement of the relevant regulations.

Particular consideration to be given to risks to young persons, and to new or expectant mothers.

Control of Substances Hazardous to Health (COSHH) Regulations 2002

Risk assessment for activities involving chemicals, except "where the substance is hazardous to health solely by virtue of its radioactive, explosive or flammable properties, or solely because it is at a high or low temperature or a high pressure".

Do not apply to lead or asbestos as these have their own specific regulations, or to medical applications.

Also require risk assessment for dusts and biological agents. Categories of biological agents and minimum control measures in Schedule 3 to the Regulations.

Dangerous Substances and Explosive Atmospheres Regulations (DSEAR) 2002

Risk assessment for materials classified as explosive, oxidising, extremely flammable, highly flammable or flammable, or which can form explosible dusts. List factors to be taken into account in risk assessment. Risks to be reduced by preventing explosions or mitigating effects where possible. Explicit hierarchy of control measures.

Require zoning of plant areas where explosive atmospheres may arise; this will affect specification of electrical equipment etc. Emergency arrangements to be identified.

Provision and Use of Work Equipment Regulations (PUWER) 1998

Require work equipment to be suitable for its intended use.

Measures must be taken to prevent access to dangerous moving parts or to ensure that their movement is stopped before a person can enter a "danger zone". A hierarchy of control measures is described.

These Regulations do not actually specify a requirement for risk assessment, but the emphasis on satisfactory control measures implies that an evaluation of risk will have been made.

Lifting Operations and Lifting Equipment Regulations (LOLER) 1998

Require equipment to be of "adequate strength and stability", with equipment used to lift persons being "such as to prevent a person using it being crushed, trapped or struck or falling from the carrier". Lifting tackle to be inspected by "competent person".

Lifting operations to be "properly planned by a competent person". This implies an evaluation of risk, although risk assessment is not mentioned explicitly.

Manual Handling Operations Regulations (MHOR) 1992

State that employers shall "make a suitable and sufficient assessment of… manual handling operations to be undertaken" by employees and "take appropriate steps to reduce the risk of injury". Risk assessment is not mentioned explicitly but is implied by this wording.

The Health and Safety (Display Screen Equipment) Regulations 1992

State that "every employer shall perform a suitable and sufficient analysis of those workstations which… are used for the purposes of his undertaking". Risk assessment is not mentioned explicitly but is implied by this wording.

Control of Noise at Work Regulations 2005

State that "an employer who carries out work which is liable to expose any employees to noise at or above a lower exposure action value shall make a suitable and sufficient assessment of the risk from that noise to the health and safety of those employees". Factors to be considered in the assessment are specified.

Ionising Radiations Regulations 1999

State that an employer "shall make a suitable and sufficient assessment of the risk to any employee and other person".

Describe regulatory regime and set out hierarchy of control measures.

Appendix 2 – Schedule 1 of MHSWR 1999

GENERAL PRINCIPLES OF PREVENTION

(This Schedule specifies the general principles of prevention set out in Article 6(2) of Council Directive 89/391/EEC)

(a) avoiding risks;

(b) evaluating the risks which cannot be avoided;

(c) combating the risks at source;

(d) adapting the work to the individual, especially as regards the design of workplaces, the choice of work equipment and the choice of working and production methods, with a view, in particular, to alleviating monotonous work and work at a predetermined work-rate and to reducing their effect on health;

(e) adapting to technical progress;

(f) replacing the dangerous by the non-dangerous or the less dangerous;

(g) developing a coherent overall prevention policy which covers technology, organisation of work, working conditions, social relationships and the influence of factors relating to the working environment;

(h) giving collective protective measures priority over individual protective measures; and

(i) giving appropriate instructions to employees.

Appendix 3 – Selected Published Risk Assessment Forms and Tools

EPS Risk Assessment form

To be used for general risk assessment, contains prompts regarding hazards that might be present. Chemicals page applies to Perkin Building only. Available at O:\EPS Forms\Safety and O:\EPS-safety\eps risk assessment forms on O-Drive.

Scottish Universities COSHH Form

To be used for COSHH assessment in Brewster, Coulson, Mountbatten and Nasmyth Buildings; Perkin to use section in general EPS risk assessment form. Designed to prompt consideration of all aspects of chemicals and biological agents usage, including protective equipment, emergency response and residue disposal. Available at O:\EPS-safety\eps risk assessment forms on O-Drive.

Heriot-Watt Overseas Travel Form

To be used for travel overseas; travel within the UK does not require a specific risk assessment at present, although it is likely that procedures for driving on University business will become more stringent in the near future. Available at O:\EPS Forms\Safety and O:\EPS-safety\eps risk assessment forms on O-Drive.

Heriot-Watt Home-Working Form

To be used for working at home on University business where this is an individual's designated place of work. Available at O:\EPS Forms\Safety and O:\EPS-safety\eps risk assessment forms on O-Drive.

Heriot-Watt Fire Risk Assessment Form

Contains prompts for fire risk factors inside buildings. Available at O:\EPS-safety\eps risk assessment forms on O-Drive.

HSE Manual Handling Assessment Chart (MAC) Tool

Detailed assessment of manual handling operations using charts and a scoring system. Reasonably easy to use, although it looks complex at first. Available at http://www.hse.gov.uk/msd/mac/introduction.htm.

Work Positive Stress Assessment Tool

Comprehensive stress assessment tool based on benchmarking process. Easy to use; this predates HSE's assessment tool but is as effective and more user-friendly. Available at http://www.hebs.com/workpositive/resources.cfm#.

HSE Display Screen Equipment ACoP

Work with Display Screen Equipment: Guidance on Regulations. 2nd Edn., 2003, HSE, L26. Gives guidance on interpreting relevant regulations and includes checklist of risk factors. Some useful information relating to musculoskeletal disorders arising from computer use can be found at http://www.openerg.com/index.htm.

HSE web site also contains tools to assist in other types of risk assessment, e.g. COSHH, noise, slips, vibration, stress. In some cases these require measurement of parameters such as surface roughness, noise level, acceleration of tools etc.