Guidance on Carrying Out Risk Assessments

Risk Assessment

A risk assessment identifies all the health and safety hazards of the work activity and judges the associated risks if the work is carried out with the planned precautions. If the risks are unacceptably high, the assessment also identifies additional steps that need to be taken, when and by whom, to reduce the risks further.

Suitable and sufficient risk assessment

Risk assessments must be `suitable and sufficient`. This means they will:

- identify all the hazards associated with the activity
- include what is reasonably foreseeable
- be proportionate to the risks and the nature and duration of the work
- take account of legislation, guidance and industry good practice
- evaluate the extent of the associated risks, taking account of existing or planned precautions and their effectiveness
- identify additional precautions if necessary with timescales and responsibility for their implementation
- be kept up to date

The assessment enables informed planning and decisions on what is needed for the work, including:

- resources: materials, equipment, facilities, skilled staff, support, supervision
- equipment, including necessary testing and maintenance
- knowledge, skills, experience for those carrying out the work
- additional training if necessary
- personal protective clothing and equipment
- emergency arrangements
- funding and adequate time allocation

Reasonably practicable

Unless there is a more specific higher legal requirement, usually indicated by '*shall'* or '*as far as practicable'*, then most precautions to minimise risk are *'so far as is reasonably practicable'*. The term 'reasonably practicable' means that the degree of risk in a particular activity should be balanced against the resources (time, effort, cost) and difficulty of taking all the technically possible measures to avoid or minimise the risk. If applying these resources is so disproportionate to the risk that it would be unreasonable to implement them the employer is not obliged to do so.

Arrangements for Risk Assessments

Faculties, Directorates and Units carry out risk assessments for all their teaching, research, outreach and support activities, before the work commences. Assessments are included in their planning processes and in decisions on resources. Assessments take account of University Codes of Practice on relevant topics and are used to draw up Faculty/Directorate/Unit-specific local codes of practice setting out the control measures to be followed for the activity. They are reviewed and revised as necessary to ensure they are kept up to date.

Documentation

Proforma risk assessment forms are available on the University Health & Safety web pages for downloading and completion electronically or as hard copy:

- General form used to record risk assessments for all other types of work activities where the work involves significant hazards – a hazard is anything with the potential to cause harm.
- Expectant and new mothers at work form
- Genetically-modified materials assessment form
- Display Screen Equipment (DSE) workstation assessment

Carrying out the risk assessment and completing the form

The guidance below sets out the information that should be considered when carrying out a general risk assessment and recorded under each section of the general risk assessment form. For details see the Code of Practice on Risk Assessment and associated Guidance and Forms for the relevant topic.

Faculty/Directorate/Unit

Name of Faculty, Directorate or Unit for which the assessment is being undertaken

Title of risk assessment/work being assessed

Give a brief meaningful title of the activity being assessed, for example ‘Annual stocktaking and disposal of surplus materials in storeroom 123’ rather than ‘Stocktaking’.

Location of work being assessed

The area, room, laboratory or workshop, building, campus or off-campus area in which the activity is taking place.

Brief description of work being assessed

Give a brief description of what the work will involve, setting out the:

- Duration and timing of the activity (particularly if it runs outside normal hours or overnight)
- Frequency of the activity (for example daily, once a year)

- All stages of the activity being considered in the assessment (preparation, storage, transportation, use, disposal), or the specific stages or portions of the activity if the whole is not under consideration
- Summary of materials and/or chemicals used
- Equipment used
- Estimate of quantities used (taking account of the numbers of replicates, and if necessary the number of students working at the same time)

A research paper, protocol or method statement may be attached to the assessment form if it provides the necessary details. A note must be made of any differences between the paper/protocol/method and the proposed work, for example different quantities, materials or equipment.

Hazards inherent in the task or process

A hazard is anything with the potential to cause harm. Examples include: handling chemicals has the potential for spillages and accidental exposure, perhaps causing burns to the skin or damage to the lungs; working on a roof has the potential for falls from height or dropped tools, perhaps causing death or serious fractures.

The general assessment form includes several Hazard Categories which cover the whole range of activities that may need to be assessed. All categories should be considered carefully and information given under all those that are relevant. If a category is definitely irrelevant to the particular assessment, then 'Not Applicable or N/A' should be entered under that category.

The hazard categories are:

- **Personal safety**
  - eg physical or verbal attack; disability or health problems; delayed access to personal or medical assistance; failure of routine or emergency communications; security of accommodation and support; getting lost or stranded by transport; cultural or legal differences
- **Equipment hazards – storage, handling and use of equipment and materials**
  - eg Tools; machinery; vehicles; manual handling; noise; work at height; electricity; fire; vacuum; high pressure; high temperature; ultra-violet; laser; vibration
- **Chemical hazards – storage, handling, use, and disposal of chemical reagents, intermediates, products and waste**
  - eg toxic by inhalation or ingestion; irritant; corrosive; flammable; explosive; oxidising; radioactive
- **Biological hazards – storage, handling, use, and disposal of biological agents, intermediates, products and waste**
  - 'any micro-organism, cell culture or human endoparasite including any which have been genetically modified, which may cause infection, allergy, toxicity and other hazards to human health'. This includes bacteria, viruses, fungi and parasites.

- **Natural physical hazards – effects of the natural environment, climate, landscape, plants, animals**
  - eg extreme weather; earthquakes and volcanoes; mountains, cliffs and rock falls; glaciers, crevasses and icefalls; caves, mines and quarries; forests including fire; marshes and quicksand; fresh or sea water; tidal surges
- **Environmental impact**
  - eg pollution and waste; deposition of rubbish; disturbance of ecosystems; trampling; harm to animals or plants
- **Other hazards**
  - **Any other significant hazards that do not appear to fit into the main categories**

Consider the planned activity, where it will be undertaken, by whom and when. List aspects of the work with significant hazards that are inherent (expected or foreseeable) in the context of the work or process that is being undertaken and where it will be done. Give brief details of how foreseeable harm/injuries could occur.

In the example of 'Annual stocktaking and disposal of surplus materials in storeroom 123', significant hazards may arise if the storeroom is remote from colleagues and there could be delays in getting help if there is a problem or an accident. Injuries could arise from frequent manual handling of the stepladder and boxes of materials in the narrow aisles, or falling from the stepladder to reach high shelves. If there is lone working, perhaps there could be injuries trying to do something that needs two people. The assessment will identify the arrangements that are already in place or need to be introduced to make the work safe.

In each relevant hazard category on the assessment form provide brief details of:

- All the hazards that are reasonably foreseeable for those preparing for the activity, doing the work, or clearing up afterwards, for example calibrating equipment; handling heavy loads, exposure to noise or dust, disposal of waste chemicals, repairing equipment.
- All the hazards that are reasonably foreseeable, in the context and location of the activity, for others who are not directly involved, for example work at height in an open access area could mean tools drop on passers-by, using solvents may affect others working elsewhere in the laboratory.
- Which equipment or materials or part of the activity could cause injury or ill-health, for example transport; fixed machinery; analytical equipment; electrical equipment; hand tools, needles.
- How the equipment and materials are normally used, and how the injuries or ill-health could occur, for example routine use of scalpels could cause cuts if the blade slips, spillage of a corrosive liquid could cause burns to the skin.

- How injuries or ill health could occur if something goes wrong, for example there is a power failure and the fume cupboard fan stops? Or the water fails and the process overheats due to loss of cooling?
- What the harm would be:
  - Physical – Cuts (minor/major), strain (minor strain/major back injury), fracture, burns (minor/severe), eye injury (foreign body/loss of sight), respiratory problems.
  - Mental – distress
  - Environmental – pollution (air, water, land), damage to property, harm to wildlife
- What materials are used or produced
  - intended products, intermediates and waste
- Nature of the materials
  - chemical hazard classification; weight, shape or size of heavy or awkward items being handled
- Routes of exposure to liquids, fumes, mists, solids
  - inhalation, skin absorption, ingestion
- Is the harm likely to be instantaneous (acute - e.g. contact with hot surface) or over a longer period (chronic - e.g. exposure to excessive noise)
- What is the level, duration and frequency of exposure?

Person(s) at risk

- Individuals carrying out the activity
- Staff and students doing the practical or research
- Technicians and others preparing and clearing the activity
- Observers or others using the area/equipment, including passers-by
- Maintenance and contractors going into the area or working on the equipment
- Domestics and Security going into the area outside normal hours
- Are extra precautions needed for e.g. pregnant, health problems, inexperience, disabilities?
- Consider the environment – intended product(s), emissions, by-products, wastes, routes of disposal

Precautions (Control measures) to be followed

For each significant hazard identified, provide brief details of all the existing and planned precautions (control measures) that will be in place to minimise the likelihood and severity of any injuries or ill-health that may occur for all individuals and groups who may be affected by the hazards identified. The following points should be addressed:

Safe working methods and procedures

- Where and how the work must be done
- The sequence of steps that must be followed if this is critical

- Do any specific arrangements need to be made, for example periodic delivery of materials to a particular location; arranging access?
- Is there an emergency generator providing power for essentials such as extract ventilation?
- Are there any restrictions or prohibitions?
  - can only be done by authorised personnel
  - specific lone working arrangements (NB lone working prohibited for undergraduates in laboratories and workshops)
  - only in particular location(s)
  - timing, for example must always be carried out in normal working hours
  - specific minimum number of people, for example working in pairs to handle heavy loads
  - work can only be done under supervision

Materials and equipment

- Are the materials the safest available for the work?
- Is the equipment suitable?
- Where are specific mechanical aids such as trolleys kept?
- Are there any particular instructions or precautions for use of the equipment?
- Are there arrangements for periodic equipment checking, maintenance, servicing and inspection if necessary?

Competence, information and training, and supervision

- Local Codes of Practice, Standard Operating Procedures (SOP) and/or guidance and instructions are written and kept up to date for the task, available and provided to those carrying out the work
- All personnel involved must be competent to carry out the work or are under competent supervision
- Look at exactly what the people doing this activity will need to know. Will they already have the necessary knowledge and skills, including any practical expertise? Will training be required?
- Does the training need to be a formal course? To a particular standard? By a named provider? A local briefing with a specific fixed content? Delivered by whom?
- Before the work starts? With periodic refreshers?
- What are the maximum staff/student ratios or work group size?
- Are there arrangements to check that the proper precautions (control measures) are in place and followed?

Advance information and notification to others e.g. cleaners and security personnel if necessary

If out-of-hours working or running of equipment/plant is planned, suitable notifications must be made under University and School/Office arrangements.

Personal protective equipment (PPE) and clothing

- All Personal Protective Equipment and clothing must be of the correct type to protect against the hazard that has been identified.
- It must also be suitable for the individual using or wearing it, for the work activity itself and for the work environment.
- Glasses or goggles or face shields to protect the eyes – are they to protect against impact? (how hard an impact?) Splashes of chemicals? (what kind of chemicals?) Fumes, gases and/or vapours? (what kind?) Will glasses give enough protection? Does the whole face and neck need to be covered?
- Gloves to protect the hands and forearms – are they to protect against chemicals? (what kind?) Cuts? Extremes of temperature? Extra long? Tight cuffs? What material?
- Respirators to protect the lungs – are they to protect against particles (how small?) Fumes, gases and/or vapours (what kind?) Are face masks good enough or are powered hoods needed?
- Ear defenders or earplugs to protect the ears against noise - How noisy is the area? Will the hands be dirty? (could lead to infections if using ear plugs) Will the ear defenders interfere with other protection, such as glasses or head protection?
- Hard hats or bump caps to protect against head injuries - what kind of impact? What kind of environment?
- Safety footwear to protect the feet – are they to protect against punctures from items on the ground? Dropped items? Slips?
- Overalls or coats or aprons to protect against spillages? - what kind of materials may be spilled? How much? Do they need to have tight cuffs? High neck?

Emergency arrangements – first aid, fire fighting, communications, spillages

- These must be relevant to the type and scale of the work, and the foreseeable accidents
- What actions will need to be taken if the work does not go according to plan?
- Who will take those actions?
- Is the campus or Faculty/Directorate/Unit provision of first aiders adequate? Can they enter the area easily and safely? Is specialist knowledge required for the likely type of injury, eg chemical burns?
- What should be done if the power or water supply fails? Where can services be isolated? Is there a specific safe sequence of steps?
- Where are the spillage kits kept?

Residual risks if all precautions are followed

The residual risk is judged by considering the likelihood that the harm will occur and the severity of that harm if all the planned methods and all precautions are followed:

- Is the risk high, medium or low?

- Ideally all risks will be low if the right methods and precautions are in place and followed
- If the risk remains medium or high, further actions must be considered before the work commences, continues or takes place again. These may be different or additional precautions (control measures).

Additional precautions required for future work

Different or additional precautions (control measures) must be considered before the work commences, continues or takes place again. If it is reasonably practicable to do so, then they should be introduced before the work goes ahead. Examples may be:

- Replacement of equipment (this may be phased replacement due to cost and time constraints and future budget allocations)
- Improved guarding of machinery
- Revision of existing procedures or Standard Operating Procedures
- Further training for personnel involved
- Provision of better or different PPE

In some cases it is not possible to make the changes immediately but they can be noted in the assessment for future action by a designated person and with a target completion date:

- Relocation of personnel and/or equipment when facilities available
- Safer equipment when technological progress makes this available

Sources of information used for this assessment

This is the information that was used by the people carrying out the assessment; what their judgements and decisions were based on. These sources should be recorded for future reference, and the version or date, so that they can be monitored for changes and updates in future reviews and revisions:

- Relevant legislation
- Instruction manual(s) and equipment handbooks
- Manufacturers and or suppliers information (eg service bulletins or Safety Data Sheets)
- Relevant association's publications
- University H&S web pages or other Internet sources
- Health & Safety Local Officers (HSLO)
- Current and past workers or operators
- Colleagues

Person(s) completing this assessment

The person who undertakes a risk assessment will be the one carrying out or managing the activity day-to-day, and who made the judgements and decisions on hazards, risks and precautions. That person could be:

- The Manager or Supervisor for activity
- A HSLO advising closely on the assessment
- A PhD Student for their own project

- A technician in charge of specific equipment
- May be more than one person working together on the assessment

Other persons commenting on the assessment (where required under Faculty/Directorate/Unit arrangements)

Others involved in the decision-making process should be noted in this section if necessary. They may be the line managers or academic supervisors responsible for the activity day to day, others carrying out the work, or the HSLO. The Faculty/Directorate/Unit H&S consultative group may be involved and make recommendations on drafts. The risk assessment may also pass through a formal comment stage as part of a project or funding approval.

Person approving this assessment

This is whoever has the overall responsibility for the activity, the decisions on how it will be carried out, and ensuring that it will be done as described. It could be:

- Faculty Operating Officer/Director of Professional Service/Head of Unit
- Head of Department
- Senior Academic
- Manager or Supervisor for activity

Review of assessment, and revision if necessary

Assessments must be reviewed periodically to check and make sure that all the information is still correct and that the arrangements are still appropriate. Reviews must be carried out:

- When there is a change in relevant legislation, University Codes of Practice, or industry/ higher education sector good practice
- When there are significant changes to work materials, equipment, methods, location or people involved
- If there are accidents, near misses or complaints associated with the work
- If problems are noted
- When restarting work after an extended period
- For each visit in a series
- If none of these apply, the assessment must be reviewed at least annually for a continuing activity

As part of the review, precautions (control measures) should be checked for their suitability and effectiveness by:

- Observation: is the task being carried out safely?
- Obtaining comments and suggestions from those carrying out the task, supervisors and observers
- Noting any complaints
- Reviewing environmental monitoring if being undertaken
- Reviewing health surveillance if being undertaken
- Reviewing accident and near-miss reports
- Checking compliance with latest standards

- Checking the sources of information used in the original assessment or most recent review

All significant revised details need to be annotated in the revised assessment. Include:

- New details about the activity, hazards, persons at risk or precautions
- Changes to the activity that affect hazards and risk
- Changes to existing precautions that are no longer adequate
- Necessary improvements are recommended to maintain good practice
- Latest sources of information

Small revisions can be annotated on the original assessment form. Ensure the revision(s) are signed and dated. Where a large number or substantial revisions have been made it will be appropriate to produce a new assessment.

Local Code of Practice

Once a risk assessment has been carried out, the precautions (control measures) need to be made known to those who will be carrying out and supervising the work. The University's generic term for this is a Local Code of Practice, but Faculties/Directorates/Units may have their own terminology such as instructions, briefing sheet, method statement, standard operating procedure. Whatever term is used locally, the Code should be made available on shared drives, notice-boards, and included in local staff and student inductions and task training sessions. The Code should include the name of the author and the date. When a risk assessment is reviewed, and particularly if it is revised, the accompanying Local Code of Practice should also be reviewed, revised and re-dated then reissued.