

RISK ASSESSMENT

Introduction

1. This guide provides advice to the University staff members and research personnel for assessing risk in respect of their activities and workplace.
2. This is a step-by-step guide to risk assessment.
3. Instead of setting out specific requirements for specific circumstances, it sets out a basic system for managing risk to health and safety i.e. find out what the situation is, then decide what to do about it within the system.
4. Five basic steps to risk assessment are suggested. What is suggested here is a framework, a department head or research project leader may opt for a different sequence. Whatever approach is chosen, the same information is required and it is unlikely to be achieved without a systematic approach.
5. The basic requirement for risk assessment is: it should be suitable and sufficient. More serious and complex risks require greater consideration to meet this requirement, simple and lower risk situation will require less. This guide aims at complex or serious risks.
6. This guide is not a proforma for risk assessment. There is a wide variety of work activities and the range of effective ways of controlling risks is equally extensive. What is provided is a logical approach to checking hazards.
7. The spirit of risk assessment is to make sure things are done to reduce injury and illness. Poor assessment may well result in meaningless reports but good assessment can be used not only for reference but also as a plan for identifying action to reduce the risk of injury and illness.

Five Steps to Risk Assessment of Your Work

Step 1. Look for the hazards.

Step 2. Decide who might be harmed, and how.

Step 3. Evaluate the risks arising from the hazards and decide whether existing precautions are adequate or more should be done.

Step 4. Record your findings.

Step 5. Review your assessment from time to time and revise it if necessary.

Terminology

- Policy:** is used in relation to health and safety and other functional management areas, (e.g. financing and human resources) to convey the general intentions, approach and objectives of an organization and the criteria and principles on which actions and responses are based. The term, 'written policy statements' is used to describe those documents which record the policy of the organization.
- Accident:** includes any undesired circumstances which give rise to ill health or injury; damage to property, plant, products or the environment; production losses, or increased liabilities.
- Incident:** includes all undesired circumstances and near misses which have the potential to cause accidents.
- Hazard:** means the potential to cause harm, including ill health and injury; damage to property, plant, products or the environment; production losses or increased liabilities.
- Ill health:** includes acute and chronic ill health caused by physical, chemical or biological agents as well as adverse effects on mental health.
- Risk:** means the likelihood that a specified undesired event will occur due to the realization of a hazard by, or during, work activities or by the products and services created by work activities.

Assessing Risk

An assessment of risk is a careful examination of what in your workplace or outcome of your activities could cause harm to people. Having that in mind, you can weigh up whether you have taken enough precautions or should do more to prevent harm. The objective is to make sure that nobody gets hurt or becomes ill.

The decision you need to make is whether a hazard is significant, and whether it is covered by satisfactory precautions so that the risk is small. Check it up when you assess the risks.

- e.g.1 Electricity can kill but the risk of electrocution in a laboratory is remote if the 'live' components are insulated, metal casings properly earthed and a circuit breaker installed.
- e.g.2 Chlorine is a toxic gas. Leakage of a chlorine gas cylinder has, in one particular case, destroyed 70% of the lung function of a research student in USA permanently so that the injured person has to rest on bed at all times. The chance of leakage is not uncommon in a laboratory if people handle the valve or regulator wrongly. Corrosion of the valve would increase the chance further. The risk is high here. Then, the laboratory rules and regulations on handling and storage of chlorine gas cylinders must be adhered to strictly to reduce the risk. On the other hand household bleach could generate chlorine gas in contact with acid i.e. of the same hazardous nature. However, the chance of mixing is low and the concentration and quantity of chlorine concerned is much less than a cylinder. Therefore, the risk in using bleach in your home is relatively low.

How to Assess the Risks?

In your office, hazards may be few and simple. Yet, taking initiative by checking them is still necessary. For example, use of Video Display Units (VDUs) incorrectly could cause you ill health and discomfort. You need to correct the situation. In laboratories or during a medical/engineering/science experiment, you may use toxic chemicals or dangerous apparatus. Then you should make an assessment of the risks to health and safety and write down your findings. Check that you have taken all the reasonable precautions that you can to avoid injury or ill health.

Since you are familiar with the work; you can do the assessment yourself. If you are not confident, you may get help from your departmental health and safety officer or refer the case to the Health, Safety and Environment Office. But remember - you are responsible for seeing that it is adequately done.

Step 1. Look for the hazards

While doing your risk assessment of your workplace, walk around and look afresh at what could potentially cause harm. Concentrate on things that could result in serious harm or affect more than one person.

Six areas to look at:

- | | |
|--------------------------------|---------------------------------|
| (a) Activities | (b) Materials/Substances |
| (c) Equipment/Apparatus | (d) Workplace |
| (e) People | (f) Procedures |

While planning your operation, list down the task step by step, then consider the likely hazards of each step.

Sometimes, talk to users of the workplace or those who have worked on similar tasks, listen to their complaints or comments, you may reveal issues which are not immediately obvious.

Check with material safety data sheets or operational instructions issued by manufacturers. These can also help in spotting hazards. Guides from the authorities, accidents and ill health records may give you some hints as well.

Step 2. Decide who might be harmed, and how

Think about people who may not be in the workplace all the time, e.g. cleaners, visitors, contractors, maintenance personnel, students, etc. Include members of the public, or people you share your workplace with, if there is a chance they could be hurt by your activities.

Step 3. Evaluate the risks arising from the hazards and decide whether existing precautions are adequate or more should be done

Even after all precautions have been taken, usually some risk remains. What you have to decide for **each significant hazard** is whether this remaining risk is high, medium or low. **First**, ask yourself whether you have done all the things that the law says you have got to do. For example, there are legal requirements on prevention of access to dangerous parts of machinery. **Then** ask yourself whether generally accepted health and safety standards are in place. But do not stop there - think for yourself, because you must do what is reasonably practicable to keep your workplace safe. Your real aim is to make all risks small by adding to your precautions if necessary. More information about health and safety requirements and standards can be found internally from the library and the Health, Safety and Environment Office or externally from local authorities and their publications.

Improving health and safety need not cost a lot. For instance, placing a mirror on a dangerous blind corner to help prevent vehicle accidents, or putting some non-slip material on slippery steps, are inexpensive precautions considering the risks.

If you find that something needs to be done, ask yourself:

- (a) Can I **get rid of the hazard** altogether?
- (b) If not, how can I **control the risks** so that harm is unlikely to happen?

Only use personal protective equipment when there is nothing else that you can reasonably do.

If the work you do tends to vary a lot, or if you have to move from one site to another, select those hazards which you **can reasonably foresee** and assess the risks from them. After that, if you spot any unusual hazard when you get to a site, get information from others on site, and take what action seems necessary.

If you share a workplace, tell the other users there about any risks your work could cause them, and what precautions you are taking. Also, think about the risks to you from those who share your workplace.

Step 4. Record your findings

As quality assurance is an adopted approach of the University, you should record the significant findings of your assessment. This means

- (a) writing down the more significant hazards and
- (b) recording your most important conclusions - for example, “Electrical installations: insulation and earthing checked and found sound”, or “Fume from welding: local exhaust ventilation provided and regularly checked”.

You must also inform your Department Head about your findings.

There is no need to show how you did your assessment, provided you can show that:

- (a) a proper check was made;
- (b) you asked **who** might be affected;
- (c) you dealt with all the obvious significant hazards, taking into account the number of people who could be involved;
- (d) the precautions are reasonable, and the remaining risk is low.

Assessments need to be suitable and sufficient, although they cannot be perfect. The real points are:

- (a) Are the precautions reasonable, and
- (b) Is there anything to show that a proper check was made?

Keep the written document for future reference; it can help you if an inspector questions your precautions, or if you become involved in any action for civil liability. It can also remind you to keep an eye on particular matters. And it helps to show that you have done your best.

To make things simpler, you can refer to other documents, such as manuals, the University and Departmental health and safety policies rules, manufacturers' instructions, and health and safety precautions/rules/regulations issued by the authorities. You do not need to repeat all that, and it is up to you whether you combine all the documents, or keep them separately.

Step 5. Review your assessment from time to time and revise it if necessary

Any significant change of the worknature, the layout of the workplace, introduction of new equipment or new substances/reactions, new category of people, justify re-assessment. This would be a frequent task for research works and construction works. The researcher or project leader has to specify a time-table for review and revision that is flexible enough to meet any drastic changes. The situation would be quite different in a general office. Once you have assessed the risks, put them under proper control and installed a mechanism to inform and educate all members, there would normally be little need for re-assessing that general office within one to two years.

Working conditions may change gradually leading eventually to a drastic modification in the long run. Be alert!

Conclusion

This five steps assessment approach to manage risks in your work is tried and tested. It is the very beginning of risk management in our campus. It can help you to protect people and control loss. All five steps are fundamental. Act today: Don't react to an accident tomorrow.

HSEO has prepared a Risk Assessment Work Sheet (HSE Form 14) for reference.

Checklist of Hazards

1. Moving parts of machinery
 - (a) Crushing
 - (b) Cutting
 - (c) Drawing-in
 - (d) Entanglement
 - (e) Ejection
 - (f) Fluid
 - (g) Friction/abrasion
 - (h) Shearing
 - (i) Stabbing/puncturing
2. Dangerous Equipment
 - (a) Lifting Appliances and Lifting Gears
 - (b) Cartridge Operated Tools
 - (c) Abrasive Wheels
 - (d) Hoists
 - (e) Forklift Truck
3. Working at Height on
 - (a) Ladder
 - (b) Gondola
 - (c) Tower
 - (d) Mobil Tower
 - (e) Platform
4. Transport
5. Access
 - (a) Slips, trips and falls
 - (b) Falling or moving objects
 - (c) Obstruction or projection
 - (d) Confined spaces
 - (e) Cold room

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6. Ergonomical
 - (a) Manual handling
 - (b) Video display units
 7. Electricity
 8. Chemicals
 - (a) Carcinogenic
 - (b) Corrosive
 - (c) Explosive
 - (d) Flammable
 - (e) Harmful
 - (f) Irritative
 - (g) Sensitising
 - (h) Toxic
 9. Fire and Explosion
 10. Particles and Dust
 - (a) Inhalation
 - (b) Ingestion
 - (c) Abrasion of skin or eye
 11. Radiation
 - (a) Ionising
 - (b) Non-ionising
 12. Biological
 - (a) Bacterial
 - (b) Viral
 - (c) Fungal
 13. Environmental
 - (a) Noise
 - (b) Vibration
 - (c) Light
 - (d) Humidity
 - (e) Ventilation

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- (f) Temperature
 - (g) Climate
 - (h) Pressure/vacuum
14. Organizational
- (a) Poor maintenance
 - (b) Lack of supervision
 - (c) Lack of training
 - (d) Lack of information
 - (e) Inadequate instruction
 - (f) Unsafe systems
 - (g) Provision of unsuitable equipment
 - (h) Inadequate monitoring arrangements
 - (i) Poor operator/machine interface
15. The individual
- (a) Individual not suited to work
 - (b) Long hours
 - (c) High work rate
 - (d) Violence to staff
 - (e) Unsafe behaviour of individual