

Risk Assessment Guide

Introduction:

This guide aims to help Lab Staff “Lab Supervisors, Laboratory Instructors, Researchers,etc.” to assess safety and health risks in their workplace.

A workplace risk assessment is one of the key tools for improving occupational safety and health conditions at work. Thus, it plays an important role in protecting workers and businesses, as well as complying with the laws. It helps everyone focus on the risks that really matter in the workplace – the ones with the potential to cause real harm.

A well conducted workplace risk assessment will contribute to the protection of workers by eliminating or minimizing work related hazards and risks. It should also benefit businesses through better organization of working practices potentially increasing productivity.

What is risk assessment?

A risk assessment is simply a careful examination of what, in the workplace, could cause harm to people. It enables a weighing up of whether enough precautions are in place or whether more should be done to prevent harm to those at risk, including workers and members of the public. A risk assessment must be suitable and sufficient.

What is the difference between Hazard and Risk?

Hazard: is anything that has the potential to cause harm, such as chemicals, electricity, working from ladders, an unguarded machine, an open drawer, demanding and stressful work, etc.

Risk: is the chance or probability that a hazard will actually result in injury, illness or damage to property, equipment or the environment, with an indication of how serious the harm could be, including any long-term consequences.



This is a hazard



This is a risk



How to assess the risks in the workplace?

Follow the five steps:

Step 1: Identify the hazards

Step 2: Decide who might be harmed and how

Step 3: Evaluate the risk and decide on precautions

Step 4: Record your findings and implement them

Step 5: Review your assessment and update if necessary

STEP 1

Identify the hazards

- Walk around your workplace and look at what could reasonably be expected to cause harm.
- Identify which work activities and processes are the most dangerous/hazardous, and in which parts of the workplace (you may find it useful to use a checklist; in any case, it is important to take notes to enable an eventual written risk assessment to be drawn up).
- Ask your workers, or their representatives, what they think about the dangers of the jobs they carry out, and how workplace accidents and ill health can be prevented. They may have noticed things that are not immediately obvious to you or to an external service.
- Learn from experience of previous accidents and work-related ill health. These often help to identify the less obvious hazards.
- Remember to think about long-term hazards to health (e.g. high levels of noise or exposure to harmful substances), as well as safety hazards.
- Check manufacturers' instructions or data sheets for chemicals and equipment as they can be very helpful in spelling out the hazards and putting them in their true perspective.
- Ask your workers if they can think of any hazard you have not identified or any worker at potential risk that you may have missed.

STEP 2

Decide who might be harmed and how?

For each hazard think about who might be harmed (e.g. students, visitors, specific groups of staff) and how (e.g. back injury from repeatedly lifting boxes). This will help you identify the best way of managing the risk.

Deciding who might be harmed doesn't mean listing everyone by name, but rather identifying groups of people (e.g. Lab supervisors, people working in the storeroom, lone workers, cleaners or passers-by) who are at risk of exposure to the hazards, how they are at risk, and the potentially negative consequences for their safety and health (i.e. what type of injury or ill health might occur).

Remember:

- Some workers have particular requirements, e.g. new and young workers, new or expectant mothers and people with disabilities may be at particular risk. Extra thought will be needed for some hazards.
- Cleaners, visitors, contractors, maintenance workers etc., who may not be in the workplace all the time.
- Members of the public, if they could be hurt by your activities.
- If the workplace is shared, think about how your work activities affect others present, as well as how their work affects your colleagues – talk to them; and
- Ask workers if they can think of anyone that may have been missed.

STEP 3

Evaluate the risk – decide on precautions (Control Measures)

Evaluating risk is about developing an understanding of the risk. It provides an input to decisions on whether risks need to be controlled and the most appropriate and cost-effective risk treatment strategies.

Risk analysis involves consideration of the sources of risk, their consequences and the likelihood that those consequences may occur. Risk is analysed by combining consequences and their likelihood. In most circumstances existing controls are taken into account.

$$\text{Risk} = \text{Consequence (Severity of harm)} \times \text{Likelihood of Occurrence}$$

Consequence: is a measure of how serious an injury or health effect could be, as a consequence of unsafe working or of an accident.

Likelihood: is a measure of how likely an accident could happen. When people are working safely there is less chance that an accident will occur.

Table 1- Hazard Consequence					
Area impacted (a)	Insignificant Consequences (Score = 1)	Minor Consequences (Score = 2)	Moderate Consequences (Score = 3)	Major Consequences (Score = 4)	Catastrophic Consequences (Score = 5)

Human Health and Safety	Minor injuries, which may require self-administered first aid. Injured personnel can continue to perform normal duties.	Injuries requiring on-site treatment by medical practitioner. Personnel unable to continue to perform duties.	Serious injuries requiring off-site treatment by medical practitioner or immediate evacuation to hospital. Potential long-term or permanently disabling effects.	Single fatality.	Multiple fatalities.
Production Loss	Incident event without causing production loss.	Production loss or delay up to one week.	Production loss or delay of one week to one month.	Production loss or delay for over one month.	Loss of license to operate or ability to produce indefinitely.
Total Cost of Impacts or Incident Event	Financial loss (compensation, fines, cost to repair, plant damage) of less than AED5,000.	Financial loss (compensation, fines, cost to repair, plant damage) of AED5,000 - AED50,000.	Financial loss (compensation, fines, cost to repair, plant damage) of AED50,000 - AED500,000	Financial loss (compensation, fines, cost to repair, plant damage) of AED500,000 - AED10M.	Severe financial penalties or legal liabilities. Financial loss (compensation, fines, cost to repair, plant damage) of greater than AED10M.

Table 2- Likelihood

Descriptor	Likely Frequency	Probability
Rare	Extremely unlikely Less than 5% chance of occurring	1
Possible	Has occurred 5% - 25% chance of occurring	2
Likely	Has occurred more than once 25%-60% chance of occurring	3
Often	Occurs several times per year 60% - 80% chance of occurring	4
Frequent	Occurs frequently 80%-100% chance of occurring	5

Table 3- Risk Rating

Likelihood (From Table 2)	Consequence (From Table 1)				
	Insignificant (1)	Minor (2)	Moderate (3)	Major (4)	Catastrophic (5)
Rare (1)	1 Low	2 Low	3 Low	4 Moderate	5 Moderate
Possible (2)	2 Low	4 Moderate	6 Moderate	8 High	10 High
Likely (3)	3 Low	6 Moderate	9 High	12 High	15 Extreme
Often (4)	4 Moderate	8 High	12 High	16 Extreme	20 Extreme
Frequent/ Almost Certain (5)	5 Moderate	10 High	15 Extreme	20 Extreme	25 Extreme

Table 4- Risk Action

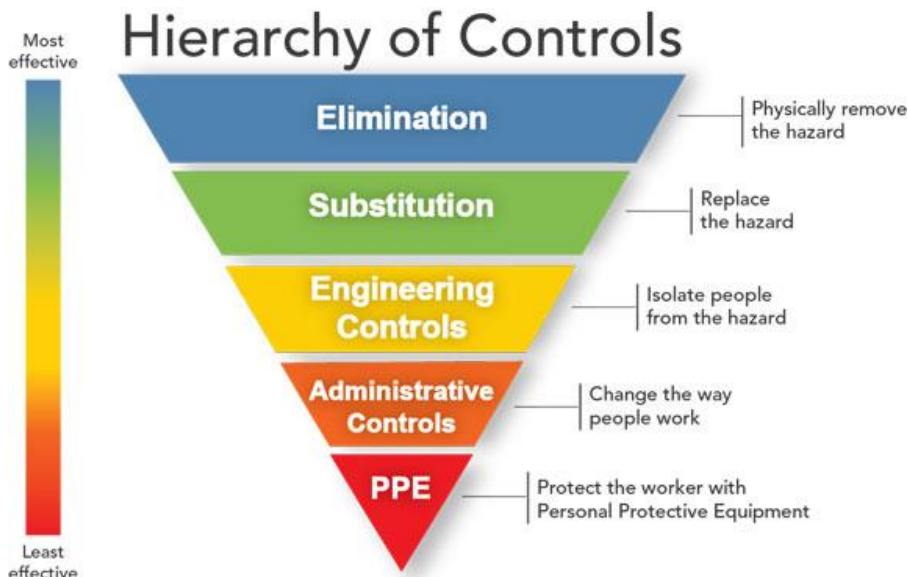
Risk Rating		Action
15 - 25	Extreme Risk	Activity should not proceed in current form.
8 - 12	High Risk	Activity should be modified to include remedial planning and action.
4 - 6	Moderate Risk	Activity can operate subject to management and /or modification.
1 - 3	Low Risk	No immediate action required, unless escalation of risk is possible.

Control Measures:

are simply what steps you are going to take to remove the hazards, or at least reduce the risk of hazards causing harm to as low level as possible.

For each hazard identified, the core activity in risk assessment is to identify, decide on, and implement the safety and health risk controls following the order in which they are listed in what is termed the “hierarchy of risk control measures”.

Risks should be reduced to the lowest reasonably practicable level by taking preventative measures, in order of priority. The chart below sets out an ideal order to follow when planning to reduce risk. Consider the sequence in the order shown, do not simply jump to the easiest control measure to implement.



1. Elimination

Eliminating the hazard—physically removing it—is the most effective hazard control. For example, if employees must work high above the ground, the hazard can be eliminated by moving the piece they are working on to ground level to eliminate the need to work at heights

2. Substitution

Substitution, the second most effective hazard control, involves replacing something that produces a hazard with something that does not produce a hazard—for example, replacing a toxic material with nontoxic material.

3. Engineering controls

The third most effective means of controlling hazards is engineered controls. These do not eliminate hazards, but rather isolate people from hazards. Capital costs of engineered controls tend to be higher than less effective controls in the hierarchy, however they may reduce future costs. For example, a crew might build a work platform rather than purchase, replace, and maintain fall arrest equipment. "Enclosure and isolation" creates a physical barrier between personnel and hazards, such as using remotely controlled equipment. Fume hoods can remove airborne contaminants as a means of engineered control.

4. Administrative controls

Administrative controls are changes to the way people work. Examples of administrative controls include procedure changes, employee training, and installation of signs and warning labels (such as those in the Workplace Hazardous Materials Information System). Administrative controls do not remove hazards, but limit or prevent people's exposure to the hazards, such as completing road construction at night when fewer people are driving.

5. Personal protective equipment

Personal protective equipment (PPE) includes gloves, Nomex/Uniform, respirators, hard hats, safety glasses, high-visibility clothing, and safety footwear. PPE is the least effective means of controlling hazards because of the high potential for damage to render PPE ineffective. Additionally, some PPE, such as respirators, increase physiological effort to complete a task and, therefore, may require medical examinations to ensure workers can use the PPE without risking their health.

Step 4

Record your findings and implement them

(i.e. Record who is responsible for implementing which risk control measures and the timeframe)

If you have decided on additional control measures action has to be taken to ensure they are implemented. It is good practice to allocate responsibility of this to named individuals, as well as assigning a time frame for implementation. The date of implementation should also be recorded.

Completing the risk assessment is an important step, but it is acting on the findings of the risk assessment that will make the difference in eliminating or minimizing work related hazards and risks.

It is likely that you will have identified a number of new control measures that are required, and businesses may not have the resources to implement all at once. Some additional control measures can be implemented immediately with limited resource e.g. ensuring housekeeping improvements, removing/rerouting trailing cables etc. Others will have to be prioritized and this should be based on the degree of risk.

Make a plan of action to deal with the most important things first.

A good plan of action often includes a mixture of different things such as:

- A few low-cost or easy improvements that can be done quickly, perhaps as a temporary solution until more reliable controls are in place;
- Long-term solutions to those risks most likely to cause accidents or ill health;
- Long-term solutions to those risks with the worst potential consequences;
- Arrangements for training workers on the main risks that remain and how they are to be controlled;
- Regular checks to make sure that the control measures stay in place.

Step 5

Review your assessment and update if necessary

Few workplaces stay the same. Sooner or later, you will bring in new equipment, substances and procedures that could lead to new hazards. So it makes sense to review what you are doing on an ongoing basis, look at your risk assessment again and ask yourself:

- Have there been any significant changes?
- Are there improvements you still need to make?
- Have workers identified other issues?
- Have you learnt anything from accidents or near misses?

Make sure your risk assessment stays up to date

During the year, if there is a significant change, don't wait. Check the risk assessment and, where necessary, amend it. It is best to think about the risk assessment when planning changes – this helps to ensure new hazards are not introduced and appropriate control measures are in place.

Remarks:

Check all expected hazards on the following link

<https://www.besmart.ie/risk-assessment/complete/browse-hazards/1/>

BeSMART.ie – Free Business Electronic Safety Management and Risk assessment Tool

Also, you can use BeSMART.ie to prepare your workplace-specific risk assessment

References:

- International Labour Organization (ILO): A 5 STEP GUIDE for employers, workers and their representatives on conducting workplace risk assessments.
- Abu Dhabi Occupational Safety and Health Center-OSHAD: Process of Risk Management-Version 3.0
- Health and Safety Executive, UK