Science & Technology Facilities Council

# RISK MANAGEMENT AND THE THE RISK ASSESSMENT METHOD

## STFC TRAINING MANUAL

Rev 1.5, Issued September, 2013

# CONTENTS

# INTRODUCTION

## What is a Risk Assessment?

Legally, as an employer, you have to assess risks and document the significant ones.
A risk assessment is nothing more than a careful examination of activities in your workplace could cause harm and how they might cause harm to:

- your employees;
- members of the public; or
- anyone else (like a visitor for example).

It should note what controls are in place (or should be in place) to reduce the exposure of people to particular hazards where there is significant risk of harm in undertaking the activity.

## What is it for?

In effect, a risk assessment allows you to identify for any activity:

- What could go wrong
- How badly it could go wrong;
- How likely it is to happen; and
- Whether anything needs to be done about it.

There are probably a number of different things that could go wrong in your workplace, causing some sort of harm to someone else. These are **HAZARDS**.

## Hazard and Risk

A **HAZARD** is anything that has the potential to cause harm, be it a thing like electricity or a slippery floor, or an activity, like working from a height or working with and arc welder.

A **RISK** is the chance, great or small, that people will be harmed by the hazard, together with an indication of how serious the harm could be.

## Significance

A **HAZARD** is considered significant if it is reasonably foreseeable that it could cause serious harm to individuals or the environment.

# RESPONSIBILITIES

The STFC SHE Code 6, Risk Management, defines responsibilities at various levels within STFC management:

## Directors

- **Assess:** Ensure that all Safety, Health and environmental hazards have been risk assessed.
- **Record:** Ensure that **Significant** SHE Risk Assessments are recorded.
- **Manage:** Ensure resources are available to implement the control measures identified by risk Assessments.
- **User Facilities:** Ensure risk assessment of user work is carried out.

## Line Managers

- **Assess :** Do risk assessment for activities within your control in conjunction with those doing the work and document significant risks. (Team assessment).
- **Manage:** Implement additional controls identified by Risk Assessment, and ensure existing ones are maintained.
- **Communicate:** Ensure risk assessment is communicated to those doing activity and others affected by the activity.
- **Review:** Make sure documented Risk Assessments are reviewed every two years or following changes in the work or an incident (whichever is sooner).
- **Help:** Make sure that you, or those who work for/with you know which tools are available and can use them.

## Staff, users, tenants and visitors

- **Assess:** Contribute to the risk assessment process.
- **Report:** Feedback if significant risks cant be managed with existing resources.
- **Understand:** Make sure you/they understand risks associated with work.
- **Use:** “On the Job” process to manage additional risks that arise during the course of your/their work.
- **Follow:** Implement control measures.

## SHE Group

- **Advise:** Assist Directors, Line Managers, Staff etc. in understanding the requirements of the code and how to use risk assessment tools.
- **Facilitate:** Provide an electronic storage system for risk assessments.

# WHAT TYPE OF RISK ASSESSMENT?

Within STFC the risk assessment process can be undertaken in one of three ways. The decision to use which of the three ways is subjective, and based on the assessors perception of the risks involved.

Training aims to establish some consistency across STFC, but the three ways relate to three levels of perceived risk – Low, Medium and High:

- **Low - Mental Risk Assessment** – the thought process that all sensible individuals undertake every moment of every day when assessing the risks associated with activities from crossing a road to lifting a heavy load.

**USE –** By an individual for very quick, less than 5 minute, routine tasks. For example – changing a filter on a vacuum pump.

- **Medium - "On The Job" (OTJ) Risk Assessment** - An on the spot risk assessment, which many are used to doing mentally, when changes or additions to planned work occur, or if carrying out a quick task. The quality of mental risk assessments can be improved by using a very simple pro-forma designed to prompt the consideration of a wide range of hazards, called an OTJ RA.

**USE –** For risk assessment of tasks that are brief, likely to take less than 30 minutes, and are unlikely to be repeated. For example changing a water pump. This method can also be used to manage changing risks within a larger job. If the need to make a change arises, this method can be used to assess the suitability of current controls.

- **High - Documented Risk Assessment** - STFC uses a standard method to undertake and document risk assessments for activities with significant risks.

**USE –** For complex tasks, and those simple tasks where significant risks exist.

# MENTAL RISK ASSESSMENT

The thought process that all sensible individuals undertake every moment of every day when assessing the risks associated from crossing a road to lifting a heavy load.

If the hazards are trivial or there is a trivial change to an existing risk assessed task then a quick ‘stop and think’ should suffice.

# ‘ON THE JOB’ RISK ASSESSMENT

Where a mental ‘Stop and Think’ has identified non-trivial hazards or there has been a significant change in the scope of a routine activity, the ‘On the Job’ Risk Assessment forms can be used to quickly re-assess any additional risks and identify possible additional control measures.

“ON THE JOB” RISK ASSESSMENT- IDENTIFY HAZARDS & EVALUATE THE RISK

| Date: | Task:<br>Related Risk Assessments: |
|---|---|
| Name: | Building/Area: |

| **Physical injury hazards** | **Likelihood*** | **Severity*** | **Risk**** | **Action to be taken** |
|---|---|---|---|---|
| 1: Mobile plant | | | | |
| 2: Moving parts of machinery | | | | |
| 3: Manual handling | | | | |
| 4: Fall from Height/Roof Access P | | | | |
| 5: Access and egress | | | | |
| 6: Slips trips and falls | | | | |
| 7: Pressure systems P | | | | |
| 8: Electrical shock P | | | | |
| 9: Hot work/fire P | | | | |
| 10: Explosion F | | | | |
| **Physical injury hazards** | **Likelihood*** | **Severity*** | **Risk**** | **Action to be taken** |
| 11: Ionising radiation F | | | | |
| 12: Lasers F | | | | |
| 13: Ultraviolet light | | | | |
| 14: Hot/Cold objects | | | | |
| 15: Temperature | | | | |
| 16: Noise/vibration | | | | |
| **Physical injury hazards** | **Likelihood*** | **Severity*** | **Risk**** | **Action to be taken** |
| 17: Hazardous substances (COSHH) F | | | | |
| 18: Micro-organisms | | | | |
| 19: Asbestos F | | | | |
| 20: Fumes/Gas | | | | |
| **Physical injury hazards** | **Likelihood*** | **Severity*** | **Risk**** | **Action to be taken** |
| 21: Weather | | | | |
| 22: Lone working | | | | |
| 23: Confined spaces P | | | | |
| 24: Other | | | | |
| 25: Other | | | | |
| 26: Other | | | | |

* **Score L** If incident Very Unlikely/Severity Slight, **Score M**: If incident Unlikely/Severity Moderate and **Score H** If incident Likely/Severity High, (See guidance for definitions). **Likelihood & Severity => Risk**

** Risk “Values” of “MH”, “HM” and “HH” require fully documented risk assessment with additional control measures

| Describe elements that create specific risks: |
|---|
| Main risks identified, and control measures required: |

**P –** Denotes that a permit system is used to control most works with these hazards, and a permit may be needed for the work being undertaken.

**F –** Denotes that a full documented assessment and safe system of work is usually required for work **with** this hazard. This form is insufficient to assess all the risk involved when working **with** these hazards, but should be used to assess the likely impact of that hazard on your work when you are not working directly with it. For example, the form can be used to assess handling tasks in a "Supervised" radiation area, but it cannot be used to assess handling radioactive sources – for which a full risk assessment is required.

The "On the Job" risk assessment pro forma aims to prompt those undertaking work to **STOP** and **THINK** when the scope of their work changes or during the course of planned work when new safety hazards arise.

The same applies to those undertaking experimental work – when the experimental results indicate a new experiment or experimental set up this pro forma aims to prompt them to similarly **STOP** and **THINK** before proceeding with small changes. Larger changes will require more formal assessment.

Many injuries and incidents occur when work or experiments for which the risks have been assessed and planned changes and those working "plough on" without pausing to **STOP** and **THINK**.

The pro forma is designed to help **YOU** think through the relevant issues when faced with changes or additions to planned work or experiments, or when carrying out quick tasks - a series of prompts for the common safety hazards.

The form should **ONLY** be used in the following circumstances:

- To make specific a generic risk assessment.
- The task is simple and the risks are not high. Significant (high) risks from simple tasks that are carried out on a regular basis must be assessed fully in a documented assessment.
- To manage changing risks within a larger job i.e. the bulk of the job may be covered by a documented risk assessment (which defines the various stages of the job), but if the need to do something differently arises, this method can be used to assess the risk.
- To help manage minor changes arising during experimentation.

Completed "On the job" Risk Assessments should normally be kept in hard copy form for two weeks, should there be a need to assess it in the event of an incident.

Where the "On the job" Risk Assessments are undertaken as part of a larger job or experimental build it is appropriate to store it for the duration of that larger job.

# THE DOCUMENTED 'FIVE STEP' METHOD

## Assessing the Risks

The 'five steps' method of Risk Assessment provides a simple way of thinking about risks. The method helps you consider:

1. how particular types of accident could happen as a result of carrying out any particular task or activity;

2. how likely they are to happen and to who;

3. the nature of the risk and what precautions to take; and

4. what to do with the results.

The method can also be used to identify a 'risk category' for each of the hazards that have been identified. The risk category can help you identify which hazards to deal with first. The higher the 'risk category' the bigger the potential problem.

## What Next?

Carefully follow the steps on the following pages to complete your assessment.
These steps are:

- **Step 1:** 'What are the hazards and are they significant';
- **Step 2:** 'Decide Who might be Harmed and How';
- **Step 3:** 'What further action is necessary';
- **Step 4:** 'How will you put the Assessment into action'; and
- **Step 5:** 'Review and Update the Assessment'

There is a form provided at the back to use as a template for **Steps 1 and 2**. A central database is available for you to record the results of the assessment and to manage the actions from the assessment.

## Managing the Risks

After **Step 2**, you may end up with a number of actions that you need to prioritise, you may have to manage the actions from a number of assessments or you may have a complex project to manage. In any case you probably need a more quantitative assessment method that can be applied equally across all the actions to enable you to plan and prioritise the implementation of the actions.

The final section shows how you can use the information from the assessments to categorise the actions in a quantitative way.

# Step 1: 'What are the Hazards?'

Firstly, make sure you have copies of the assessment form that appears at the back of this document. Then decide the scope of the assessment and enter that in the header along with other details such as the names of people undertaking the activity being assessed. You may wish to assess the hazards within a particular task or activity or for a whole project.

Below is a list of common hazards. The list is not exhaustive but is designed to help you think about possible hazards in the work area, task or activity.

| **Hazards** |
|---|
| Drowning or asphyxiation |
| Fall from height |
| Trapped by something collapsing/overturning |
| Contact with electricity or electrical discharge |
| Exposure to an explosion |
| Struck by moving vehicle |
| Use of Visual Display Units (*) |
| Contact with moving machinery |
| Exposure to ionising or non-ionising radiation (*) |
| Exposure to Fire |
| Slip, trip or fall on same level |
| Struck by moving, including falling/flying, object |
| Exposure to or contact with a harmful substance (*) |
| Strike against something fixed or stationary |
| Injured by animal |
| Acts of violence |
| Injured while handling, lifting or carrying (*) |

(*) Assessments for these types of hazards are covered by specific codes. You should consult the relevant documentation if these hazards exist in the area, task or activity.

Working down the list, begin by thinking about the first **hazard** that applies to the activity being assessed in the relevant column of your form. For example this might be *'fall from height'*.

Now think about any task or step in a task that could feasibly cause this type of accident and result in harm to someone and ask 'is it significant?'. These should each be given a box in the relevant column of your assessment form (see example below).

**N.B.** You will find that your employees and their representatives can probably add to your list. The more widely you consult, the more complete the assessment will be.

| Hazard | Task/Situation |
|---|---|
| Fall from height | Changing light bulbs in ceiling |
| ditto | Climbing on fragile roof |
| Manual Handling | Carrying heavy packages |

Once you have exhausted all of the options for the first hazard move onto the next one that applies to the activity being assessed and repeat the process.

Keep working your way down the list in this way until you have identified all of the potential causes of each of the different accident types.

The example form below shows the kind of information you might have entered by the end of STEP 1. This uses a few examples from consideration of the hazards present in a workshop. We will keep completing this form as we go through the other steps in the assessment.

**Don't forget the header information**. It is especially important to list the 'Persons Exposed' and they are the people who you will need to communicate the assessment to and be specific about the 'Activity/Task'.

| | |
|---|---|
| Ref: | Description: Warehouse/Store |
| Assessment Date: | Location/Site: |
| Assessor: | Department: |
| Assessment Team: | Persons Exposed: Fred Smith, Joe Jones and Jane Johnson |
| Activity/Task: Work routinely carried out within the Warehouse and associated store. | |

| Step 1: What are the Hazards? | Step 2: Who might be harmed and how? | What are you already doing? | Step 3: What further action is necessary? | Step 4: How will you put the Assessment into action? | | |
|---|---|---|---|---|---|---|
| Hazard/Task or Situation | | | | **Action by who** | **by when** | **Done** |
| Fall from height/ Changing light bulb in high ceiling | | | | | | |
| Fall from Height/ Climbing on fragile roof | | | | | | |
| Manual Handling/ Carrying heavy packages | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

| | |
|---|---|
| Step 5 Review date: | ▪ Review you assessment to make sure you are still improving, or at least not sliding back.<br>▪ If there is significant change in your workplace, remember to check your assessment and, where necessary, amend it. |

# Step 2: 'Decide Who Might be Harmed and How'

For each of the hazards identified in **STEP 1** you need to be clear about who might be harmed. You only need to identify groups of people as you should have already identified persons at risk in the header:

| |
|---|
| Staff working in the area |
| Staff walking through the area |
| Staff with particular needs (Young people, pregnant women, …) |
| Contractors (maintenance workers and cleaners in the area) |
| Members of the public (who may have access to the area) |

The next thing to consider is the **type of injury/illness** that would result if what **COULD happen DID happen**.

In **STEP 1** you identified a number of things that could cause harm to someone undertaking the activity. For each hazard you identified, think about the type of injury/illness that is most likely. Do this by beginning at the top of the list of types of accident and working your way down. As soon as you come to the phrase that best describes the general type of injury/illness, use this phrase in your form to help you describe how someone might be harmed.

As a general rule you are looking for 'the most likely reasonably foreseeable injury' **not** the worst case.

| **Decide How Someone Might be Harmed** |
|---|
| Death |
| Causing Permanent disability (Loss of limb, hearing, major burns) |
| Causing Temporary Disability (Fractures, intermediate burns) |
| Causing Significant Injuries (Sprains, minor burns) |
| Causing Minor Injuries (e.g. cuts / scratches) |

You should also note what you are already doing to reduce the hazard or make the harm less serious.

At the end of **STEP 2** you should have a form that looks something like the one below.

| | |
|---|---|
| Ref: | Description: Warehouse/Store |
| Assessment Date: | Location/Site: |
| Assessor: | Department: |
| Assessment Team: | Persons Exposed: |
| Activity/Task: | |

| Step 1<br>What are the Hazards? | Step 2<br>Who might be harmed and how? | What are you already doing? | Step 3:<br>What further action is necessary? | Step 4:<br>How will you put the Assessment into action? |
|---|---|---|---|---|

| Hazard/Task or Situation | | | | Action by who | by when | Done |
|---|---|---|---|---|---|---|
| Fall from height/ Changing light bulb in high ceiling | Staff could suffer fatal injury | Use of MEWP | | | | |
| Fall from Height/ Climbing on fragile roof | Member of staff may break a limb | Nothing | | | | |
| Manual Handling/ Carrying heavy packages | Staff could suffer back problems | Lifting aids available. | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

| Step 5 Review date: | ▪ Review you assessment to make sure you are still improving, or at least not sliding back.<br>▪ If there is significant change in your workplace, remember to check your assessment and, where necessary, amend it. |
|---|---|

# Step 3: 'What Further Action is Necessary?'

When considering what action may be required to reduce the risk from any particular hazard, the following principles should be considered, if possible in the order given:

1. Eliminate the hazard completely;
2. Replace with a less hazardous option;
3. Prevent access to the hazard (e.g. by guarding);
4. Organise the work to reduce exposure to the hazard;
5. Issue personal protective equipment;
6. Provide welfare facilities (e.g. washing facilities for removal of contamination and first-aid);

In all cases information and training should be provided.

Be sure to involve staff, this will ensure that any actions you propose will work in practice and won't give rise to any new hazards.

At this point you can transfer the information to the SHE enterprise risk assessment database. This will enable you to manage the actions and prioritise them as required.

Note what actions need to be taken. You need to do everything 'reasonably practicable' to protect people from the harm (i.e. taking into account the cost and effort needed to reduce the risk against its likelihood of occurrence and potential severity) and then manage any residual risk. It is not required to reduce risk to zero.

| | |
|---|---|
| Ref: | Description: Warehouse/Store |
| Assessment Date: | Location/Site: |
| Assessor: | Department: |
| Assessment Team: | Persons Exposed: |
| Activity/Task: | |

| Step 1<br>What are the Hazards? | Step 2<br>Who might be harmed and how? | What are you already doing? | Step 3:<br>What further action is necessary? | Step 4:<br>How will you put the Assessment into action? |
|---|---|---|---|---|

| Hazard/Task or Situation | | | | Action by who | by when | Done |
|---|---|---|---|---|---|---|
| Fall from height/ Changing light bulb in high ceiling | Staff could suffer fatal injury | Use of MEWP | None | | | |
| Fall from Height/ Climbing on fragile roof | Member of staff may break a limb | Nothing | Control access to roof. Place warning signs. | | | |
| Manual Handling/ Carrying heavy packages | Staff could suffer back problems | Lifting aids available. | None | | | |
| | | | | | | |

| Step 5 Review date: | ▪ Review you assessment to make sure you are still improving, or at least not sliding back.<br>▪ If there is significant change in your workplace, remember to check your assessment and, where necessary, amend it. |
|---|---|

# Step 4: 'How will you put the Assessment into Action?'

By doing this assessment you have identified:

- all of the things that could cause harm in your workplace;
- what the resulting injuries/illnesses are likely to be; and
- what you are going to do about them.

We suggest that you look at your form and identify which of the hazards that you will probably need to worry about most as they are:

1. likely to happen
2. likely to cause severe injuries/illnesses;

Armed with this information, you can prioritise your response to the workplace health and safety issues that are most important in your particular situation.

In terms of what to do to reduce these risks, every situation and hazard is different. For each of the hazards think about how you could reduce either:

- the likelihood; or
- the level of injury/illness.

There may be some things that you can do that will reduce both.

It is important to look at all of the hazards in this way. Some hazards, while perhaps not being of the highest priority in terms of the risk, may be very easily and cheaply dealt with.

Other hazards might also be of a lower priority in terms of risk but may be very difficult and expensive to deal with. In such cases it is probably better to deal with the more 'important' (and perhaps more cheaply dealt with) hazards first. By doing this you will ensure that all of your health and safety efforts are directed efficiently so that you can achieve maximum health and safety benefits at least cost/effort.

For each of the 'priority hazards' map out what you are going to do by recording:

- what you intend to do about it;
- when you intend to do it; and
- who is going to do it.

Keep revisiting your assessment and recording the changes that you have made. By doing this you will have an **'at a glance'** record of what risks are the most important in your workplace at any one time.

| | |
|---|---|
| Ref: | Description: Warehouse/Store |
| Assessment Date: | Location/Site: |
| Assessor: | Department: |
| Assessment Team: | Persons Exposed: |
| Activity/Task: | |

| Step 1<br>What are the Hazards? | Step 2<br>Who might be harmed and how? | What are you already doing? | Step 3:<br>What further action is necessary? | Step 4:<br>How will you put the Assessment into action? |
|---|---|---|---|---|

| Hazard/Task or Situation | | | | Action by who | by when | Done |
|---|---|---|---|---|---|---|
| Fall from height/ Changing light bulb in high ceiling | Staff could suffer fatal injury | Use of MEWP | None | N/A | | |
| Fall from Height/ Climbing on fragile roof | Member of staff may break a limb | Nothing | Control access to roof. Place warning signs. | ABC | 1/1/08 | |
| Manual Handling/ Carrying heavy packages | Staff could suffer back problems | Lifting aids available. | None | N/A | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

| Step 5 Review date: | ▪ Review you assessment to make sure you are still improving, or at least not sliding back.<br>▪ If there is significant change in your workplace, remember to check your assessment and, where necessary, amend it. |
|---|---|

## Step 5: 'Review and Update'

At some stage you will have to revisit the assessment. New equipment or new substances could introduce new hazards which need to be looked at. In addition if you have an accident or near miss you need to review the assessment in the light of what happened.

In any event the assessment should be reviewed at least once every two years. Using the central risk assessment database will enable us to track assessments which need reviewing and issue reminders.

# ‘MANAGING RISKS’

There will be some instances where you may need to assign priorities to actions from an assessment or you may be responsible for managing the actions from a number of assessments. In either case you will need a coherent method for assigning a priority to actions. The Quantitative Risk Assessment pro-forma (see below) gives you this option.

There are three additional fields available when entering or editing any task in an assessment:

- Harm,
- Likelihood and
- Risk.

For each hazard, you choose options for the Harm and Likelihood categories.

Use the information contained in Step 2, categorise the harm that might be caused:
As a general rule you are looking for ‘the most likely reasonably foreseeable injury’ **not** just the worst case.

| **Decide How Someone Might be Harmed** | |
|---|---|
| Major | Fatality. |
| High | Amputations; multiple serious injuries; major fractures; major burns. |
| Moderate | Lacerations; burns; concussion; serious sprains; minor fractures. |
| Slight | Superficial injuries; minor cuts and bruises; eye irritation from dust. |

Below are the phrases that are used in the risk database to describe the likelihood of something happening and how someone might be harmed:

| **How Likely is it to Happen?** | |
|---|---|
| Very Unlikely | The hazard is very rarely experienced and exposure will seldom result in injury. |
| Unlikely | The hazard is rarely experienced and exposure will seldom result in injury. |
| Likely | The hazard is persistent but exposure may not always result in injury. |
| Very Likely | The hazard is persistent and exposure will undoubtedly result in injury. |

Then use the matrix below to obtain a ‘risk factor’ from the likelihood and harm categories for each hazard (e.g. if you decided the *harm* category was ‘moderate’ and the *likelihood* was ‘unlikely’ the *risk factor* would be ‘medium’). This risk category is then used to determine what priority should be given to reducing the risk factor for that particular hazard.

# Risk Factor

To manually calculate the risk factors use the table below:

| | | | | | |
|---|---|---|---|---|---|
| **Harm** | Major | High | High | V High | V High |
| | High | Med | Med | High | V High |
| | Moderate | Low | Med | Med | Med |
| | Slight | Low | Low | Low | Low |
| | | Very Unlikely | Unlikely | Likely | Very Likely |
| | | **Likelihood** | | | |

| | |
|---|---|
| | Low Risk - No additional controls are necessary unless they can be implemented at very low cost (in terms of time, money and effort). Actions to further reduce these risks can be assigned low priority. |
| | Medium Risk - Consideration should be given as to whether the risks can be lowered, where applicable, to a low risk level, but the costs of additional risk reduction measures should be take into account. The risk reduction measures should be implemented within a defined time period. |
| | High Risk – Substantial efforts should be made to reduce the risk. Risk reduction measures should be implemented urgently within a defined time period and it might be necessary to consider suspending or restricting the activity, or to apply interim control measures, until this has been completed. Considerable resources might have to be allocated to additional control measures. |
| | V High Risk - These risks are unacceptable. Substantial improvements in risk controls are necessary. The work activity should be halted until risk controls are implemented. If it is not possible to reduce risk the work should remain prohibited. |