## GUIDANCE NOTES

These notes provide guidance on the process of risk assessment for manual handling operations, on the provision of manual handling training to MRC staff and general information on good lifting technique suitable for all staff.

<table>
<thead>
<tr>
<th>Guidance Note 1</th>
<th>Flow chart of regulatory requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guidance Note 2</td>
<td>The risk assessment process</td>
</tr>
<tr>
<td>Guidance Note 3</td>
<td>The provision of training</td>
</tr>
<tr>
<td>Guidance Note 4</td>
<td>Guidelines for staff</td>
</tr>
</tbody>
</table>

Guidance Note 1 takes you through the requirements of the specific legislation in the form of a flow chart.

Guidance Note 2 is intended for all staff that will be involved in assessing the risk of injury from manual handling operations.

Guidance Note 3 is intended for safety personnel and line managers.

Guidance Note 4 is suitable for distribution to all staff.

Your Regional Health and Safety Co-ordinator will be willing to assist establishments with the implementation of this guidance.

The full text is available on our website at [http://www.mrc.ac.uk/H&S/Welcome.htm](http://www.mrc.ac.uk/H&S/Welcome.htm)
HOW TO FOLLOW THE MANUAL HANDLING OPERATIONS REGULATIONS

Does the work involve manual handling operations?  
Yes  
No

Is there a risk of injury?  
Yes/Possibly  
No

Is it reasonably practicable to avoid moving the loads?  
Yes  
No

Is it reasonably practicable to automate or mechanise the operation?  
Yes  
No

Does some risk of manual handling injury remain?  
Yes/Possibly  
No

Carry out manual handling assessment  
Determine measures to reduce risk of injury to the lowest level reasonably practicable  
Implement the appropriate measures  
Evaluate the effects. Are the risks controlled as planned?  
Yes  
No

End of initial exercise  
Review if conditions change significantly  
Adapted from the HSE Guidance document 1998
THE RISK ASSESSMENT PROCESS

INTRODUCTION

The process of risk assessment of manual handling operations is based fundamentally upon ergonomic considerations. In other words fitting the task to the person and not the person to the task.

There is an overall duty to assess risk contained within the Management of Health and Safety at Work Regulations. Specific legislation however covers the assessment of risk from manual handling. It requires three basic steps to be considered. These are:

1. to avoid, so far as is reasonably practicable, manual handling operations that could give rise to injury;

2. to assess the risk of injury in those operations that cannot be avoided; and based on that assessment –

3. to introduce appropriate measures to reduce the risk of injury, again qualified by ‘so far as is reasonably practicable’.

REVIEW OF WORK ACTIVITIES

You should initially and periodically thereafter review the activities of your establishment to determine if any tasks involve manual handling.

This process involves reviewing all tasks to determine what manual handling activities take place and identifying who is involved in those operations. The activities can be broadly divided into those where manual handling is likely to be part of the normal duties and those relating to tasks not restricted to any particular group or individual.

Examples of manual handling operations

Tasks normally undertaken as part of normal duties

1. Maintenance staff
   - moving heavy equipment from one location to another (e.g. centrifuges, filing cabinets)
   - moving heavy equipment to gain access to services
2. **Porters and stores staff**
   - handling stock deliveries
   - local delivery of gas cylinders
   - handling bulk containers for dispensing

3. **Animal house staff**
   - handling bulk animal feed, water bottles and bedding
   - moving cages and racks

4. **Library staff**
   - moving heavy journals on and off shelving,
   - stretching to re-stack shelving and display cabinets

**Tasks not restricted to particular groups or individuals**

1. **Centrifuge rotors**
   Some large rotors weigh more than 20 kilos and can present a problem during their loading onto and unloading from a centrifuge. The major concern arises when stretching across the centrifuge to load or remove the rotor.

2. **Washing up**
   Trays of glassware to be loaded into glass-washing machines can be heavy with uneven load distribution. You may need to review systems of work for example to avoid storing the full trays on floors.

3. **Dispensing liquid nitrogen from Dewar containers**
   Even a relatively small container can be a problem to lift. Lifting and pouring tasks could present difficulties to an individual, in addition to the intrinsic hazards and risks of liquid nitrogen. This is an example of where you should make a detailed risk assessment with the aim of avoiding the risk (by changing the method of dispensing to a pressurised container) or reducing the risk (by using a support swing trolley or making it a two person operation).

4. **Autoclaving**
   You should review the way material is loaded into and out of autoclaves (see also guidance on working with biological hazards). This could involve bending, stretching and twisting movements as well as lifting. Options available to mechanise or otherwise reduce the risk could include the use of height adjustable trolleys and reducing the size of containers.

5. **Stationery and computing equipment**
   One box of standard 80g/m$^2$ A4 paper weighs several kilogrammes and can present a problem if not lifted correctly. Similarly a typical computer monitor weighs 19 kg and is not evenly balanced.
IS THERE A POSSIBLE RISK OF INJURY?

Attempting to assess if there is any risk of injury from a manual handling operation is necessarily going to be less than absolute in the majority of situations. First, there is no need for you to go into great detail where the risk is clearly low, or where the operation can be readily avoided.

However, in many situations where circumstances indicate a possible need for a more detailed assessment, you may be able to apply figures that define approximately the safe lifting limits for most able-bodied males and females respectively and thus act as a threshold. The following text describes these threshold limits and their application.

The use of threshold figures for determining the need for a detailed risk assessment

The purpose of this process is to provide assessors with a baseline. A detailed assessment is not required for trivial operations where there is clearly negligible risk of injury. The HSE has provided a set of numerical guidelines based on published scientific data. They indicate approximate boundaries for approximately 95 percent of males and females, when carrying out a manual handling operation either standing or seated.

**Lifting and lowering**

The guidelines only consider the weight of the load and assume all other conditions are favourable to the handler. This is an important point to note since other factors, for example a wet or uneven floor, may reduce the guideline figure.

The figures can be used as an indicator of a limit below which it may not be necessary to conduct a detailed risk assessment. Figure 1 below shows the figures for women and men whilst standing. You should note how the limits fall the further the load is both vertically and horizontally away from the waist. The figures for women are approximately one third less than those given for men. Figure 2 gives the figures for seated operations.

**Carrying**

Where the load can be held against the body for a distance no greater than 10m the same figures apply as in Figure 1 (i.e., 13 to 16 kg for women and 20 to 25 kg for men, depending on the position of the hands).
**Pushing and pulling**

The guideline figures for starting or stopping motion of a load are 25 kg for men and 16 kg for women reducing to 10 kg and 7 kg for keeping the object in motion.

**AVOIDANCE OF THE TASK**

Where any risk of injury has been identified, your first duty is to make every reasonable effort to avoid the need to perform that operation. Is it really necessary to move the loads? Could the result be achieved in a different way? Is it possible to bring items to the heavy object rather than carry the object to another location?

On occasion it may be possible to design out such problems at an early stage, for example in the selection of equipment. From the perspective of manual handling for example, it is better to select a front-loading rather than a top-loading autoclave, especially if the operators are of small stature. You should also consider the requirement for adequate space to allow servicing without excessive twisting and bending when deciding on the location of a centrifuge. A third example could be the use of gas cylinders. Where use is heavy and extensive, you should consider avoiding transport of the cylinders within the building by piping in supplies from an external facility located close to the delivery point.

**ELIMINATION OF HANDLING**

If the initial survey indicates that the handling operation is necessary, you should then give consideration, within the bounds of ‘reasonable practicability’, to the possibility of mechanising or automating the process. An example could be the delivery and distribution of animal foodstuff directly into large hoppers, thus eliminating the need to carry large bags.

It is possible that the process of automating or mechanising does not totally eliminate the risk of injury. A further assessment may then be required.

**THE RISK ASSESSMENT**

Where any risk of injury remains, you must ensure a risk assessment is made.

**Who makes the assessment?**

It is likely in the majority of cases that local management and advisers are best placed to make the assessment. Suggested contributors are the safety co-ordinator, the laboratory manager, the line manager and possibly a small team that includes the above plus members of the staff groups affected by the assessment.

**How is the assessment done**

You should follow the ergonomic approach required and consider four things:

- the task
- the load
• the working environment
• the capability of the individual

**The task**
A review of the task could suggest a change to the layout to reduce bending and twisting etc. In addition care should be taken to ensure the best possible position for any lifting required, including the initial positioning of the load as near as possible to waist height while standing.

**The load**
Options you should consider include making the load lighter, making it smaller or easier to manage, making it easier to grip and making it more stable.

**The working environment**
The objective is to make the environment suitable for the task. To perform a manual handling operation the handler requires sufficient space that is free of obstruction at all levels from the floor up to and including head height. The state of the floor is critically important. The floor should be clean and level. Any spillages should be wiped up before the task is done. If moisture is necessarily present, the floor surface should be made of non-slip material.

**The capability of the individual**
This is a critical component of the ergonomic approach. The individual characteristics that may and will affect their manual handling capability must be considered. These factors include stature, those who are or have been pregnant recently, those with a medical history of musculo-skeletal problems and those with other relevant medical problems such as a chronic heart condition.

The individual should contribute to the assessment. Ability to lift is undoubtedly linked to the person’s familiarity with lifting and their general fitness.

**The conclusions**
The objective is to reduce the risk of injury from any manual handling procedure to the lowest reasonably practicable level.

The assessment should reach firm conclusions. For example:

That the task - presents little risk of injury
- should only be carried out by named, trained individuals
- should be redesigned by the provision of mechanical assistance
- should not be done by MRC staff but requires a specialist contractor.

You should remember to involve the staff in the process in order to achieve ‘ownership’ of the conclusions.

**Recording and reviewing the risk assessment**

Where the need for a detailed assessment has been identified, its conclusions should be recorded in writing. This is not necessary where it is simple or obvious.

Each detailed risk assessment should be reviewed at a later date to ensure that any remedial action implemented has achieved the desired effect and that no further action is required.

**Using a checklist**

Some people may find it helpful to use a checklist as an aid to carrying out a risk assessment. An example of a checklist incorporated within an assessment form is given in the *Annex* to this Note, but the principles are outlined here.

**Section A. Description of the task**

This can be a written description and/or an outline diagram. It may itself contribute toward determining if there is a possible risk of injury.

**Section B. Detailed assessment**

You may wish to estimate a level of risk you believe to be associated with each step of the operation. Using a classification system of ‘low’, ‘medium’ or ‘high’ and applying it to lists of ergonomic considerations of the task, load, environment and individual capability will enable you to prioritise remedial action. You can then identify the problem and propose a solution.

**Section C. Summary judgement**

You can insert here your conclusion of the overall risk of injury, again choosing from the three levels of risk suggested for Section B.

**Section D. Summary**

This is a written summary of the conclusions of each step of the detailed assessment, but rearranged in order of priority.
**ANNEX**

**MANUAL HANDLING OF LOADS: RISK ASSESSMENT**

<table>
<thead>
<tr>
<th>Description of task:</th>
<th></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Location:</th>
<th>Helpful diagrams or other information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personnel involved:</td>
<td></td>
</tr>
</tbody>
</table>

**Details of assessment (record overleaf)**

**Overall assessment of the risk of injury:** Low | Medium | High

**Remedial action to be taken (in priority order)**

1.  
2.  
3.  
4.  
5.  
6.  

**Date of assessment:**

**Date by which action should be taken:**

**Date for reassessment:**

**Assessor’s name (printed):**

**Signature:**
Section 2 – Details of assessment

<table>
<thead>
<tr>
<th>Questions to consider</th>
<th>Level of risk</th>
<th>Problem identified</th>
<th>Suggested action</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>The task</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• holding and manipulating loads at distance from the trunk?</td>
<td>L M H</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• twisting?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• stooping?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• reaching upwards?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• excessive lifting or carrying?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• excessive pushing or pulling?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• risk of sudden movement of loads?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• repetitive handing?</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>• insufficient rest or recovery by the process?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>The load</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• heavy?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• bulky or unwieldy?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• difficult to grasp?</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>• unstable, or with contents likely to shift?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• sharp, hot or otherwise potentially damaging?</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>The environment</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• space constraints on good posture?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• uneven, slippery or unstable floors?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• variations in floor levels or work surfaces?</td>
<td></td>
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<tr>
<td>• extremes of temperature or humidity?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• strong or unpredictable air movements?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• poor lighting conditions?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>The individual</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• requires unusual capability?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• a hazard to those pregnant?</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>• a hazard to those with a health problem?</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>• requires special information or training for its safe performance?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Other factors</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is movement etc hindered by PPE or clothing?</td>
<td>Yes No</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
PROVISION OF TRAINING

Staff identified as ‘manual handlers’ will need general training in lifting principles and technique and, where the risk assessment indicates it, specific instruction for particular tasks.

Local training programmes can be based on

- written guidance
- visual presentations
- engaging professional trainers

The HSE publication ‘Manual Handling. Guidance on Regulations’* includes good detailed training material. A section is devoted to outlining the principles of good lifting technique and MRC Guidance Note 4 includes an adaptation of that section.

Where requested, following the identification of the need for training, the corporate MRC Health and Safety Management section can arrange for training courses to be held either centrally or at a particular establishment. Alternatively it may be possible for staff to be included in the training programmes of the host institution.

MANUAL HANDLING - GUIDELINES FOR STAFF

For the majority of staff significant manual handling operations requiring detailed risk assessment will not form part of their normal duties. Even so all lifting operations should be done using good technique within the capabilities of the individual.

Every job involves some lifting and handling of loads. For most of you this will involve weights that should not place individuals at risk of injury. We do recognise however that there is considerable variation in individual physical abilities that may relate to gender, pregnancy and fitness as well as specific medical conditions and disabilities.

Guidance on maximum lifting weights.

The Table illustrates guideline weights published by the HSE. The application of the guidelines should protect about 95 percent of all men and women from injury. It is assumed that other conditions for lifting are favourable. In other words, that the load can be gripped properly, the load is well balanced, the floor is stable and level and there are no other obstacles to the lifting operation. The figures apply to lifting and lowering. If the hands pass through more than one zone, then only the lower figure can be applied.

<table>
<thead>
<tr>
<th>Zones</th>
<th>Women</th>
<th></th>
<th>Men</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Close to body</td>
<td>At arm’s length</td>
<td>Close to body</td>
<td>At arm’s length</td>
</tr>
<tr>
<td>Full height to shoulder height</td>
<td>7 kg</td>
<td>3 kg</td>
<td>10 kg</td>
<td>5 kg</td>
</tr>
<tr>
<td>Shoulder height to elbow height</td>
<td>13 kg</td>
<td>7 kg</td>
<td>20 kg</td>
<td>10 kg</td>
</tr>
<tr>
<td>Elbow height to knuckle height</td>
<td>16 kg</td>
<td>10 kg</td>
<td>25 kg</td>
<td>15 kg</td>
</tr>
<tr>
<td>Knuckle height to mid-lower leg</td>
<td>13 kg</td>
<td>7 kg</td>
<td>20 kg</td>
<td>10 kg</td>
</tr>
<tr>
<td>Mid-lower leg to floor</td>
<td>7 kg</td>
<td>3 kg</td>
<td>10 kg</td>
<td>5 kg</td>
</tr>
</tbody>
</table>

Note: for a seated operator the guideline limit is 5 kg from upper leg to shoulder height close to the body.

From time to time you may need to lift or move objects weighing more than these guidelines. Always consult your supervisor or Safety Co-ordinator before attempting the task. An assessment may be necessary to ensure that you are not injured.

IF IN ANY DOUBT, DO NOT PUT YOURSELF AT RISK. SEEK ADVICE.
GOOD HANDLING TECHNIQUE

1. Stop and think
Think before doing anything. Should you be doing the task at all? How heavy is the load? Where is it going? Can or should you carry it on your own? If you are going to lift a long vertical distance, e.g., from floor to shoulder, can you rest mid-way through the lift?

2. Stand close
Stand as close as possible to the load, placing the feet slightly apart to give a stable base. The leading leg should be placed as far forward as is comfortable.

3. Bend the knees
A good posture should be adopted by bending the knees and keeping the back straight. Do not however bend the knees too fully or kneel as this will reduce lifting power. The bend should be such that the hands when gripping the load are as near to waist level as possible.

4. Grip the load firmly
A secure grip is essential and a hook grip is less tiring than keeping the fingers straight. Where a change of grip is necessary it should be made as smoothly as possible.

5. Lift smoothly
Raising the head, the lift should be as smooth as possible and fully controlled. Lift with the legs, maintaining good momentum, leverage and balance.

6. Move the feet
If a turning movement is necessary, keep the trunk straight and avoid twisting movements.

7. Keep the load close
Make the load part of the body by holding it as close as possible for as long as possible. Where a close approach to the load is not practicable try to slide it towards you before attempting to lift. Where this is not possible (e.g. unloading from the boot of a saloon car) stand as close as possible. Bend the knees if possible and if not, brace the body by pressing the knees against a solid object. Bend at the hips keeping the head and back in a straight line. Lift gradually, using legs, buttocks and stomach muscles.

8. Place the load with care
Put the load down first on the edge of a surface, then adjust its position if necessary. Be sure that the load is secure.