

# A Simple Guide to Health Risk Assessment

Office Environment Series OE 7/2005

# Manual

# Handling



**Occupational Safety and Health Branch**  
**Labour Department**



**OCCUPATIONAL SAFETY & HEALTH COUNCIL**



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## Introduction

This guide is intended to help employers and employees assess the health risks associated with manual handling operations in their workplaces. Such assessments can be no more than an examination of what, in the course of work, could possibly cause harm to people. By following this guide, you should be able to identify the hazards, the degree of risk and the possible solutions.

You should have noted that the Occupational Safety and Health Regulation, which has already come into operation, contains provisions imposing responsibilities on employers and premises occupiers to comply with requirements on manual handling operations undertaken at workplaces that are under their control. Further guidance on the regulation can be found in our leaflet *A Brief Guide to the Occupational Safety and Health Regulation*.

## Manual Handling Operations

Manual handling operations mean moving or supporting loads using hands, arms or some other forms of bodily effort. Such operations include lifting, lowering, pushing, pulling and carrying of loads, which could be goods, baggage, people or other living creatures.

In an office environment, the most common manual handling operations are moving boxes of copy paper, files, distilled water bottles and furniture. These operations are unlikely to create significant health and safety risks if performed correctly. However, there are a number of factors that can increase the risk of injury in manual handling operations. These include characteristics of the task and load, the working environment and individual capability; e.g. heavy/bulky loads, working with an awkward posture, incorrect application of bodily force, prolonged, frequent or jerky motions, sudden movement of loads and slippery or uneven floors. Common injuries are sprains, strains and back pain. In most cases, manual handling injuries are not caused by a single incident but are cumulative. A full recovery may not always be possible - the result can be physical impairment or even permanent disability.

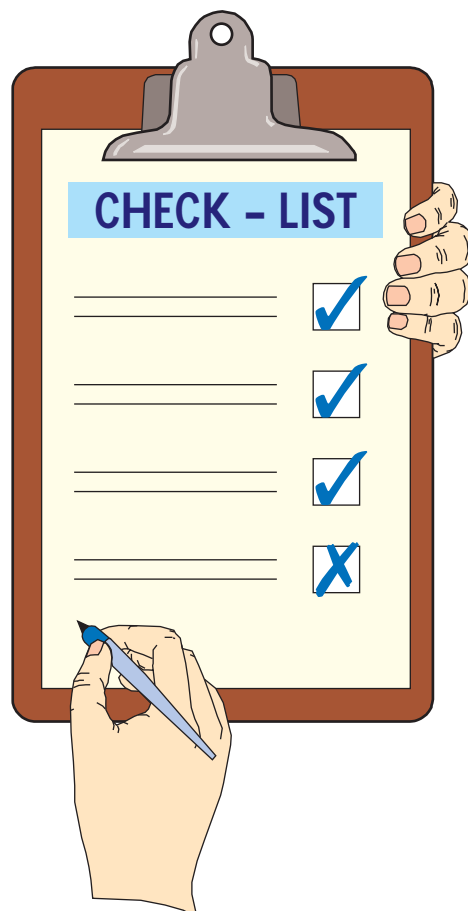


## Risk Assessment

The first step in preventing or controlling manual handling hazards at work is risk assessment. An employer should first make a preliminary assessment of the manual handling operations in the workplace. This is a simple exercise requiring the employer to ask a few simple questions regarding the task, the load and the working environment. Suggested checklist are given on the following pages for reference.

After the preliminary assessment, employers should have identified risky manual handling operations which will need immediate control or further assessment. If it is not reasonably practicable to avoid risky manual handling operations, an employer should perform a further assessment in order to evaluate the risk factors in depth and to work out preventive and protective measures.\* A “Further Assessment Checklist for Manual Handling Operations” is suggested for this purpose. Each of the manual handling operations requiring further assessment should be checked against the risk factors stipulated in the checklist.

Guidelines for completing the preliminary assessment and further assessment are given in the following sections. Preventive and protective measures are also suggested for eliminating or reducing the identified risk factors.



\* For details of the regulatory requirements on manual handling operations, please refer to our publication “A Guide to Part VII of the Occupational Safety and Health Regulation (Manual Handling Operations)”.

## Preliminary Assessment Checklist for Manual Handling Operations (Sample 1)

(Please read the Guidelines on Page 4 - 5 before filling in this form. Please put a "✓" in appropriate box.)

Work locations/Department of the organisation: \_\_\_\_\_

Job title: \_\_\_\_\_

Job/Task description: \_\_\_\_\_

Date of assessment: \_\_\_\_\_

### Part A: Assessment

	Yes	No	Uncertain	Notes (refer to the Guidelines on Page 4 - 5)
1. Does the manual handling operation involve repeated awkward postures?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Twisting, kneeling, stooping, bending or twisting the wrist & extending the arm above the shoulder, etc.
2. Does the employee require strenuous effort or have difficulties in manipulating the load?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Strenuous effort is usually required to handle load greater than 16 kg without mechanical aids such as trolleys or other simple lifting equipment.
3. Is there any information indicating that this manual handling operation involves a significant risk of injury?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A risky operation in trades & industries, confirmed complaint of hazardous operation & known case of injuries or death.
4. Are there any conditions in the working environment that may create additional risks to the manual handling operators?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Risks include space constraints, slippery, uneven or unstable floors, & variations in the level of floors or work surfaces.
5. Is the employee unsuitable to perform or physically incapable of performing this manual handling operation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Temporary or permanent physical injuries, musculoskeletal disorders, health problems or pregnant, etc.

### Part B: Findings (Diagrams can be used to indicate the positions & postures of employees at work.)

Number of employees performing this hazardous manual handling operation:

\_\_\_\_\_

The position(s) of the employees at work:

\_\_\_\_\_

Other significant findings:

\_\_\_\_\_

\_\_\_\_\_

### Part C: Conclusions and Follow-up

- Stop the hazardous manual handling operation immediately.  (Note: If this operation can be avoided.)
- Make a further assessment.  (Note: Some or all of the answers in Part A are "Yes" or "Uncertain".)
- Need **NO** further assessment.  (Note: All the answers in Part A are "No".)
- Others: \_\_\_\_\_

\_\_\_\_\_

Assessor: \_\_\_\_\_

Signature: \_\_\_\_\_



## Guidelines for Completing the Preliminary Assessment Checklist for Manual Handling Operations (Sample 1)

### Part A: Assessment

#### Question 1

*Repeated awkward postures* refer to performing tasks with the following postures repetitively:

- (i) Twisting the body trunk;
- (ii) Kneeling or stooping;
- (iii) Bending or twisting the wrist;
- (iv) Extending the arm above the shoulder.



#### Question 2

Mechanical aids include trolleys or other simple lifting equipment. *Manipulation* involves lifting, lowering, pushing, pulling and carrying the loads. *Strenuous effort* is usually required to handle loads greater than 16 kg in a standing position. In addition, it increases the risk of back injury.

#### Question 3

The following scenarios may indicate a significant risk of injury:

- (i) From safety and health publications or other sources of information in the trades and industries, the manual handling operations of the same nature involve a significant risk of injury;
- (ii) Complaints on the hazardous manual handling operations are received and confirmed; and
- (iii) There are known cases of injuries or death arising from manual handling operations in the workplace.

#### Question 4

Conditions in the working environment that may create additional risks are:

- (i) space constraints;
- (ii) slippery, uneven or unstable floors; and
- (iii) variations in the level of floors or work surfaces.

#### Question 5

The following conditions can be used for a preliminary assessment of whether employees are physically capable of undertaking the manual handling operation concerned:

- (i) Employees are found to have temporary or permanent physical injuries;
- (ii) An employee has complained of persistent symptoms such as aches and pains in the hands, wrists, arms, shoulders or back which are associated with musculoskeletal disorders;
- (iii) An employee has reported to the management that he/she is more susceptible to the hazardous manual handling operations because of his/her health problems; and
- (iv) An employee is pregnant.

If the information on the employee is not available, please select “Uncertain”. Before the manual handling operations are performed, review the situation when the information is available.

#### **Part B: Findings**

If *TEN* or more employees are normally employed at a workplace at any one time to perform manual handling operations which may create safety and health risks, assessment records should be kept. Information on the employees who have performed the manual handling operations and a simple diagram indicating the positions and postures of employees at work and those environmental risk factors can be attached in the assessment record.

#### **Part C: Conclusions and Follow-up**

1. If the manual handling operation is found to have a significant risk and the operation can be avoided as far as is reasonably practicable, it should be stopped immediately.
2. If *PART* or *ALL* of the answers in Part A are “Yes” or “Uncertain”, the manual handling operation concerned has a significant risk. When it is not feasible to stop the operation, a further assessment should be made.
3. If *ALL* the answers in Part A are “No”, the manual handling operation *DOES NOT* involve a significant risk.

## Preliminary Assessment Checklist for Manual Handling Operations (Sample 2)

(Please put a "✓" in appropriate box.)

Work locations/Department of the organisation: \_\_\_\_\_

Job title: \_\_\_\_\_

Job/Task description: \_\_\_\_\_

Date of assessment: \_\_\_\_\_

### Part A: Assessment

1. Is there any information indicating that this manual handling operation involves a significant risk of injury?  
Yes  : Please go to Q2.  
No  : The assessment need not go any further.
2. Can the manual handling operation be avoided/mechanised/automated at a reasonable cost?  
Yes  : Please proceed and check that the result is satisfactory.  
No  : Please go to Q3.
3. Is the employee unsuitable to perform or physically incapable of performing this manual handling operation?  
Yes  : Please complete "Further Assessment Checklist for Manual Handling Operations".  
No  : Please choose No.4 of Part C.

### Part B: Findings (Diagrams can be used to indicate the positions & postures of employees at work.)

Number of employees performing this hazardous manual handling operation:

\_\_\_\_\_

The position(s) of the employees at work: \_\_\_\_\_

Other significant findings: \_\_\_\_\_

### Part C: Conclusions and Follow-up

1. This manual handling operation can be avoided/mechanised/automated at a reasonable cost.
2. Make a further assessment.
3. Need No further assessment.
4. Reduce the risk of this manual handling operation to the lowest level as far as reasonably practicable.
5. Others: \_\_\_\_\_  
\_\_\_\_\_

Assessor: \_\_\_\_\_

Signature: \_\_\_\_\_



## Further Assessment Checklist for Manual Handling Operations

(Please read the Guidelines on Pages 10 to 20 before filling in this form. Please put a "✓" in an appropriate box.)

Work locations/Department of the organisation: \_\_\_\_\_

Job title: \_\_\_\_\_

Job/Task description: \_\_\_\_\_

Date of assessment: \_\_\_\_\_

### Part A: Assessment

	Yes	No	Comments
<b>1. The tasks</b>			
1.1 Do they involve holding or manipulating loads at a distance from the body?	<input type="checkbox"/>	<input type="checkbox"/>	
1.2 Do they involve unsatisfactory bodily movement or posture, especially –			
(a) Twisting of body?	<input type="checkbox"/>	<input type="checkbox"/>	
(b) Stooping?	<input type="checkbox"/>	<input type="checkbox"/>	
(c) Reaching upwards?	<input type="checkbox"/>	<input type="checkbox"/>	
1.3 Do they involve excessive movement of loads, especially –			
(a) Excessive lifting or lowering distances?	<input type="checkbox"/>	<input type="checkbox"/>	
(b) Excessive carrying distances?	<input type="checkbox"/>	<input type="checkbox"/>	
1.4 Do they involve –			
(a) Excessive pushing or pulling of loads?	<input type="checkbox"/>	<input type="checkbox"/>	
(b) A risk of sudden movement of loads?	<input type="checkbox"/>	<input type="checkbox"/>	
(c) Frequent or prolonged physical effort?	<input type="checkbox"/>	<input type="checkbox"/>	
(d) Insufficient rest or recovery periods?	<input type="checkbox"/>	<input type="checkbox"/>	
(e) A rate of work imposed by a process?	<input type="checkbox"/>	<input type="checkbox"/>	
<b>2. The loads</b>			
2.1 Are they –			
(a) Heavy?	<input type="checkbox"/>	<input type="checkbox"/>	
(b) Bulky or unwieldy?	<input type="checkbox"/>	<input type="checkbox"/>	
(c) Difficult to grasp?	<input type="checkbox"/>	<input type="checkbox"/>	
(d) Unstable, or with contents that are likely to shift?	<input type="checkbox"/>	<input type="checkbox"/>	
(e) Sharp, hot or otherwise potentially harmful?	<input type="checkbox"/>	<input type="checkbox"/>	

	Yes	No	Comments
<b>3. The working environment</b>			
3.1 Are there space constraints that prevent good posture?	<input type="checkbox"/>	<input type="checkbox"/>	
3.2 Are there uneven, slippery or unstable floors?	<input type="checkbox"/>	<input type="checkbox"/>	
3.3 Are there variations in the level of floors or work surfaces?	<input type="checkbox"/>	<input type="checkbox"/>	
3.4 Are there extremes of temperature or humidity?	<input type="checkbox"/>	<input type="checkbox"/>	
3.5 Are there conditions that cause ventilation problems or gusts of wind?	<input type="checkbox"/>	<input type="checkbox"/>	
3.6 Are the lighting conditions poor?	<input type="checkbox"/>	<input type="checkbox"/>	
<b>4. Individual capability</b>			
4.1 Does the operation –			
(a) Require unusual strength or height, or other special physical characteristics?	<input type="checkbox"/>	<input type="checkbox"/>	
(b) Create a hazard to persons with a health problem or pregnant women?	<input type="checkbox"/>	<input type="checkbox"/>	
(c) Require special information or training for its safe performance?	<input type="checkbox"/>	<input type="checkbox"/>	
<b>5. Other matters</b>			
5.1 Is movement or posture hindered by personal protective equipment or by clothing?	<input type="checkbox"/>	<input type="checkbox"/>	

**Part B : Findings** (Diagrams can be used to indicate the positions and postures of employees at work.)

Number of employees performing this hazardous manual handling operation:

The position(s) of the employees at risk: \_\_\_\_\_

Other significant findings:

\_\_\_\_\_  
 \_\_\_\_\_

**Part C: Conclusions and Follow-up**

1. Discussion: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

2. Preventive and protective measures for this process (in order of their completion dates):

Preventive and Protective Measures	Date for Completion	Date for Follow-up

3. Others: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Assessor: \_\_\_\_\_ Signature: \_\_\_\_\_

## Guidelines for Completing the Further Assessment Checklist for Manual Handling Operations and Preventive / Protective Measures<sup>1</sup>

### 1. The tasks

#### 1.1 Holding or manipulating loads at a distance from the body

In such cases, the stress imposed on the body is much greater than when holding the same load close to the body.

##### *Preventive and Protective Measures:*

- (i) Reduce weight or size of the load;
- (ii) Provide an appropriate handle on the load; and
- (iii) Improve working procedures and workplace layout to enable the load to be manipulated close to the body.



#### 1.2 Unsatisfactory bodily movement or posture

##### (a) Twisting of body

The greater the range of body is twisted, the higher is the risk of getting injured. The following is a simple way to judge whether twisting of the body is excessive: If the arms move away from the body at an angle exceeding 45° while manipulating, pulling or pushing loads with two hands, it can be considered as excessive twisting.



<sup>1</sup> The values (including the twisting angle, carrying distance, weight and dimensions of loads, etc.) provided in this section are solely for reference. They do not represent fine lines between safe and dangerous situations. The assessor could use other values with scientific measures according to the characteristics of different trades and industries.

***Preventive and Protective Measures:***

- (i) Position all tools and materials in front of the operator to avoid the need of twisting to reach objects on either side of the body;
- (ii) Provide adjustable swivel-chairs for employees so that they can reach the load without having to twist their bodies; and
- (iii) Provide sufficient work space for the employees so that they can move their bodies around freely instead of twisting their bodies.



*Re-design the workplace layout and re-position documents and files to minimise bodily movements.*

**(b) Stooping**

If frequent bending of the waist or leaning forward is required, the stress on the back increases.

***Preventive and Protective Measures:***

- (i) Position the heavy or frequently used loads so that they can be easily gripped. The ideal position is around waist level;
- (ii) Eliminate reaching over large horizontal distances; and
- (iii) Bend knees and squat down to lift objects instead of stooping.

**(c) Reaching upwards**

If frequent reaching over shoulder height is required, additional stresses are placed on the arms and back, making control of the load more difficult. Excessive extension of arms during manual handling increases the risk of injury.

***Preventive and Protective Measures:***

- (i) Place materials and tools at a suitable height to avoid reaching upwards; and
- (ii) Provide footsteps, height-adjustable work platforms or other aids.



*Using a footstep avoids unnecessary stretching when reaching upwards.*



### 1.3 Excessive movement of loads

#### (a) Excessive lifting or lowering distances

When an object is lifted or lowered for more than 25 cm, a change of grip is likely required during the process. This increases the risk of injury.

##### *Preventive and Protective Measures:*

- (i) Eliminate manual lifting by using mechanical devices;
- (ii) Reduce the weight of the objects; and
- (iii) Reduce the variations in work levels.

#### (b) Excessive carrying distances

Even when a load is carried with a natural posture, covering a distance of more than 10 m without a pause might increase the risk of muscle fatigue and injury.

##### *Preventive and Protective Measures:*

- (i) Use mechanical aids, like a trolley, to carry the load;
- (ii) Reduce the distance, carrying time and the number of movements by re-arranging and improving the workplace layout; and
- (iii) Use an automatic document conveying system or electronic mailing system for internal document transfer.



*Using a trolley simplifies the task when a long distance has to be covered.*

## 1.4 Other factors

### (a) Excessive pushing or pulling of loads

If your hands are positioned too high or too low when pushing a load, the risk of injury increases. The optimum position for the hands is near waist level. Even if this posture is employed, excessive effort should be avoided.

#### *Preventive and Protective Measures:*

- (i) Use conveyors to move a load, or use suitable trolleys to push or pull the load. In general, pushing is preferable to pulling;
- (ii) Reduce the weight of loads;
- (iii) Avoid rough, uneven and high friction floors;
- (iv) Ensure regular maintenance of transport equipment; and
- (v) Improve the workplace layout to reduce the distance and the requirements for pulling or pushing loads.



*It is harder for the operator to pull or push when wheels are not properly maintained.*



*Regular maintenance is required for all mechanical aids in the workplace.*

### (b) A risk of sudden movement of loads

If a load suddenly moves and the operator is unable to retain complete control of it, the unpredictable stresses imposed on the body would increase the risk of injury. For example, objects that are not properly stacked may easily fall during carrying.

#### *Preventive and Protective Measures:*

- (i) Stack the loads in a proper and secure way; and
- (ii) Get co-workers to help.



**(c) Frequent or prolonged physical effort**

This can create a high risk of injury even if the loads are modest. For example, a task performed repetitively for long period without rest increases the risk of injury.

***Preventive and Protective Measures:***

- (i) Take occasional breaks from work; and
- (ii) Practise job rotation, allowing employees to exercise different groups of muscles at intervals, thereby enabling exhausted muscles to recover.

**(d) Insufficient rest or recovery periods**

If an employee has an insufficient rest or recovery period, the risk of injury increases. For example, when a group of muscles is used continuously to perform a task without rest periods or a break injuries are likely to occur.

***Preventive and Protective Measures:***

- (i) Provide sufficient rest breaks for employees; and
- (ii) Vary tasks within a shift to allow employees to use different groups of muscles; thereby enabling the exercised muscles to rest.



*Practising job rotation reduces prolonged repetitive physical effort.*



**(e) A rate of work imposed by a process**

When a worker lacks control over the pace of work, he/she will feel tired easily and the risk of injury will be higher.

***Preventive and Protective Measures:***

- (i) Allow employees to adjust their work rate to optimise safety, health and productivity; and
- (ii) Provide sufficient manpower and equipment.

**2. The loads****2.1 Load characteristics****(a) Heavy loads**

For example, the risk of back injury increases when a load over 16 kg is manipulated from a standing position without mechanical aids. The risk is even higher when this is done from a sitting position.

***Preventive and Protective Measures:***

- (i) Use mechanical aids such as trolleys and lifting platforms;
- (ii) Categorise loads by weight so that additional precautions can be applied selectively;
- (iii) Divide a heavy load into smaller components; and
- (iv) Employ team lifting.



*Team lifting of heavy loads can reduce the risk of injury.*

**(b) Bulky or unwieldy loads**

If a load is too big or bulky, it will not be possible to handle it close to the body. In addition, a bulky load may block vision. The size of the load should enable the operator to hold it firmly and without difficulty.

***Preventive and Protective Measures:***

- (i) Change the shape or packaging of the load to make it less bulky;
- (ii) Provide suitable handholds; and
- (iii) Employ team lifting.

**(c) Loads that are difficult to grasp**

Examples are large, round loads and loads with a smooth, wet or greasy surface. The risk of dropping the load and the likelihood of fatigue are increased.

***Preventive and Protective Measures:***

- (i) Change the shape or surface of the object to make it easier to grip;
- (ii) Place the load in a container that is easy to hold; and
- (iii) Provide handles, hand grips or indents to improve the grip.



*Adding handholds to opposite sides of the box is an easy and effective improvement.*



*Boxes without hand grips are awkward to handle.*

**(d) Unstable loads or loads with contents that are likely to shift**

Disorderly stacking of loads affects stability during carrying, and increases the risk of injury. When containers are partially filled with liquid, the contents will move in response to the containers' movements. As the centre of gravity changes, carrying the load is more difficult and the risk of injury increases.

***Preventive and Protective Measures:***

- (i) Pack the objects so that they will not move during transportation; and
- (ii) Fill liquid containers in such a way that only a small amount of free space is left. This reduces the movement of contents during carrying.



**(e) Loads which are sharp, hot or otherwise potentially harmful**

These loads may impair a proper grip and discourage good posture.

***Preventive and Protective Measures:***

- (i) Make sure that the loads are free from dust, oil or corrosive deposits;
- (ii) Employ handling aids or personal protective equipment, such as gloves; and
- (iii) Use a suitable container to hold sharp objects.



*String used for packing goods can hurt the hands.*



*Wearing gloves eliminates the risk of injury to the hands.*

### 3. The working environment

#### 3.1 Space constraints that prevent good posture

A person working in a confined area is forced to adopt a poor posture. Examples of such areas include:

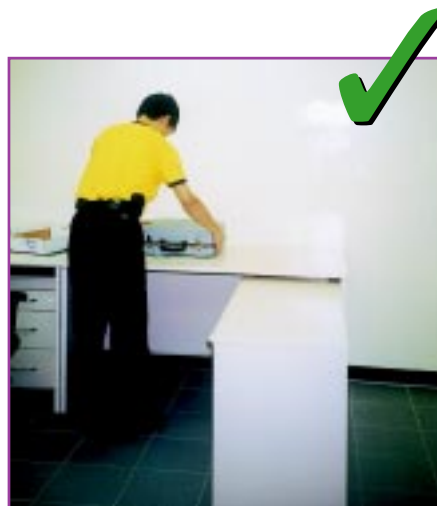
- (i) Height restrictions, which will force workers to stoop; and
- (ii) Confined working areas, narrow doorways and aisles, which will aggravate the difficulty in handling bulky loads.

***Preventive and Protective Measures:***

- (i) Ensure that obstructions are cleared before attempting to manoeuvre loads; and
- (ii) Provide sufficient space so that lifting can be carried out with natural posture.



*An obstruction induces this worker to reach forward for an object.*



*Obstructing chairs cleared avoids the need to stretch.*

### 3.2 Uneven, slippery or unstable floors

Working on uneven, slippery or unstable floors, e.g. floors with uneven carpet or trailing wire, increases the risk of slipping, tripping and falling. Floors affected by spillages of water, oil, soap or food scraps increase the hazards.

***Preventive and Protective Measures:***

- (i) Ensure good housekeeping in the office;
- (ii) Promptly clear away spillages of water, oil, soap, food scraps and other slippery substances; and
- (iii) Apply slip-resistant surfacing to floors or ramps which may easily become wet.



*Pantry floors are often slippery. Frequent cleaning can reduce the risk of slipping.*

### 3.3 Variations in level of floors or work surfaces

When a worker carries a load up or down steps, the risk of injury increases.

***Preventive and Protective Measures:***

- (i) Use ramps or lifts; and
- (ii) Arrange related tasks to be performed at the same height.



*Moving trolleys up and down a staircase is hazardous.*



*Using a ramp or adding a temporary ramp reduces the risk of accidents.*

### 3.4 Extremes of temperature or humidity

Assessment of health and safety risks to employees working in extreme temperatures and humid conditions is of utmost importance. Such assessment serves firstly to estimate the effect of such extreme conditions on the employees, and secondly on the additional risk and effort required of manual handling operations in such conditions.

***Preventive and Protective Measures:***

- (i) Control temperature and humidity in the workplace as far as possible;
- (ii) Eliminate or reduce work in extreme conditions, e.g. minimise strenuous outdoor work during noon time in mid summer; and
- (iii) Provide longer rests.

### 3.5 Conditions causing ventilation problems or gusts of wind

Inadequate ventilation affects air quality. On the other hand, gusty winds make large loads more difficult to manage.

***Preventive and Protective Measures:***

- (i) Relocate or take a different route when carrying out the manual handling operation;
- (ii) Use handling aids to support or gain greater control of the load;
- (iii) Use a team of workers to handle the loads; and
- (iv) Reduce the area or size of the load or object.

### 3.6 Poor lighting conditions

This aggravates potential hazards. Any marked contrast between areas of bright light and deep shadow hinders accurate judgement of height and distance. Please refer to *Guidelines for Good Occupational Hygiene Practice in the Workplace* published by the Labour Department for the illuminances standards.

***Preventive and Protective Measures:***

- (i) Provide sufficient and suitable lighting; and
- (ii) Provide auxiliary lighting for the operator to read labels on loads, so that he/she does not have to assume an awkward posture in reading.



*Poor lighting conditions increase the risk of injuries.*

## 4. Individual capability

### 4.1 Individual characteristics

**(a) Operations requiring unusual strength or height, or other special physical characteristics**

If an employee works beyond his or her capability, the risk of injury is tremendously high.

***Preventive and Protective Measures:***

- (i) Assess the operation and the employee's physical characteristics and health condition before assigning duties; and
- (ii) Allow a certain adjustment period for an employee who has been away from work for a long time. For example, let the employee carry lighter loads or do a job requiring a lower working rate, then gradually increase the workload to normal.



*Do not force employees to lift a load that is beyond their capabilities.*



**(b) Operations that are hazardous to pregnant women or those who have a health problem**

If an employee is suffering from back trouble, a hernia or other health problems which may impede lifting work or is recovering from surgery, he/she will be more susceptible to injury. A doctor's advice may be sought if necessary. During pregnancy, hormonal changes can affect the ligaments, leading to increased susceptibility to injury. Furthermore, as pregnancy progresses, a pregnant woman will experience increased difficulty in adopting correct posture in manual handling operations.

***Preventive and Protective Measures:***

- (i) Allocate less physically demanding tasks to such workers;
- (ii) Take special care of women who have to handle loads while pregnant or shortly after childbirth; and
- (iii) Assess the respective capability of employees to undertake strenuous manual handling operations.

**(c) Operations requiring special information or training for safe performance**

The assessor should first confirm whether the employees have undertaken appropriate training or have gained sufficient information, so that they can safely perform the manual handling tasks. For example, whether they had training on the safe use of mechanical aids.

***Preventive and Protective Measures:***

- (i) Provide adequate training to employees; and
- (ii) Provide sufficient information and proper lifting method to employees.



*Information specifying the weight and the heavier side of the load should be provided.*

## 5. Other matters

### 5.1 Movement or posture hindered by personal protective equipment or by clothing

A tight or loose uniform may restrict movements, and adversely affect manual handling operations.

***Preventive and Protective Measures:***

- (i) Improve working conditions to minimise personal protective clothing requirements; and
- (ii) Wear clothing that fits properly so that loads can be carried close to the body and body movements will not be restricted.

## Appendix 1: Assessment of Manual Handling Operation Example

In an office, an office assistant is required to replace the distilled water refill bottle from a water cooling machine daily. The water refill bottle weighs about 20 kg. A preliminary and a further assessment are conducted. The results are shown below.

### Preliminary Assessment Checklist for Manual Handling Operations

Work locations/Department of the organisation: Administration Department

Job title: Office assistant

Job/Task description: Replacement of distilled water refill bottle of a water cooling machine

Date of assessment: 4 February 1999

#### Part A: Assessment

	Yes	No	Uncertain	Notes
1. Does the manual handling operation involve repeated awkward postures?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. Does the employee require strenuous effort or have difficulties in manipulating the load?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	The water refill bottle is heavy. It weighs about 20 kg.
3. Is there any information indicating that this manual handling operation involves a significant risk of injury?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	There have been cases of back injury.
4. Are there any conditions in the working environment that may create additional risks to the manual handling operators?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5. Is the employee unsuitable to perform or physically incapable of performing this manual handling operation?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

#### Part B: Findings (Diagrams can be used to indicate the positions & postures of employees at work.)

Number of employees performing this hazardous manual handling operation: One

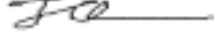
The position(s) of the employee at work: Corridor

Other significant findings: \_\_\_\_\_

#### Part C: Conclusions and Follow-up

- Stop the hazardous manual handling operation immediately.  (Note: If this operation can be avoided.)
- Make a further assessment.  (Note: Some or all of the answers in Part A are "Yes" or "Uncertain".)
- Need **NO** further assessment.  (Note: All the answers in Part A are "No".)
- Others: \_\_\_\_\_

Assessor: T M Chan

Signature: 



## Further Assessment Checklist for Manual Handling Operations

Work locations/Department of the organisation: Administration Department

Job title: Office assistant

Job/Task description: Replacement of distilled water refill bottle of a water cooling machine

Date of assessment: 4 February 1999

### Part A: Assessment

	Yes	No	Comments
<b>1. The tasks</b>			
1.1 Do they involve holding or manipulating loads at a distance from the body?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
1.2 Do they involve unsatisfactory bodily movement or posture, especially –			
(a) Twisting of body?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
(b) Stooping?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
(c) Reaching upwards?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
1.3 Do they involve excessive movement of loads, especially –			The water refill bottle has to be lifted 96 cm to the top of the water cooling machine from ground level.
(a) Excessive lifting or lowering distances?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
(b) Excessive carrying distances?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
1.4 Do they involve –			
(a) Excessive pushing or pulling of loads?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
(b) A risk of sudden movement of loads?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
(c) Frequent or prolonged physical effort?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
(d) Insufficient rest or recovery periods?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
(e) A rate of work imposed by a process?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>2. The loads</b>			
2.1 Are they –			The water refill bottle weighs about 20 kg and has no handles. It is difficult to grasp. The centre of gravity is unstable when the water moves when turning the bottle upside down.
(a) Heavy?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
(b) Bulky or unwieldy?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
(c) Difficult to grasp?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
(d) Unstable, or with contents that are likely to shift?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
(e) Sharp, hot or otherwise potentially harmful?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

	Yes	No	Comments
<b>3. The working environment</b>			
3.1 Are there space constraints that prevent good posture?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
3.2 Are there uneven, slippery or unstable floors?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	The water refill bottle has to be lifted 96 cm to the top of the water cooling machine from ground level and then turned upside down.
3.3 Are there variations in the level of floors or work surfaces?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3.4 Are there extremes of temperature or humidity?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
3.5 Are there conditions that cause ventilation problems or gusts of wind?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
3.6 Are the lighting conditions poor?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>4. Individual capability</b>			
4.1 Does the operation –			The operation is not suitable for pregnant women or physically unfit people.
(a) Require unusual strength or height, or other special physical characteristics?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
(b) Create a hazard to persons with a health problem or pregnant women?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
(c) Require special information or training for its safe performance?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>5. Other matters</b>			
5.1 Is movement or posture hindered by personal protective equipment or by clothing?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

**Part B : Findings** (Diagrams can be used to indicate the positions and postures of employees at work.)

Number of employees performing this hazardous manual handling operation: 1

The position(s) of the employees at risk: Corridor

Other significant findings:

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**Part C: Conclusions and Follow-up**

1. Discussion: a) The operation can be avoided by replacing the existing water cooling machine with one that could pump water upwards.


b) The water refill bottle is heavy. Handling is difficult because the water refill bottle does not have any handles. When turning the water refill bottle over, handling is more difficult as the water will shift the centre of gravity. Pending replacement of the existing water cooling machine, the water refill bottle should be lifted by more than one person. To lift the bottle 96 cm up to the top of the water cooling machine, a good team lifting technique must be used or the back could be easily hurt. The operators should be trained on team lifting.

2. Preventive and protective measures for this process (in order of their completion dates):

Preventive and Protective Measures	Date for Completion	Date for Follow-up
Operators be trained in correct handling techniques	5.2.99	immediate
Arrange for two operators to change the water refill bottle	5.2.99	immediate
Replace with a water cooling machine that pumps water upwards to avoid the operation	5.4.99	19.4.99

3. Others: \_\_\_\_\_

Assessor: T M Chan

Signature: 

## Appendix 2: General Correct Lifting Method

### ■ Planning

- work out a safe carrying procedure according to the size, shape and weight of the object;
- clear corridor or path of obstructions;
- use appropriate personal protective equipment;
- use mechanical aids or get help if there is any doubt.

### ■ Use Correct Lifting Posture



1. Start close to the object.



2. Bend knees, squat down, straddle the load and keep back straight.



3. Grasp object firmly. Ensure that your grip will not slip.



4. Hold the object close to the body and lift with the legs - slowly straightening the legs. After the legs are straight bring the back to a vertical position.



5. Always lift smoothly. Avoid jerky motions. Turn with feet and never twist the back.



## Further Information

For further assistance or information about the subject, you can contact Occupational Safety and Health Branch, Labour Department

Address : 15/F, Harbour Building  
38 Pier Road, Central  
Hong Kong  
Tel : 2852 4041  
Fax : 2581 2049  
Home Page address : <http://www.labour.gov.hk>  
E-mail address : [enquiry@labour.gov.hk](mailto:enquiry@labour.gov.hk)

Information on the services offered by the Occupational Safety and Health Council can be obtained through hotline 2739 9000.

## Complaints

If you have any complaints about unsafe workplaces and practices, please call the Labour Department's occupational safety and health complaint hotline at 2542 2172.

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The Labour Department's contribution towards safety and health - a shared responsibility  
- and the Department's endeavour to serve the community.