ACT Government

AUSTRALIAN CAPITAL TERRITORY

OCCUPATIONAL HEALTH AND SAFETY ACT 1989

APPROVAL OF A CODE OF PRACTICE

INSTRUMENT NO. 9 OF 1999

Pursuant to subsection 87(1)(a) of the *Occupational Health and Safety Act 1989* ("the Act") I revoke the approval for the Code of Practice entitled "A.C.T. Manual Handling Standard and Code of Practice (Second Edition)" (Instrument No. 164 of 1992 - 1 December 1992) notified in Gazette No. G50 of 16 December 1992 and approve the Code of Practice entitled "ACT Manual Handling Code of Practice" as attached to this Instrument.

Dated this eighth day of January 1999

BRENDAN MICHAEL SMYTH
Minister for Urban Services

ACT MANUAL HANDLING CODE OF PRACTICE

Foreword

The ACT Occupational Health and Safety Council is a tripartite body established by the ACT Government to develop, facilitate and implement a territory occupational and safety strategy.

This strategy includes standards development, the development of hazard-specific preventive strategies, research, training, information collection and dissemination and the development of common approaches to occupational health and safety legislation.

The Council comprises a representatives of the peak employee and employer a bodies – the ACT Trades and Labour Council, the ACT and Region Chamber of Commerce and Industry, the Master Builders Association, as well as government representatives.

The Chief Minister, following advice from Council, approved the adoption of a Standard and Code of Practice under subsection 87(1) of the *Occupational Health Safety Act 1989* in February 1991.

The ACT Standard and Code were based on the *National Standard for Manual Handling* and *National Code of Practice for Manual Handling* declared under subsection 38(1) of the *National Occupational Health and Safety Commission Act 1985*.

The principal feature of the ACT Standard and Code of Practice for Manual Handling was the provision of a multi-factorial approach to risk identification, assessment and control to be applied to manual handling tasks. This was considered to be a more appropriate method than the exclusive use of weight limits alone.

In November 1997 the Standard for Manual Handling formed the basis of the ACT *Occupational Health and Safety (Manual Handling) Regulations (No. 32 of 1997)*. This was notified in the *Gazette* on 5 December 1997. As a consequence, the Code of Practice for Manual Handling has been revised to reflect the change from the Standard to the Regulation. Other minor editorial amendments have also been incorporated into the revised Code.

What is a Code of Practice

An approved Code of Practice is a practical guide to achieving the standard of health and safety required by the *Occupational Health and Safety Act 1989* and Regulations for a particular area of work.

An approved Code of Practice should be followed, unless there is an alternative course of action which achieves the same or a better standard of health and safety in the workplace. It comes into effect on the day the notice of this approval is published in the ACT Government Gazette or on the day specified in the Gazette notice.

An approved Code of Practice is designed to be used in conjunction with the Act and Regulations but does not have the same legal force. A person or company cannot be prosecuted for failing to comply with an approved Code of Practice. However, in proceedings under the Act or Regulations, failure to observe a relevant approved Code of Practice can be used as evidence that a person or company has contravened or failed to comply with the provisions of the Act or Regulations.

An ACT WorkCover Inspector may cite an approved Code of Practice in a direction in an Improvement or Prohibition Notice, indicating the measures that should be taken to remedy an alleged contravention or non-compliance. Failure to comply with a requirement in an Improvement or Prohibition Notice is an offence.

In summary an approved CODE OF PRACTICE

1. Gives practical guidance on how the required standard of health and safety can be achieved in an area of work,

2. Should be followed, unless there is an alternative course of action which achieves the same or better standard of health and safety in the workplace,

3. Can be used in support of the preventive enforcement provisions of the Occupational Health and Safety Act,

4. Can be used to support prosecution for failing to comply with or contravening the Act or Regulations.

The ACT Occupational Health and Safety Council acknowledges the efforts of the National Occupational Health and Safety Commission and the Victorian Department of Labour in the development of this ACT Code of Practice.

1. INTRODUCTION

PURPOSE

1.1 The purpose of this ACT Code of Practice for Manual Handling is to provide practical advice in meeting the requirements of the ACT Manual Handling Regulation for the identification, assessment and control of risks arising from manual handling activity in workplaces.

INTERPRETATION

1.2 While this ACT Code of Practice aims to provide detailed advice, it is not possible to deal with every situation which may be found in workplaces.

OVERVIEW

1.3 This ACT Code of Practice provides advice in the following areas:

(a) General Principles (Section 2);

(b) Risk Identification (Section 3);

(c) Risk Assessment (Section 4); and

(d) Risk Control (Section 5).

2.GENERAL PRINCIPLES

CONSULTATION

2.1 The ACT Manual Handling Regulation requires assessment and control of manual handling tasks to be carried out by employers and persons in control (of workplaces) in consultation with employee(s) who are required to carry out the tasks and their representative(s) on health and safety issues.

2.2 Subregulation 7 defines consultation in the following way: "consultation involves the sharing of information and the exchange of view between the employer or person in control, as the case requires, and the persons who must be consulted and includes the genuine opportunity for those persons to contribute effectively to any decision-making process aimed at eliminating or minimising manual handling risks.".

2.3 This consultation should occur:

(a) as early as possible in planning for the introduction of new or modified manual handling tasks, or in the review of existing tasks, to allow for changes arising from the consultation to be incorporated;
(b) when the employer is identifying the problem areas in order to establish priorities for assessment;
(c) when determining the approach and methods to be used in assessing the manual handling tasks;
(d) when decisions are being taken on various control measures to reduce risk factors; and
(e) when the effectiveness of implemented control measures is being reviewed.

2.4 Consultation should also occur when priorities for risk assessment are being established. Employee(s) may be able to indicate tasks or movements which are particularly fatiguing, strenuous or difficult to perform.

2.5 Consultation may occur through formal and/or informal processes, and involve direct and/or representational participation.

DESIGN

2.6 The object of the ACT Manual Handling Regulation (subregulation 4) is "to ensure that employers and persons in control take all reasonably practicable steps that are available to them to ensure—

(a) that plant, equipment and containers that may be manually handled are safe when manually handled;
(b) that work practices involving manual handling are designed to be safe; and
(c) that the working environment is designed to be consistent with safe manual handling activities."

2.7 Additional costs are incurred in redesigning or modifying plant or processes once they are being used in the workplace. It is more cost effective to reduce risk factors at the design stage.

2.8 Purchasing specifications should specify the uses or functions of the plant and equipment, and, where possible, the general performance characteristics required to reduce the risk to health and safety.

2.9 Where design or purchase of equipment is planned, the appropriate consultation should occur in accordance with procedures in Sections 3.9-3.11 of this ACT Code of Practice.

2.10 The design of plant, equipment and containers in workplaces needs to provide for a range of physical characteristics of the workforce. Information concerning human dimensions and capabilities should be taken into account to provide an optimum match between the plant or equipment and users.

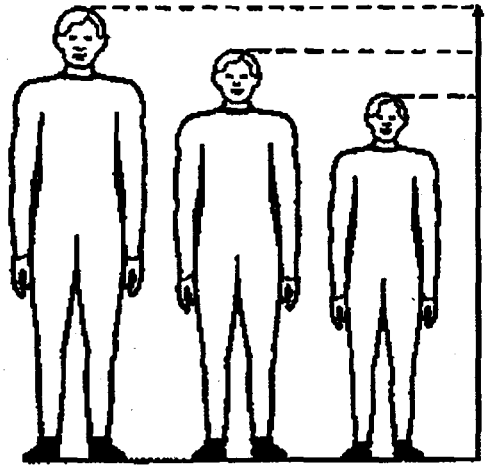

Figure 1 – Workplaces should incorporate adjustable features to accommodate people who are not average size

Design Principles

2.11 Employers need to be aware of the enormous range of physical dimensions, for example height and reach, to be found in the workforce, and the implications of this for task design and the selection and use of equipment and furniture.

2.12 Equipment and furniture should be designed so that they can be used safely. It is also desirable to design activities and tasks to suit the capacity of the widest possible range of the workforce to avoid discrimination against particular groups. That is, the employer is required to take account of the safety of each employee, and not simply design a system which might be safe for an *average* person of the workforce.

2.13 Some general principles for reducing risks associated with manual handling, which should be incorporated into the design of workspaces, plant and equipment are:

(a) minimise the lifting and lowering forces exerted;

(b) avoid the need for bending, twisting and reaching movements; and

(c) reduce pushing, pulling, carrying and holding.

2.14 Aspects to consider at the design stage include:

(a) size, surface characteristics, stability and weight of objects;

(b) vertical and horizontal movements involved;

(c) workplace layout and general environment; and

(d) work postures and space requirements.

2.15 These aspects should be considered in relation to the following stages of the handling process:

(a) transportation and reception;

(b) handling at the workplace; and

(c) storage and distribution.

RISK IDENTIFICATION, ASSESSMENT AND CONTROL

2.16 This ACT Code of Practice provides guidance on the following three key stages in the process of reducing manual handling injuries:

(a) identification of risk factors in the workplace likely to cause manual handling injury;

(b) detailed assessment of particular risk factors; and

(c) principles and examples of control measures to eliminate or reduce risk.

2.17 Figure 2 summarises these stages.

1. RISK IDENTIFICATION (Section 3).

- Analysis of Workplace Injury Records
- Consultation with Employees
- Direct Observation

2. RISK ASSESSMENT (Section 4)

- Action and Movements
- Workplace and Workstation Layout
- Working Posture and Position
- Duration and Frequency of Manual Handling
- Location of Loads and Distances Moved
- Weights and Forces
- Characteristics of Loads and Equipment
- Work Organisation
- Work Environment
- Skills and Experience
- Personal Characteristics
- Clothing
- Special Needs

3. RISK CONTROL (Section 5)

- Job Redesign
  Modify Object
  Modify Workplace Layout
  Different Actions, Movements, Forces
  Rearrange Materials Flow
  Modify Task - Mechanical Assistance
  Modify Task - Team Lifting
- Mechanical Handling Equipment
  Examples of Mechanical Handling Equipment
- Training
  Particular Training
- Training in the Principles of Correct Manual Handling and Lifting
- Other Administrative Controls
  Special Needs
  Clothing

Figure 2 - The three stage approach to safe manual handling

Weight

2.18 Weight is used in this ACT Code of Practice as one of the important factors to be considered when assessing and controlling risk.

2.19 Weight is not used to prescribe absolute limits. However, particular attention should be given to Sections 4.21 - 4.26 and 5.20 - 5.44 of this ACT Code of Practice which provide a general guide to weights which it is recommended that adults and juniors should not handle unaided.

New and Returning Employees

2.20 Notwithstanding the remainder of this ACT Code of Practice, employees newly engaged on a manual handling task or process, or returning from an extended absence, should, where necessary, be allowed a period of adjustment to build up the skill and ability demanded by the tasks they are required to perform

Training

2.21 In general, training should be provided for manual handling tasks. Refer to Sections 5.54 - 5.62 of this ACT Code of Practice for guidance.

REVIEW AND EVALUATION

2.22 The implementation of this risk control approach, as with any successful systematic process, does not end with the implementation of some change. The effectiveness of the new control measures needs to be reviewed regularly to ensure that the objectives are being achieved and that there are no unforeseen negative outcomes.

RECORD KEEPING

2.23 Records associated with the implementation of the ACT Manual Handling Regulation should be maintained in a central location and be available to the employees' representative(s) on health and safety issues. Such records will make the task of review and evaluation easier.

2.24 The records may include information on:

(a) the manual handling injury prevention program;

(b) risk assessment reports;

(c) design modifications to, and specifications for, plant and work processes;

(d) risk control measures implemented; and

(e) training and education activities.

3. RISK IDENTIFICATION

3.1 This section of the ACT Code of Practice provides means of identifying manual handling tasks likely to be a risk to health and safety in order that they can be examined and assessed as required by the ACT Manual Handling Regulation (subregulation (5)).

3.2 The purpose of risk identification is to:

(a) identify; and

(b) place in priority order, the jobs or tasks which require risk assessment.

3.3 There are three basic steps to risk identification:

(a) analysis of workplace injury records;

(b) consultation with employees; and

(c) direct observation or inspection of the task or work area.

3.4 If any of the three steps indicate the need for assessment, Section 4 of this ACT Code of Practice provides advice on that assessment.

ANALYSIS OF WORKPLACE INJURY RECORDS

3.5 Workplace records of injuries should be examined to identify where, and in what jobs, manual handling injuries have occurred.

3.6 Indicators to consider include:

(a) the area of the workplace where the injury occurred;

(b) the occupation, or job/task of the injured person;

(c) the part of the body injured, for example, back, neck or shoulder;

(d) the nature of the injury, for example, strain, sprain, laceration or fracture; and

(e) the type of accident, for example, overexertion and physical stress in lifting object, or slips and falls while handling objects.

3.7 It is often useful to examine injury records to find out the frequency and severity of injuries and compare them to the number of employees or hours worked, that is, incidence rate. Comparisons can also be made between locations, occupations or tasks.

3.8 Higher frequency and/or severity rates indicate priority areas.

DIRECT OBSERVATION

3.12 The direct observation of work areas and of the task being performed will assist in identifying risk. Workplace inspections, audits and walk-through surveys, and the use of checklists can assist in the risk identification process. It is best if these direct observation tools are tailored to the specific characteristics of the organisation or industry concerned. A general risk identification checklist, and guidance on its use, is provided in this section. The checklist is also reproduced at the back of this publication so that it can be copied for use in the workplace.

3.13 The spaces provided at the top of the checklist enable the person performing the general risk identification to record relevant information on:

(a) the building, plant and equipment (description of work location);

(b) details of the task and/or workstation;

(c) the person conducting the assessment on behalf of the employer; and

(d) the name of the employees' representative(s) on health and safety issues consulted in the process.

3.14 If any of the questions in the checklist result in a YES answer, further assessment of that risk factor is required. Generally the more YES answers that result for a particular task, then the higher the priority for risk assessment.

SAFE MANUAL HANDLING CHECKLIST GENERAL RISK IDENTIFICATION

Description of Work Location_____Date__/__/__

_____

Task Description

_____

Assessed by

_____

Employees' Representative(s)

_____

The existence of any one of the following key risk factors, that is, a Yes answer, indicates the need for further assessment as outlined in Section 4 - Risk Assessment.

MOVEMENTS, POSTURE AND LAYOUT DURING MANUAL HANDLING

1. Is there frequent or prolonged bending down where the hands pass below mid-thigh height? ❑ Yes ❑ No

2. Is there frequent or prolonged reaching above the shoulder? ❑ Yes ❑ No

3. Is there frequent or prolonged bending due to extended reach forward? ❑ Yes ❑ No

4. Is there frequent or prolonged twisting of the back? ❑ Yes ❑ No

5. Are awkward postures assumed frequently or over prolonged periods, that is, postures that are not forward facing and upright? ❑ Yes ❑ No

TASK AND OBJECT

6. Is manual handling performed frequently or for long time periods by the employee(s)? ❑ Yes ❑ No

7. Are loads moved or carried over long distances? ❑ Yes ❑ No

8. Is the weight of the object: ❑ Yes ❑ No

(a) more than 4.5 kg and handled from a seated position? ☐ Yes ☐ No

(b) more than 16 kg and handled in a working posture other than seated? ☐ Yes ☐ No

(c) more than 55 kg? ☐ Yes ☐ No

Note: Weight is not used to prescribe absolute limits, but is one of the important factors to be considered when assessing and controlling risk.

9. For pushing, pulling or other application of forces; are large push/pulling forces involved? ☐ Yes ☐ No

10. Is the load difficult or awkward to handle, for example, due to its size, shape, temperature, instability or unpredictability? ☐ Yes ☐ No

11. Is it difficult or unsafe to get adequate grip of the load? ☐ Yes ☐ No

WORK ENVIRONMENT

12. Is the task performed in a confined space? ☐ Yes ☐ No

13. Is the lighting inadequate for safe manual handling? ☐ Yes ☐ No

14. Is the climate particularly cold or hot? ☐ Yes ☐ No

15. Are the floor working surfaces cluttered, uneven, slippery or otherwise unsafe? ☐ Yes ☐ No

INDIVIDUAL FACTORS

16. Is the employee new to the work or returning from an extended period away from work? ☐ Yes ☐ No

17. Are there age-related factors, disabilities or other special factors that may affect task performance? ☐ Yes ☐ No

18. Does the employee's clothing or personal protective equipment interfere with manual handling performance? ☐ Yes ☐ No

4. RISK ASSESSMENT

4.1 The ACT Manual Handling Regulation (subregulations (5(1) and (2)) states:

> "(1) Where a manual handling task is likely to be a risk to health and safety an employer and a person in control shall ensure that it is examined and assessed.
>
> (2) Subregulation (1) applies to a person in control in so far as his or her control extends to the carrying out of the task that is likely to be a risk."

4.2 The ACT Manual Handling Regulation (subregulation 5(3)) (see below) lists the factors to be taken into account when making an assessment of a manual handling task. These factors highlight the complex nature of the causes of injury from manual handling.

> "(3) An examination and assessment under this regulation shall take into account the following:
>
> (a) the actions and movements involved in manual handling;
>
> (b) the workplace and work station layout;
>
> (c) the postures and positions that must be taken by each person involved in the manual handling;
>
> (d) the duration and frequency of the manual handling;
>
> (e) the location of the loads and the distances that they must be moved;
>
> (f) the weights and forces involved;
>
> (g) the characteristics of the loads and of any equipment that is used in the manual handling task;
>
> (h) the organisation of work at the workplace;
>
> (i) the work environment;
>
> (j) the skill, experience and personal characteristics of each person who carries out the manual handling;
>
> (k) the clothing that is to be worn during the manual handling;
>
> (l) any other factor identified by the employer, an employee or a representative on health and safety issues as being relevant."

4.3 Risk identification should be undertaken on a regular basis and, when indicated, risk assessment carried out. Risk assessment is particularly critical whenever:

(a) an injury has occurred arising from a work process and/or practice; and

(b) a work process and/or practice is introduced or modified.

4.4 In assessing a job or a task, all risk factors shall be considered, and in determining appropriate control measures, the interaction of all the factors should be taken into account.

4.5 Guidelines on assessment of these risk factors follow.

ACTIONS AND MOVEMENTS

4.6 Actions and movements should not cause undue discomfort or pain. Actions should be performed smoothly and with control, avoiding sudden or jerky movements. Manual handling should be performed in a balanced and comfortable posture. Extreme ranges of joint movement should be avoided, especially when this is prolonged or repetitive. Repetitive bending, twisting and overreaching movements are among those liable to increase the risk of manual handling injuries.

4.7 **Variation from the above and/or answering YES to any of the following questions indicates an increased risk:**

(a) Is the load shared unevenly between both hands, or lifted by one hand only?

(b) Is the object pushed or pulled across the front of the body?

(c) Is there a need to bend over to one side to lift an object or exert a force?

(d) Are two actions performed at the same time when one action is holding an unsupported fixed position?

(e) Are several tasks performed in the one position where some are best done in a seated position and the others are best done in a standing position?

WORKPLACE AND WORKSTATION LAYOUT

4.8 The positioning of plant and its controls, equipment, tools and other materials in relation to each other and the employee affects the working posture, working height, manual handling technique, duration, frequency and other work actions and movements.

4.9 The layout should permit the employee(s):

(a) to adopt an upright and forward facing posture;

(b) to have good visibility of the task; and

(c) to perform the majority of tasks at about waist height and within easy reach.

4.10 **Answering NO to any of the following questions indicates an increased risk:**

(a) Is the layout appropriate for the manual handling task and the physical dimensions of the employee(s) performing the task?

(b) Is there adequate space for all movements involved in the manual handling task?

(c) Are appropriate mechanical handling aids readily available for the task?

(d) Are the working heights adjustable or matched to the size of the employees and the tasks?

(e) Is there adequate clear space for moving legs and feet?

(f) Are the different manual handling tasks performed by one person arranged so that excessive movement is avoided?

WORKING POSTURE AND POSITION

4.11 Work activities should permit the employee to adopt several different, but equally healthy and safe, working postures. Any one posture should not be maintained for long periods without the opportunity to change posture through variation of activity or rest.

4.12 During manual handling, bending and/or twisting of the spine should be avoided, especially when this is prolonged or repetitive.

4.13 **Answering YES to any of the following questions indicates an increased risk:**

(a) Is the object presented to the employee in a position which makes it difficult to reach or grasp?

(b) During manual handling, is there frequent or prolonged:

(i) above shoulder reach? (See Figures 3 and 4)

(ii) forward bending of the back? (See Figures 5 and 6)

(iii) twisting of the back? (See Figures 7 and 8)

(iv) sideways bending of the back? (See Figures 9 and 10)

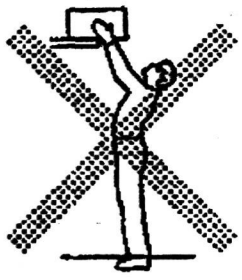

Figure 3 - Avoid above shoulder reach

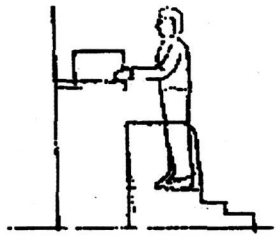

Figure 4 - Use step to avoid reaching above shoulder height

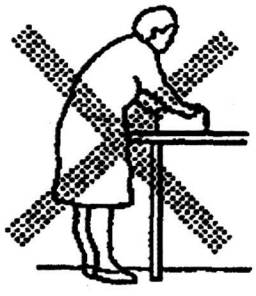

Figure 6 - Avoid forward bending of the back

Figure 5 - Avoid stooping be providing a work surface of appropriate height

Figure 7 - Avoid twisting of the back

Figure 8 - Turn to face the load

Figure 9 - Avoid sideways bending of the back

Figure 10 - Use hand trolley to avoid sideways bending of the back

DURATION AND FREQUENCY OF MANUAL HANDLING

4.14 The risk of injury rises with the increasing frequency, repetition and duration of manual handling activity by any one employee in a work period. How often, and for how long, a task is performed are key risk factors to be considered.

4.15 Problems with frequency and duration are not restricted to lifting or lowering of loads. Pushing, pulling, carrying and holding of loads can also be a problem if performed frequently or for prolonged periods.

4.16 The same manual handling task repeated over long periods of time may induce feelings of monotony and boredom. This reduction in alertness may also have important safety consequences.

4.17 There are several factors which influence a person's ability to continue prolonged exertion. These include available energy reserves, the employee's physical fitness and the relative work load, that is, the proportion of the employee's physical capacity engaged by the task.

4.18 Manual handling operations involving the use of smaller muscle groups such as hands (whether in sustained or repetitive static activity) should not be overlooked in assessing risks because these muscles fatigue quickly when overloaded.

LOCATION OF LOADS AND DISTANCES MOVED

4.19 Distances over which loads are manually handled should be as short as possible. The longer the distance the lighter the load that can be carried without increased risk.

4.20 If the load is located above the employee's shoulder height or below mid-thigh height or otherwise requires extended reach, then the risk of injury is increased. An increased risk also occurs where the load requires manoeuvring to be placed accurately into position. (See Figure 11)

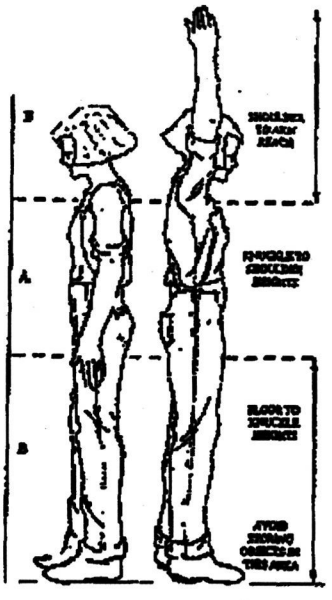

Figure 11 - Optimise location of loads. The best height range for handling loads is around waist level, with lifting between the knuckle and the shoulder being acceptable. Frequently used object should be stored in the "A" zone. Seldom used objects should be stored in the "B" zone

WEIGHTS AND FORCES

4.21 The weight of any load which is manually handled shall be considered in relation to other key risk factors including, in particular:

(a) frequency and duration;

(b) position of load relative to the body;

(c) distance moved; and

(d) characteristics of the load.

4.22 Where heavier objects are handled, more care is needed in the assessment of risk and in the application of appropriate control measures.

4.23 For lifting, lowering or carrying loads:

(a) in seated work, it is advisable not to lift loads in excess of 4.5 kg;

(b) some evidence shows that the risk of back injury increases significantly with objects above the range of 16-20 kg, therefore, from the standing position, it is advisable to keep the load below or within this range;

(c) as weight increases from 16 kg up to 55 kg, the percentage of healthy adults who can safely lift, lower or carry the weight, decreases. Therefore, more care is required for weights above 16 kg and up to 55 kg in the assessment process. Mechanical assistance and/or team lifting arrangements should be provided to reduce the risk of injury associated with these heavier weights; and

(d) generally, no person should be required to lift, lower or carry loads above 55 kg, unless mechanical assistance or team lifting arrangements are provided to lower the risk of injury.

4.24 Apart from lifting, lowering and carrying objects, many tasks in industry involve the use of force to push, pull, hold or restrain objects. Sometimes, as when holding or restraining, the force used does not actually result in movement. In other cases such as pushing levers, pulling/sliding objects the amount of force used is not necessarily related to the movement; for example, a large force may be required to move a lever a short distance. The posture required and the working conditions affect the risk associated with applying a force to push, pull or restrain an object.

4.25 Figure 12 illustrates the application of force in two circumstances.

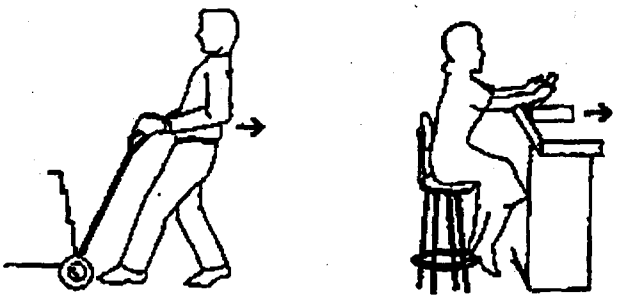

Figure 12 - illustrate the application of force in two circumstances

4.26 **Answering YES to any of the following questions indicates an increased risk:**

(a) When sliding, pulling or pushing an object, is the object difficult to move?

(b) Is the employee required to exert a large force while seated?

(c) Is the employee required to push/pull while seated without having good seating and solid foot support?

CHARACTERISTICS OF LOADS AND EQUIPMENT

4.27 Characteristics of loads and equipment to consider when assessing risk, in addition to weights and forces, include dimensions, stability, rigidity, predictability, surface texture and temperature, grips and handles.

4.28 The requirement for gloves or similar personal protective equipment also needs to be assessed in relation to manual handling risks. Gloves may protect against hand injuries, such as abrasions and burns, but they will affect grip stability, dexterity and strength. The size, shape, structure and material of the load can affect the risk of injury.

4.29 The handling of live animals or humans increases the difficulty of assessing the risk, and limits the availability of some of the common controls which are used for inanimate objects. This is because the person or animal being handled can hinder (or assist) by moving independently of the persons performing the handling. This may require the handlers to apply additional force to restrain the person or animal, or to exert sudden force in response to unexpected movements.

4.30 The nature of the person or animal may place additional demands on the handlers or limit the way the handling may be performed. Some examples are:

(a) hospital patients require extreme care in handling, often while attached to fragile medical equipment; and

(b) disturbed patients or animals may require restraint in addition to the force needed to move them.

4.31 **Answering YES to any of the following indicates an increased risk:**

(a) Does the person or animal need to be moved in a special way to ensure their health or safety?

(b) Is the person or animal disturbed, excited or moving vigorously?

(c) Is the object an awkward shape to carry in a balanced posture?

(d) Is the object difficult to grasp or hold?

(e) Is the object unstable or unbalanced, or does it have contents that may move suddenly?

(f) Is the object smooth, slippery, greasy or wet?

(g) Does the object have sharp edges or protrusions?

(h) Is the object very hot or cold?

(i) Does the object block the view of the employee when being handled?

(j) Does one person handle sheet material or other large-sized load without straps, special holders or a second person to assist?

(k) Is the object more than 50 cm wide (measured in direction across the body)? (See Figure 13)

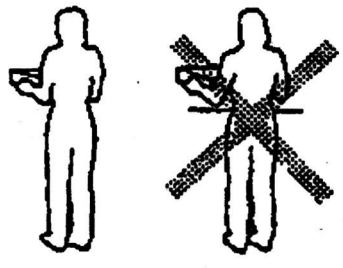

Figure 13

(l) Is the object more than 30 cm long (measured in direction away from the body)? (See Figure 14)

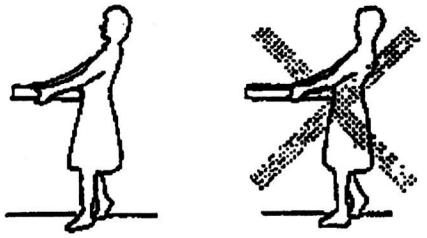

Figure 14

(m) Are any two of the object's dimensions more than 75 cm? (See Figure 15)

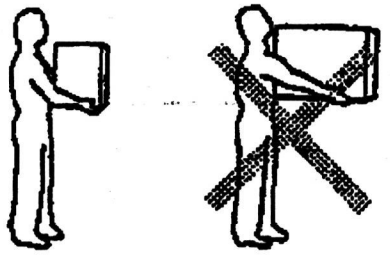

Figure 15

WORK ORGANISATION

4.32 Work organisation factors that may influence risk by interacting with other risk factors include staffing levels, availability of equipment, work schedules, shift work, workpace, task variety, rest breaks and recovery time and work procedures.

4.33 **Answering YES to any of the following questions indicates an increased risk:**

(a) Is the work frequency affected by bottlenecks, or sudden changes or delays to the flow of materials?

(b) Is the work affected by the unavailability of people to complete tasks within a deadline?

(c) Team lifting is not provided and/or safely organised when required?

(d) Are there insufficient numbers of employees to carry out the work including where peak workloads occur?

(e) Is there lack of an effective maintenance program for tools, plant and equipment used for manual handling?

(f) Are procedures for reporting and fixing unsafe equipment or environmental conditions inadequate?

(g) Is the workflow not smooth and even?

(h) Is there a lack of effective selection/purchasing, instruction and maintenance program for loads, equipment and mechanical handling devices?

WORK ENVIRONMENT

4.34 Factors in the work environment that influence risk include climate, lighting, space and floors and other surfaces underfoot.

4.35 Housekeeping and footwear are associated factors that have particular relevance for risk of slips, trips and falls while handling loads.

4.36 Answering YES to any of the following questions indicates an increased risk:

(a) Are the floors and surfaces underfoot uneven or slippery?
(b) Are there different floor levels in the workplace?
(c) Is the workplace untidy with a lack of attention to housekeeping details?
(d) Are there extremes of heat, cold, wind or humidity?
(e) Are there high levels of fumes, dusts, gases or vapours?
(f) Is there excessive vibration?
(g) Is the task performed in a confined space?
(h) Is the lighting below the levels recommended in Australian Standard 1680 – Code of Practice for Interior Lighting and the Visual Environment?

SKILLS AND EXPERIENCE

4.37 Employees should have the knowledge and ability required to perform the task. A mismatch can cause an increased risk of injury.

4.38 **Answering NO to any of the following questions indicates an increased risk:**

(a) Has the employee received appropriate training/education in manual handling hazards and/or techniques?
(b) Has the employee received appropriate training in recognising risk and evaluating tasks in order to select and apply appropriate handling techniques?
(c) Has training, appropriate to the tasks, been provided which relates to manual handling?
(d) Has the employee been properly inducted into the job practices and safety requirements in the workplace?
(e) For heavy handling tasks, has the employee had previous experience with heavy manual handling?
(f) Are the demands of the task within the physical capacity of the employee?

PERSONAL CHARACTERISTICS

4.39 Manual handling tasks are performed by people and it is people who risk injury in performing the tasks. Injury may occur during manual handling activities unless full account is taken of the capacity of individuals to perform particular tasks. Differences in capacity may be determined by a number of personal characteristics of the individuals.

4.40 Young workers are at greater risk than adult workers because they are still developing physically. For older workers, as age increases, the person's capacity may decrease, giving rise to greater risk.

4.41 However, age alone is not sufficient for assessing risk and all relevant risk factors must be taken into account. These include:

(a) strength and degree of bodily development;

(b) general state of health and fitness;

(c) bodily dimensions, for example, height and hand grip size;

(d) physical capacity, for example, muscle strength, aerobic capacity (endurance), mobility and flexibility of joints;

(e) stage of musculo-skeletal development;

(f) training and experience;

(g) susceptibility to fatigue; and

(h) degree of physical preparation undertaken prior to commencing a task.

4.42 In some instance, employees may have special needs that need to be considered in the risk assessment process. These may be permanent or temporary, for example, returning to work from an illness or extended leave of absence, pregnancy, specific disability, etc.

CLOTHING

4.43 The type of clothing an individual wears at work may hinder safe manual handling, for example, tight clothing which restricts movements will adversely affect manual handling technique. When specialist clothing is required, such as uniform or personal protective equipment, its effect on risk needs to be assessed.

SPECIAL NEEDS

4.44 In some instances, employees may have special needs that require consideration in the risk assessment process. These needs may be permanent or temporary, for example, returning to work from an illness or extended leave of absence, pregnancy, specific disability, etc.

5. RISK CONTROL

5.1 The ACT Manual Handling Regulation (subregulation 6) requires the following points to be addressed:

> "(1) If a manual handling task is assessed as being a risk to health and safety, the employer and person in control shall take such steps in accordance with this regulation as are reasonably practicable to minimise the risk.
>
> (2) For the purposes of subregulation (1) the employer or person in control shall—
>
> (a) redesign the manual handling task to eliminate or minimise the risk; and
>
> (b) ensure that each employee involved in the manual handling task receives appropriate training (including training in safe manual handling techniques) and supervision.
>
> (3) Where redesign of the manual handling task is not reasonably practicable, the employer or person in control shall—
>
> (a) take 1 or more of the following measures as is appropriate:
>
> (i) provide mechanical aids;
>
> (ii) arrange for an appropriately trained person or group of people, as required, to undertake the manual handling;
>
> (iii) provide personal protective equipment; and
>
> (b) ensure that each employee receives appropriate training and supervision in the correct use or application of any mechanical aids, manual handling procedures or personal protective equipment provided or arranged for under paragraph (a).
>
> (4) Where redesign of a manual handling task is reasonably practicable, but cannot be implemented immediately, the employer or person in control shall, for the purposes of subregulation (1), comply with subregulation (3) until such time as he or she is in a position to comply with subregulation (2).
>
> (5) An employee shall not, without reasonable excuse, fail to—
>
> (a) apply any training provided for the purposes of this regulation; or
>
> (b) comply with any lawful instruction given by a person supervising a manual handling task."

5.2 Risk control is the process of eliminating or reducing identified and assessed risk factors.

5.3 Risk control can best be accomplished by a combination of:

(a) job redesign;

(b) mechanical handling equipment; and

(c) provision of training.

5.4 Care shall be taken to ensure that further risks to health and safety are not created by the application of control methods aimed at reduction of manual handling risks.

Risk Control Options and Risk Factors

Risk Factors	Risk Control Option								
	Job Redesign						Mechanical Handling Equipment	Training	Other administrative Controls
	Modify Object	Modify workplace layout	Rearrange materials flow	Different actions, movements and forces	Modify task - mechanical assistance	Modify task - team lifting			
A. Actions and movements	*	*	*	*	*		♦	♦	
B. Workplace and Workstation layout		*	*	*	*		♦	♦	
C. Working Posture and Position	*	*		*	*	♦	♦	♦	
D. Duration and Frequency			*	*	*			♦	
E. Location of loads and distances moved	*	*	*		*	♦		♦	
F. Weights and Forces		*	*	*		♦	♦	♦	
G. Characteristics of loads and equipment	*		*	*	*	♦	♦	♦	
H. Work organisation		*	*	*				♦	
I. Work Environment		*	*				♦		
J. Skills and experience				*	*		♦	♦	
K. Personal Characteristics				*	*		♦	♦	
L. Clothing								♦	♦
M. Special Needs	*	*	*	*			*	♦	♦

INTRODUCTION TO RISK CONTROL OPTIONS

5.5 The preceding table indicates which risk control options are relevant for particular risk factors, job redesign being the preferred risk control option. No one single option will necessarily reduce a risk. A combination of different control options is often needed to address risk factors and reduce the overall risk of manual handling injuries.

5.6 The table lists the risk control options described below and indicates which control option(s) may be effective at reducing the risk of each factor.

5.7 *Note: The asterisks should not be interpreted absolutely, rigidly or independently. Some risk factors, and some control options, contain a broad range of situations or possible activities. It may be possible in some circumstances to reduce the risk of a particular factor by one of the control options for which there is no asterisk linking it to the risk factor.*

5.8 To illustrate the preference, the five preferred job redesign control options, and their connections with the key risk factors, have been placed in a shaded box.

5.9 An introduction to each control option is given below.

Job Redesign

Modify Object

5.10 The object being handled may be modified or repackaged into a bigger or smaller weight or a different size or shape.

Modify Workplace Layout

5.11 The layout of the plant, equipment and furniture may be modified or rearranged. This may include increased attention to housekeeping and maintenance functions.

Rearrange Materials Flow

5.12 The schedule or timing, and path(s) of materials flow may be modified. The risks may be reduced by rearranging containers and the way materials are moved around the workplace.

Different Actions, Movements, Forces

5.13 With or without workplace modifications, a task may be done in a different way, using different actions, movements and forces.

Modify Task - Mechanical Assistance

5.14 The risk associated with a task can be reduced by mechanical assistance, minor rearrangements of plant and equipment and an improved (or effective) maintenance program.

Modify Task - Team Lifting

5.15 The actions, movements and forces required for manual handling can be modified by team lifting arrangements.

Mechanical Handling Equipment

5.16 The provision of mechanical handling equipment with the provision of appropriate training can reduce the risk by reducing the force required.

Training

5.17 Where the previous options have been unable to reduce a significant risk, then the person requires particular instruction, training and/or education in the manual handling task.

Other Administrative Controls

5.18 Other administrative controls requiring consideration include any special needs relating to the employee, such as their state of health, and clothing.

Risk Control Priorities

5.19 It is likely that for many jobs the application of these types of control will not be mutually exclusive. In some job(s) it may be reasonably practicable to redesign some parts, and to provide mechanical aids.

JOB REDESIGN

Modify Object

5.20 Where the presence of a risk factor has been identified, the modifications suggested in the following questions may assist to reduce the risk:

(a) Can the object be made lighter?

(b) Can the object be packaged in smaller containers?

(c) Can the object be made less bulky, so that it can be handled closer to the employee's centre of gravity?

(d) Can the shape or surface texture of the object be changed to make it easier to grip?

(e) Could the surface be cleaner or cooler, or the edges less sharp, so the employee can hold the object against the body?

(f) Can handles be provided, or some type of sling used to move the object?

(g) Is the object designed, or the material packaged, so that it will not shift unexpectedly while it is being moved?

Modify Workplace Layout

5.21 Modification of the workplace layout can reduce the risk associated with manual handling. Where risk factors have been identified, then particular workplace modification may be effective in educing the risk. Examples of the modification of workplace layout are given in the following figures (Figures 16-23).

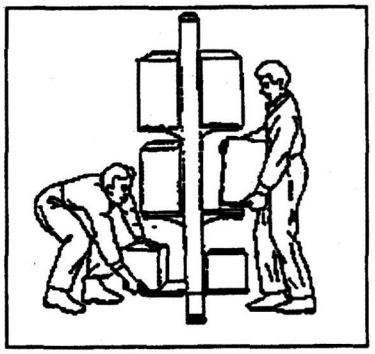

Figure 16 - Store heavier and frequently used items at waist level

Figure 17 - raise work level by use of self-adjusting platform

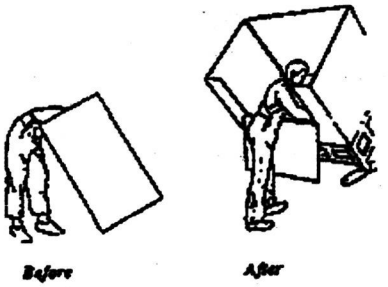

Figure 18 - prevent excessive bending of the back by adjusting work level

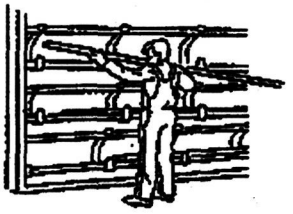

Figure 19 - adjustable storage heights

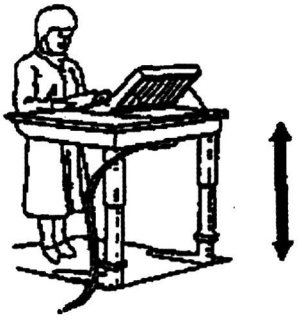

Figure 21 - adjustable work heights

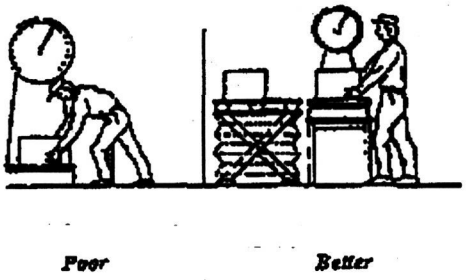

Figure 20 - adjustable work heights

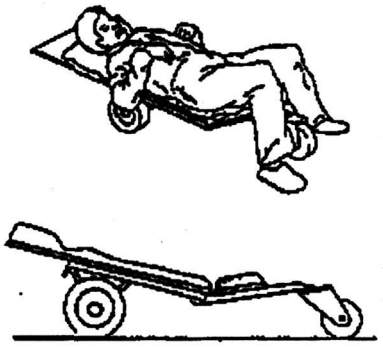

Figure 23 - avoid muscle fatigue when working in awkward positions

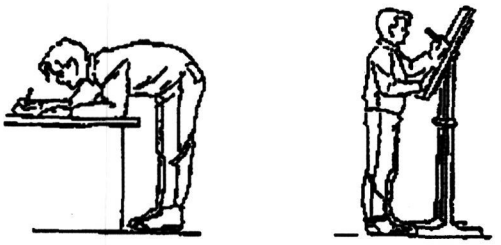

Figure 22 - improve posture

Tools Design and Modification

5.22 The design of tools, implements and controls has an influence on work postures, movements and physical stress. Some principles of good design are:

(a) Tools are as light as their function will permit, that is, heavy tools are fitted with devices to save the employee from having to support an unnecessary weight and designed for two handed use.

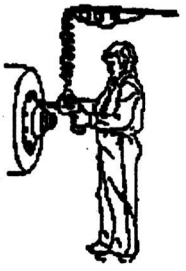

Figure 24 - suspended tools avoid unnecessary load

(b) Tools are well balanced. The angle between handle and working parts is designed to avoid unnatural bending of the hands and arms.

(c) The handle is designed to suit the grip and force required, and preferably in such a way that the user can change grip.

(d) The grip surface does not conduct heat or cold easily. It is sufficiently rough to prevent hands from slipping and it has no sharp or projecting parts to impose an uneven or unnecessarily heavy surface pressure on the hand.

(e) The positioning, resistance direction of movement and length of travel of controls are suitable for the employees and job.

(f) Tools are provided with adequate vibration insulation if necessary.

(g) Tools are suitable for both right-handed and left-handed employees and for hands of different size.

Controls Design

5.23 In relation to controls, hand controls are often preferable for precision or speed of operation, while foot controls are generally best if greater force has to be applied. Pedals are most conveniently and safely operated from a seated position. If the employee has to stand up, the pedal should be designed and positioned in such a way that the employee can support the foot on the pedal at the heel. This will make it easier to keep balance.

Rearrange Materials Flow

5.24 Where the presence of risk factors has been identified, then the following rearrangement may reduce the risk:

(a) Rearranging the containers and the way materials are moved around the workplace, between different parts of the work process.

(b) Placing loads to be handled in an optimum location will also reduce the risk. The best height range for handling loads is around waist level with lifting between the knuckle and the shoulder being acceptable.

5.25 The principles outlined above are illustrated in Figures 25-31.

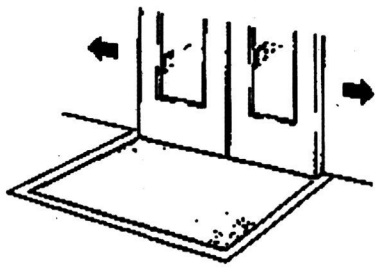

Figure 28 - automatic door

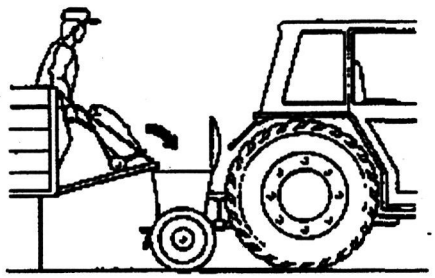

Figure 25 - gravity feed principle to avoid lowering

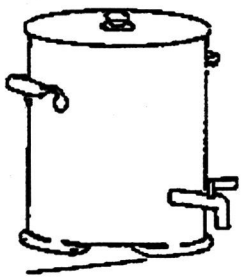

Figure 27 - tap avoids lifting to empty

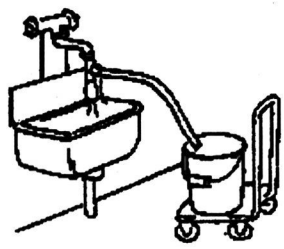

Figure 26 - hose avoids lifting

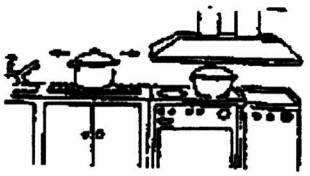

Figure 29 - rollers avoid carrying

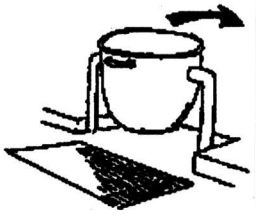

Figure 30 - pour without lifting

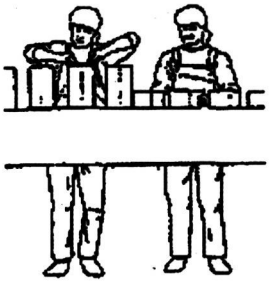

Figure 31 - tilt objects to reduce work height

Different Actions, Movements, Forces

5.26 Where risk factors have been identified, the following suggestions may assist in reducing the risk.

5.27 Bending movements can be reduced by:

(a) using lift tables, work dispensers and similar mechanical aids;

(b) raising the work level;

(c) positioning all material at work level;

(d) keeping materials at work level, for example, avoid lowering objects that may later be lifted; and

(e) eliminating large horizontal reaches.

5.28 Twisting movements can be reduced by:

(a) positioning all tools and materials in front of the employees;

(b) using conveyors, chutes, slides or turntables to change the materials flow direction;

(c) providing adjustable swivel chairs;

(d) providing sufficient work space for the employee's whole body to turn; and

(e) improving layout of the work area.

5.29 Reaching motions can be reduced by:

(a) positioning tools and machine controls close to the employee;

(b) positioning materials, workpieces and other heavy objects as near the employee as possible;

(c) enabling the object handled to be kept close to the body;

(d) reducing load or container size; and

(e) enabling the employee to walk around the load or to rotate it.

5.30 Lifting and lowering forces can be reduced by:

(a) eliminating the need to manually do this by using lift tables, forklifts, cranes, hoists, balancers, drum and barrel dumpers, work dispensers, elevating conveyors and similar aids, raising the work level, lowering the position of the employee and using gravity dumps and chutes;

(b) reducing object weight by reducing load size (specify to suppliers, for example, in regard to photocopying paper packaging), reducing capacity of containers, reducing the weight of the container, reducing load in each container and reducing the number of objects lifted or lowered at one time;

(c) increasing object weight so that it must be handled mechanically by using a unit or bulk load concept such as palletised loads;

(d) reducing the holding position away from the body by changing object shape, providing suitable grips or handles, providing greater access to the load and improving workplace layout; and

(e) converting to pushing or pulling.

5.31 Pushing and pulling forces can be reduced by:

(a) eliminating the need to push or pull by using powered conveyors, using powered trucks or movers and using slides, rollers or chutes;

(b) reducing required forces by reducing load weight; using non-powered conveyors, air bearings, ball castor tables, monorails and similar aids; using four-wheel hand trucks, hand trolley with good bearings and large diameter wheels or castors appropriate to the particular surfaces; providing good maintenance of equipment and floor surfaces; using mechanical pushers or pullers; and

(c) reducing the distance of push or pull by improving work area layout; relocating production or storage area, or similar system change.

5.32 Carrying forces can be reduced by:

(a) converting to pushing or pulling by use of conveyors, air bearings, ball castor tables, monorails, slides, chutes and similar aids, using forklifts, two or four-wheel hand trucks, trolleys and similar;

(b) reducing object weight by reducing object size, reducing capacity of containers, reducing container weight, reducing load in each container and reducing the number of objects carried at one time; and

(c) reducing carry or transport distance by improving work area layout, relocating storage or production area, or similar system change.

5.33 Holding forces can be reduced by:

(a) reducing object weight, as above;

(b) reducing object size;

(c) reducing holding time;

(d) eliminating holding by using, for example, jigs and fixtures; and

(e) using mechanical loading and unloading.

5.34 Principles involved in minimising the risk of injury when applying force include:

(a) pushing/pulling is more efficient if applied at or around waist level;

(b) pushing in/pulling out is stronger than left/right (across the body); and

(c) for manual handling, significantly higher push/pull forces are possible when standing than when seated, and the use of body weight in pushing/pulling is preferred.

Modify Task - Mechanical Assistance

5.35 Examples of mechanical aids and some potential hazards which may be encountered in their use are given below.

Hooks

5.36 The employee should be trained in the use of hand or packing hooks so that they will not glance off hard objects. If the hook is carried in the belt, the point should be covered.

Bars

5.37 The major hazard in the use of a crowbar is that it may slip. The point or edges should have a good 'bite'.

Rollers

5.38 Rollers are often used to move heavy and bulky objects. Fingers or toes may be pinched or crushed between a roller and the floor.

Jacks

5.39 All jacks shall be clearly marked with their safe working load. The surface onto which a jack is placed shall be level, clean and be sturdy enough to support the load. After the load is raised, additional support should be placed under it. Employees using jacks should wear safety shoes and instep guard protection because handles may slip or parts may fall.

Platforms

5.40 Platforms are useful for loading and unloading, provided that the load is maintained at a convenient height for lifting and handling.

Trestles

5.41 These and other support may be used for manoeuvring long loads on the point of balance, or for readjusting the grip or carrying posture.

5.42 The following figures (Figures 32-53) are examples of the use of mechanical assistance.

Figure 33 - adjusting platform reduces stooping and reaching

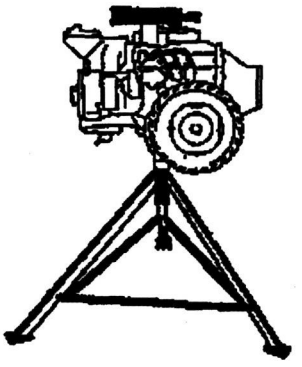

Figure 34 - stand avoids awkward posture

Figure 35 - simple trolley avoids awkward handling

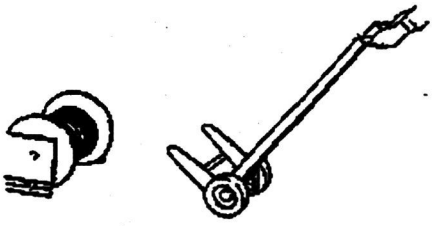

Figure 32 - simple lever and wheels avoids stooping and reduces effort

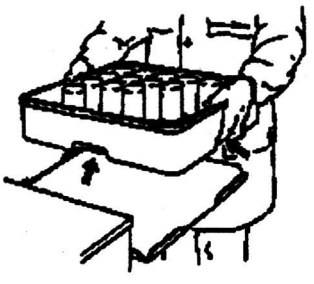

Figure 36 - design for finger space

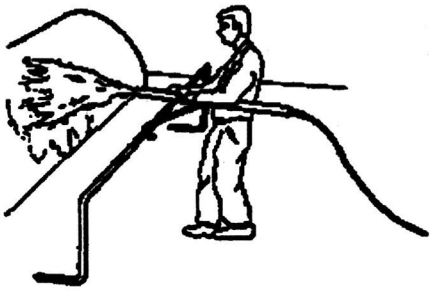

Figure 37 - use structure to absorb reaction forces

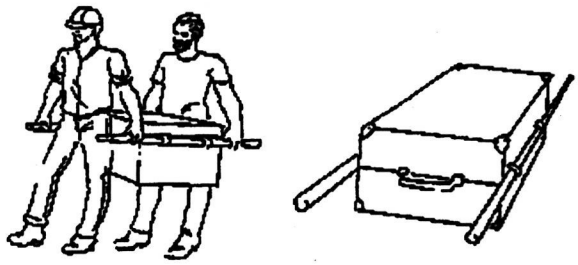

Figure 38 - simple frame enables better posture

Figure 39 - hose rests on and clips over bar

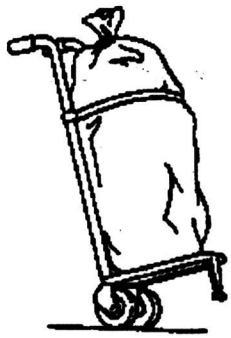

Figure 40 - hand trolley

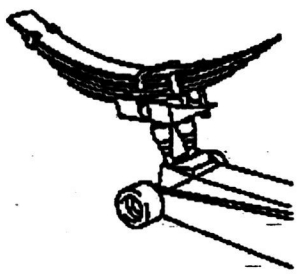

Figure 41 - support weight by use of jack

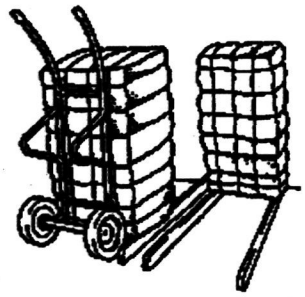

Figure 42 - rails enable trolleys to slide under loads

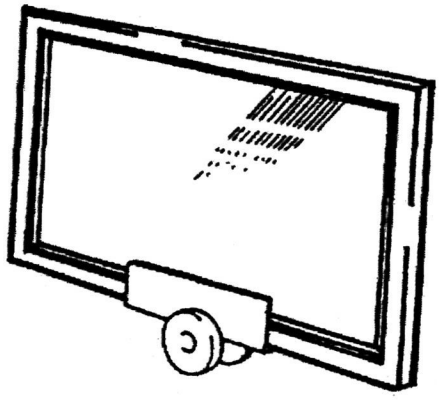

Figure 43 - wheel set enables pushing in place of lifting

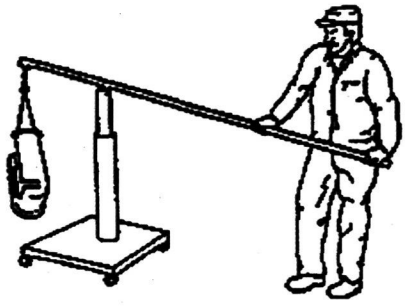

Figure 44 - level and rolling platform reduce effort

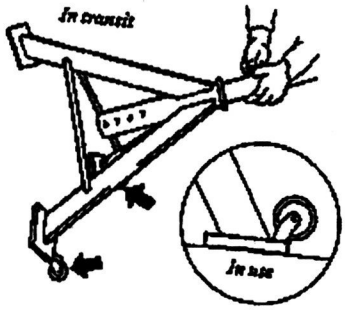

Figure 45 - wheels avoid carrying when moving

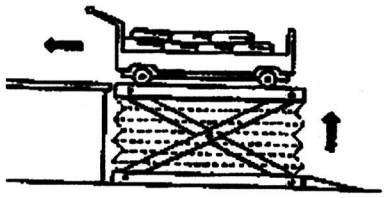

Figure 46 - adjustable height platform reduces lifting

Figure 47 - levers reduce force required

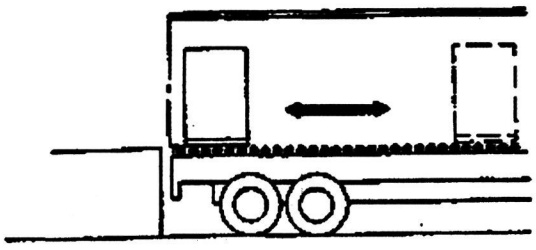

Figure 48 - floor rollers assist moving

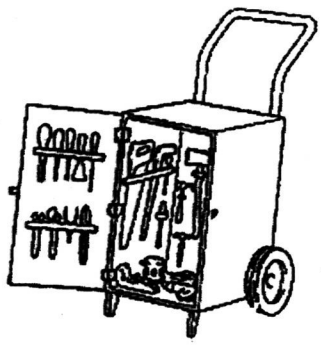

Figure 49 - custom made trolley avoids carrying

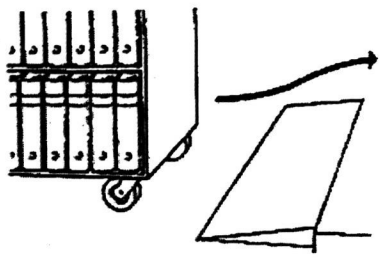

Figure 50 - ramps avoid lifting or dragging

Figure 51 - rollers and levers avoid stooping

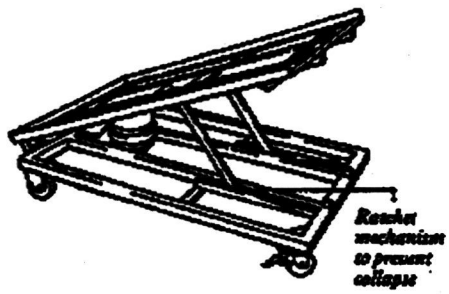

Figure 52 - rolling platform with tilt mechanism

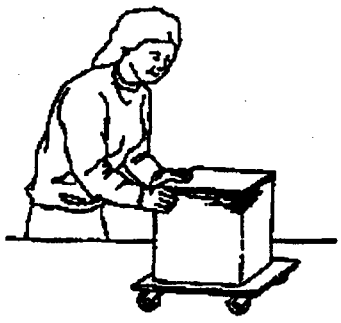

Figure 53 - rolling platform to avoid lifting

Modify Task - Team Lifting

5.43 The regular need for team lifting usually signals the need for redesign. Introduction of team lifting may be effective in reducing risk in certain manual handling tasks.

5.44 Whenever team lifting is used, it is essential to coordinate and carefully plan the lift. In organising a lift it is important to ensure:

(a) an adequate number of persons in the team;

(b) that one person is appointed to coordinate the lift;

(c) that the team members are of similar capacity and know their responsibilities during the lift;

(d) that appropriate training in lifting has been provided; and

(e) the lift has been rehearsed, including what to do in case of emergency.

MECHANICAL HANDLING EQUIPMENT

5.45 Where risk factors have been identified, then the provision of mechanical handling equipment may reduce the risk.

5.46 Mechanical handling equipment includes:

(a) simple aids, for example, levers, sliding rails, conveyers, that is, belt conveyors and roller conveyors;

(b) cranes and hoists, for example, jib cranes, overhead travelling cranes and mobile hoists;

(c) positioning equipment, for example, lift jacks; and

(d) industrial vehicles, for example, fork lift trucks and two-wheeled hand trucks.

5.47 Mechanical handling equipment should:

(a) be easy to use and not cause an obstruction;

(b) be designed to suit the load; and

(c) be readily available even in emergencies.

5.48 Operators should have information, instruction, and opportunities for hands-on experience on their use.

5.49 The design, installation and use of mechanical handling equipment may be subject to legislation.

Examples of Mechanical Handling Equipment

Conveyors

5.50 Conveyors are generally useful when loads are uniform, materials move continuously, routes do not vary, loads are constant, movement rate is relatively fixed, conveyors can bypass cross traffic, and the path to be followed is fixed. Types of conveyors include:

(a) roller conveyors;
(b) belt conveyors;
(c) screw conveyors;
(d) chutes;
(e) monorails; and
(f) trolley conveyors.

Cranes and hoists

5.51 Cranes and hoists are most commonly used when movement is within a fixed area, moves are intermittent, loads vary in size and weight, cross traffic will interfere with conveyors, and/or loads handled are not uniform. Types of cranes and hoists include:

(a) overhead travelling cranes;
(b) gantry cranes;
(c) jib cranes;
(d) hoists; and
(e) stacker cranes.

Industrial trucks

5.52 Industrial trucks are generally used when loads are moved intermittently, movement is over varying routes, loads are uniform, cross traffic would prohibit conveyors, clearances and running surfaces are adequate and suitable, most of the operation consists of, for example, pallet-lifting, manoeuvring and stacking, and material can be put into unit loads. Types of industrial trucks include:

(a) forklift trucks;
(b) platform trucks;
(c) two-wheel hand trucks;
(d) tractor-trailer trains; and
(e) hand stackers.

5.53 Illustrations of mechanical handling equipment follow (Figures 54-70).

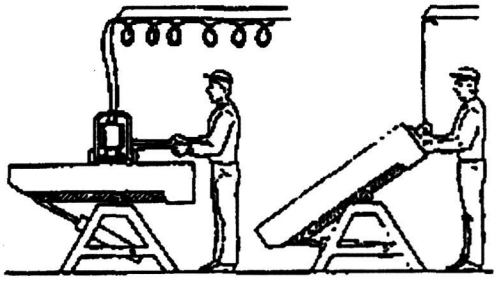

Figure 54 - adjustable support stage provides a better work position for finishing surfaces

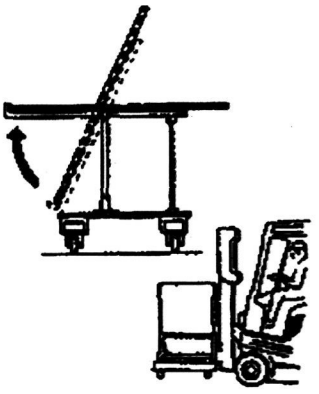

Figure 55 - a transport wagon designed for handling sheets of material

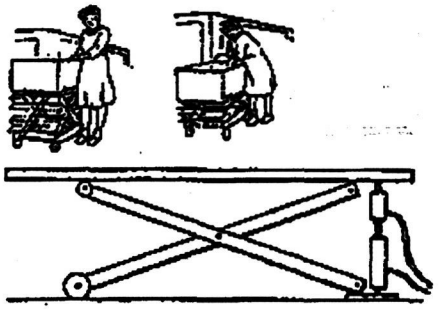

Figure 56 - adjustable scissor table for different work heights

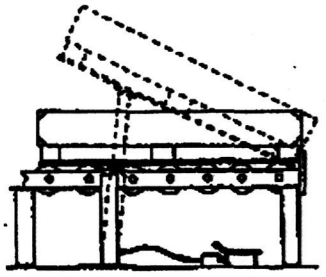

Figure 57 - hydraulic tilt bed

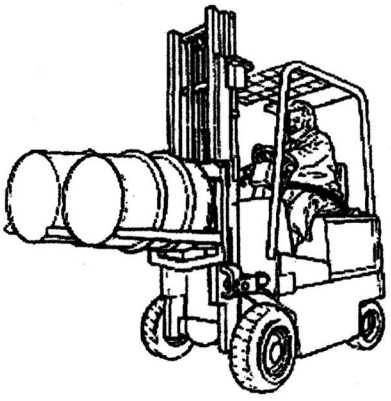

Figure 59 - fork lift

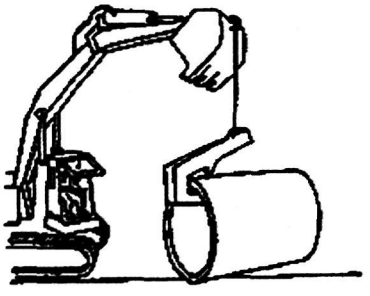

Figure 58 - using c-hook to move cylinders

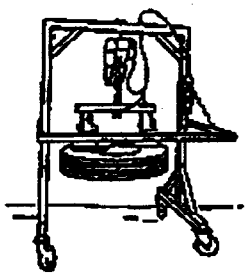

Figure 60 - gantry crane for lifting heavy material off pallets

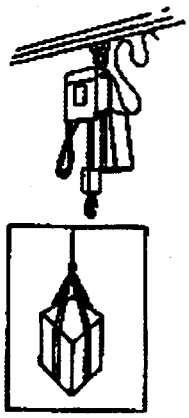

Figure 61 - specially designed hooks or slings for lifting

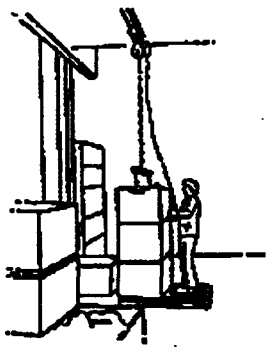

Figure 62 - electric hoist

Figure 63 - overhead crane for heavy lifting

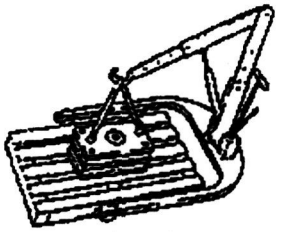

Figure 64 - mobile crane

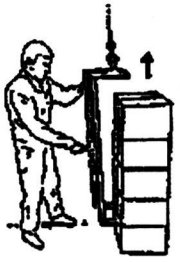

Figure 65 - lifting device for moving boxes and crates

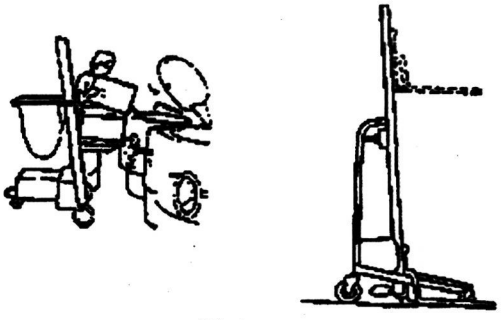

Figure 66 - a lifting cart makes it easier to dispense material above shoulder height

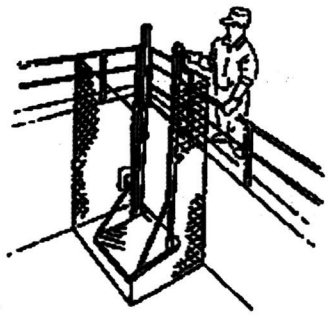

Figure 67 - elevator for transporting goods between floors

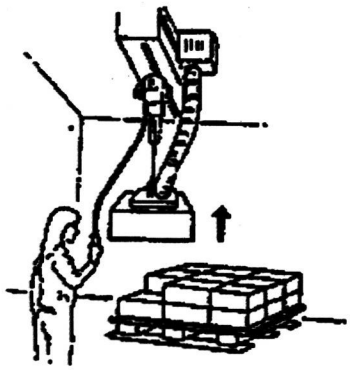

Figure 68 - vacuum lifter for material

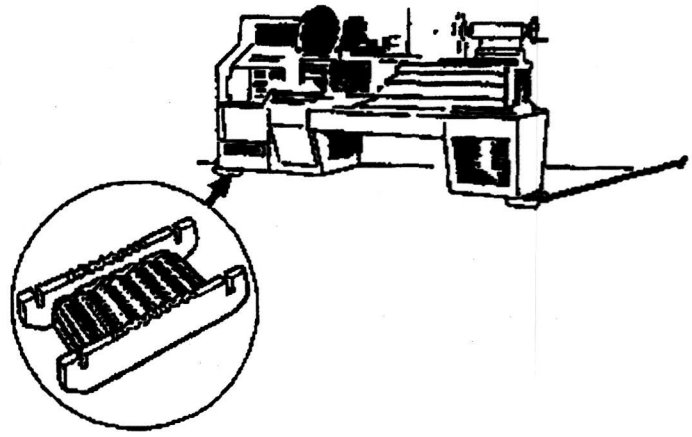

Figure 69 - skates are useful for moving heavy equipment

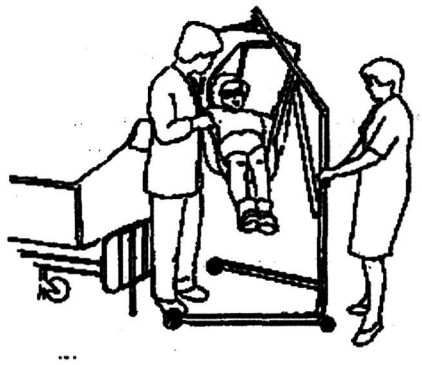

Figure 70 - mechanical aids for patient lifting and moving

Training

5.54 The ACT Manual Handling Regulation (subregulation 6(2)) states:

> **(2)** For the purposes of subregulation (1) the employer or person in control shall—
>
> (a) redesign the manual handling task to eliminate or minimise the risk; and
>
> (b) ensure that each employee involved in the manual handling task receives appropriate training (including training in safe manual handling techniques) and supervision.

5.55 In addition to the employees involved in manual handling, other target groups also requiring training include:

(a) supervisors and managers of employees involved in manual handling tasks;

(b) employees' representative(s) on health and safety issues; and

(c) staff responsible for work organisation, job and task design.

5.56 Objectives in relation to training should be established and should include:

(a) the prevention of manual handling injuries by an approach based on risk identification and assessment, and primary control through job and task design;

(b) the recognition and promotion of understanding of the multi-faceted nature of manual handling activities; and

(c) the promotion and utilisation of safe manual handling techniques.

Training Content

5.57 The content of any training program should be tailored to the specific needs of the group being trained.

5.58 Topics should include:

(a) a review of the risks to health from manual handling;

(b) the magnitude of the problem;

(c) a review of the potential effect of manual handling on the body;

(d) job and individual risk factors associated with manual handling injuries;

(e) control strategies, with primary emphasis being placed on work organisation, job and task design;

(f) safe manual handling techniques;

(g) the safe use of mechanical handling aids and personal protective equipment; and

(h) responsibilities of the parties.

Particular Training

5.59 The ACT Manual Handling Regulation (subregulation 6(3)) states:

> "(3) Where redesign of the manual handling task is not reasonably practicable, the employer or person in control shall—
>
> (a) take 1 or more of the following measures as is appropriate:
>
> (i) provide mechanical aids;
>
> (ii) arrange for an appropriately trained person or group of people, as required, to undertake the manual handling;
>
> (iii) provide personal protective equipment; and
>
> (b) ensure that each employee receives appropriate training and supervision in the correct use or application of any mechanical aids, manual handling procedures or personal protective equipment provided or arranged for under paragraph (a)."

5.60 The provision of particular training should follow an analysis of the task(s) involved which will have identified the risk factors present. Once the analysis has eliminated job design options as unworkable, how to do the job with least risk should be defined and form the basis of the particular training.

5.61 The training should be specific to the task and will aim to ensure that the employee:

(a) understands the reasons for doing the job with least risk;

(b) can recognise the risks and decide the best way to go about it;

(c) knows what is the best way to go about it; and

(d) can perform the task in this way.

5.62 This training should be supplemented by appropriate supervision when required. Any training which is provided for employees required to carry out the manual handling should also be provided to their supervisors.

Training in the Principles of Correct Manual Handling and Lifting

Manual Handling

5.63 For purposes of training programs, the following principles apply for most manual handling tasks.

Plan

5.64 As one way of avoiding overexertion injuries, the employee undertaking the manual handling should assess the load, determine where it will be placed and decide how it will be handled. By first assessing the situation, the employee can decide if mechanical assistance/aids or another person is needed to move the object, animal or person. (See Figure 71)

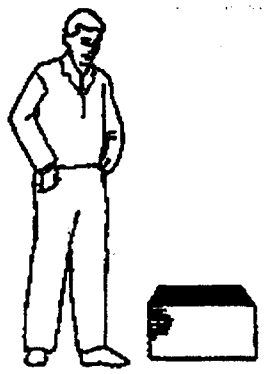

Figure 71 - plan the lift

Determine the best technique

5.65 All factors should to taken into account when determining the best technique. The best handling technique involves suitable balance and avoidance of unnecessary bending, twisting and reaching. A person undertaking a lift should lift efficiently and rhythmically, minimising bending of the lower back. The knees should be bent, but preferably not at a right angle. When applying force, the principles in Section 5.25-5.33 of this ACT Code of Practice are also relevant. (See Figure 72)

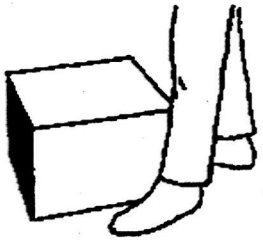

Figure 72 - determine the best lifting technique

Take secure grip on the object being handled

5.66 The grip helps to determine how safe the task will be. Whenever possible, a comfortable power grip (with the whole hand) should be used rather than a hook or precision grip (with fingers only). (See figure 73)

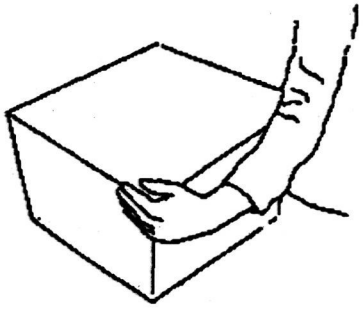

Figure 73 - get a secure grip

Pull the load in close to the body

5.67 For lifting in particular, it is important to have the centre of gravity of the load close to the body to prevent excessive stress on the back and to use the strongest muscles of the arms to hold the load. It is important to minimise the effects of acceleration by lifting slowly, smoothly and without jerking. (See figure 74)

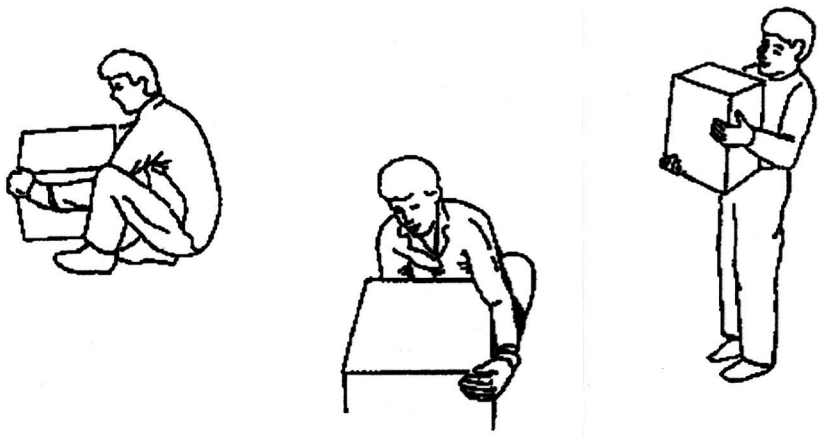

Figure 74 - pull load in close to your body

Vary heavy handling tasks with light work

5.68 The job/task should be designed so as to provide alternative tasks that do not heavily stress the same muscles. Throughout the work shift, heavier handling tasks should be alternated with lighter tasks which allow the active muscles to recover.

Team lifting

5.69 To enable load sharing, lifting partners should be of similar height and build and shall be trained in lifting techniques. There should be a person nominated as team leader to coordinate the lift. Team lifting should not be used as a first option in risk control. (See figure 75)

Figure 75 - team lifting

Manual Lifting

5.70 It is difficult to generalise about the optimum or maximum weight of a load to be lifted, because there are so many factors involved besides the actual weight to be lifted.

5.71 The following points should be considered:

(a) Lifting aids should be used if possible.

(b) There should be sufficient space for lifting to be done in the right position and with correct posture and body movements.

(c) There should be no obstructions when moving objects.

(d) The start and finish height of the load should be a suitable level above the floor, that is, between mid-thigh to shoulder height, preferably at about waist height.

(e) The centre of gravity of the load should be as close to the body as possible. A load is more difficult (heavier) to lift or carry if it is not close to the body. For example, 10 kg held at a distance of 80 cm imposes the same load as 50 kg right next to the body.

(f) The back should not be twisted or bent sideways.

(g) Lifting with one hand should be avoided.

(h) If lifting has to be performed frequently or for prolonged time periods, then the acceptable weight of the load rapidly diminishes.

OTHER ADMINISTRATIVE CONTROLS

Special Needs

5.72 The state of an individual's health shall be taken into consideration when allocating manual handling duties, drawing upon medical advice as appropriate. When an individual's health changes and those changes affect capacity to perform normal duties, whether permanently or temporarily (such as hernia, pregnancy or post-operative recovery), the work system should be adapted to suit the new circumstances or the individual should be allocated other tasks.

5.73 The increased experience and skills of older workers may compensate substantially for decline in the resilience of their tissues, including ligaments and joints.

5.74 In making such decisions, it may be necessary to seek medical assessment of individual cases in relation to the specific duties of a job, rather than generalised conclusions about the capacities of groups to perform manual handling tasks.

Clothing

5.75 In some situations, special clothing is required to reduce risk of injury. The following examples demonstrate how special clothing can reduce the risk of injury:

(a) gloves provide protection from cuts and abrasions;

(b) proper footwear assists prevention of injuries from slips and falls, and from dropped loads; and

(c) proper clothing allows loads to be carried close to the body.