Manual Handling Course

MANUAL HANDLING OF LOADS REGULATIONS (1993)

TRAINING COURSE MH1(b) - Basic Module

S & T TRAINING CENTRE
DONCASTER

Student Notes

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Introduction

This one day course is aimed at all new S & T entrants including all grades of Technical and Clerical Staff. On completion of this course you will be aware of the importance of correct Manual Handling Operations and be competent in carrying out any given Manual Handling task without injuring yourself or work colleagues.

The need for correct Manual Handling

Each year 52 million working days are lost due to back related problems. This figure could be greatly reduced with correct training and assessing of Manual Handling Practices. More than 25% of the accidents reported to the Health and Safety Authority are associated with manual handling, the transporting or supporting of loads by hand or bodily force. Whilst fatal manual handling accidents are rare, those accidents resulting in a major injury such as a fractured arm are more common, accounting for 7% of all major injuries reported in 1988/89. The vast majority of reported manual handling accidents resulting in "over three day injuries" are most commonly strains or sprains to the back.

The most common reasons for absenteeism from the workplace, due to manual handling injuries, fall into the following categories:

a) Strains or sprains to the back.

b) Cut type injuries, especially to the fingers and hand.

c) Fractures, again a high proportion of injuries to fingers and thumbs.

d) Fractures to upper and lower limbs.

The following percentage figures represent reportable accidents (over 3 day injuries) for the year 1988/89.

Injuries resulting from manual handling	32%
Injuries reported as back injury	53%
Types of injury due to manual handling	63%

(see Figures 1, 2 and 3)

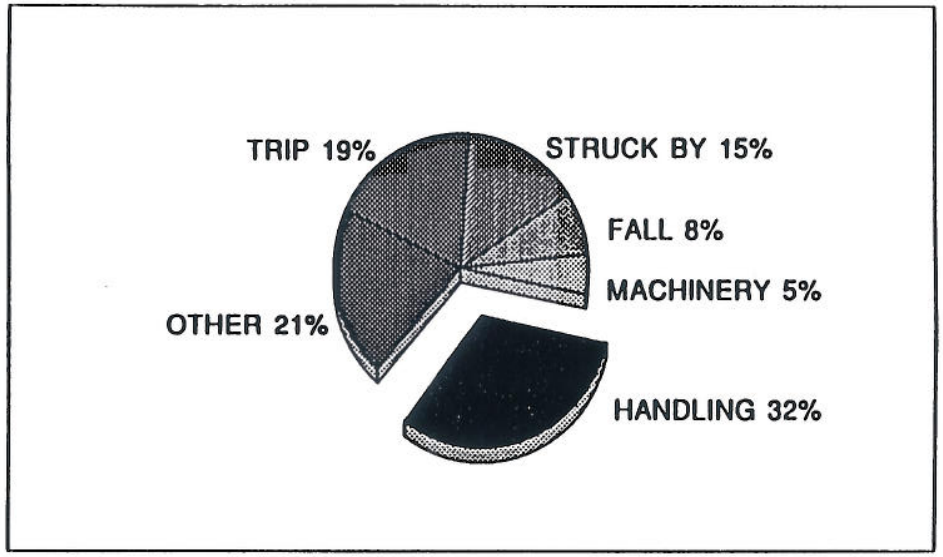

Figure 1 Accidents causing Injury

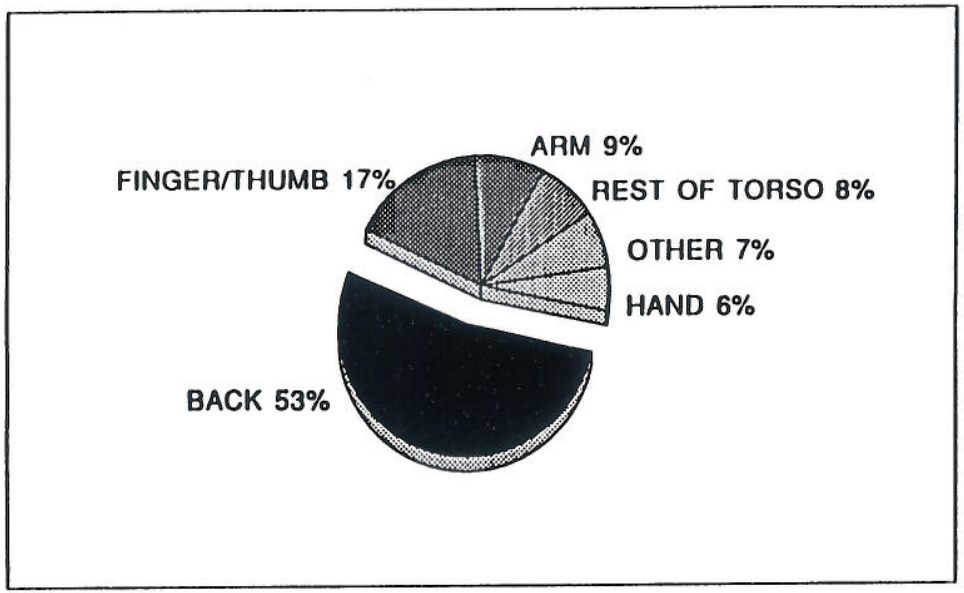

Figure 2 Sites of injury

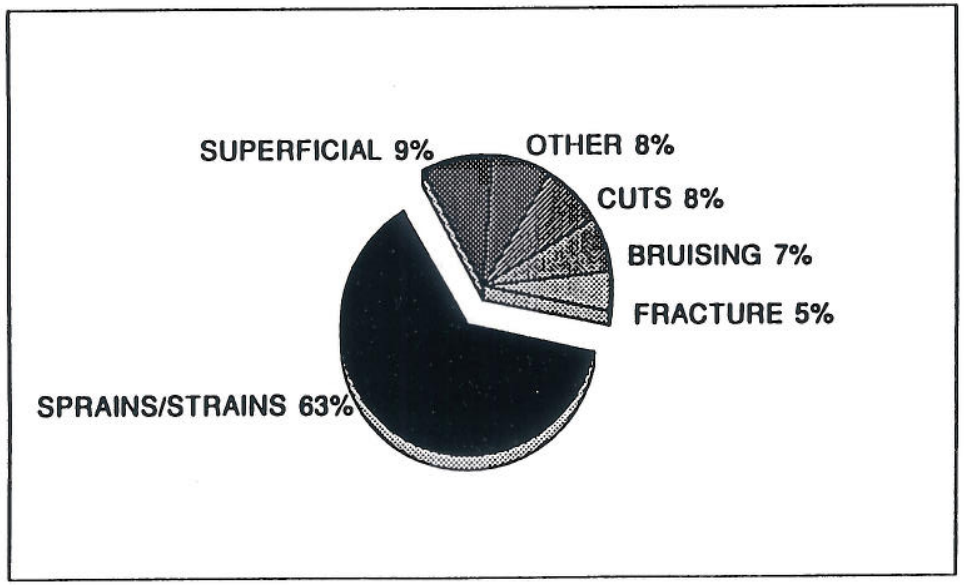

Figure 3 Types of injury

Manual handling injuries are usually associated with the nature of the job rather than the individual's capability to carry out a task. Several factors must be taken into account such as height, weight, physical fitness etc. and most important AGE. Recent investigations have highlighted the two major age groups most vulnerable to back injuries. These are teenagers and employees in the 50 - 60 age group. The latter are most vulnerable because as we get older our physical capacity to carry out lifting tasks decreases.

The Weak Link

The old saying, "a chain will break at its weakest link" can be likened to the human body. When it comes to manual handling, the weakest link in the human body is the back, especially the SPINE.

The function of the spinal column is twofold. It serves as a protective casing for the spinal cord and forms the supporting backbone of the skeleton (see Figure 4).

The spine consists of 24 separate bones called Vertebrae.

The first 7 vertebrae form in general terms the neck region of the spine.

These vertebrae allow for normal head and neck movements.

The next 12 vertebrae each have a rib attached on either side and together form the ribcage or chest region. This area of the spine is the more rigid region of the spinal column.

The lower spine region is formed by 5 large vertebrae and this section is the most vulnerable to injury. These are the vertebrae which take the brunt of the work when bending and lifting.

The base of the spine is made up by 2 sections of fused vertebrae.

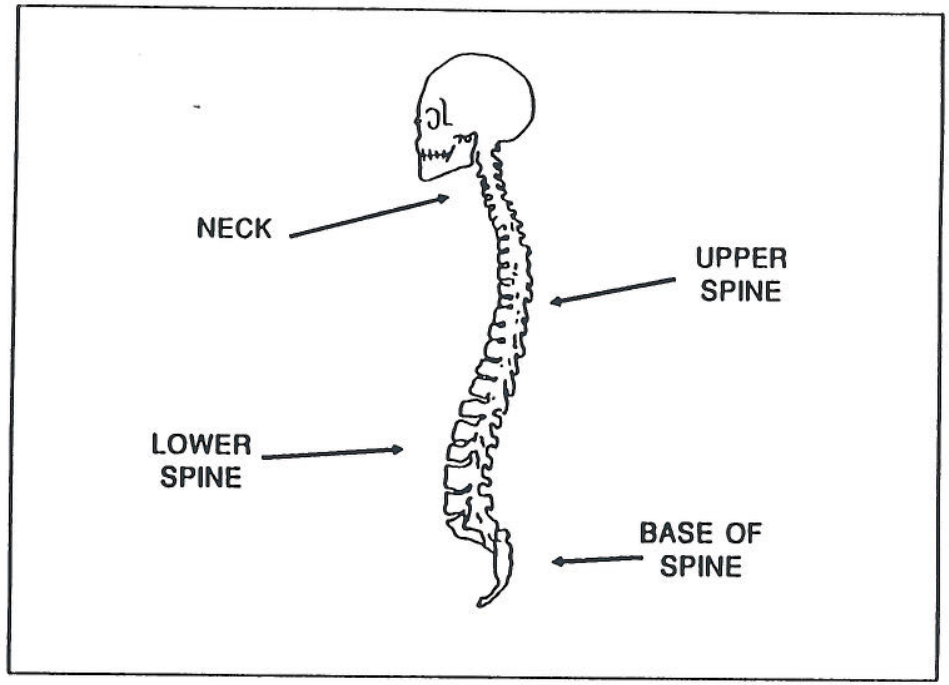

Figure 4 Spine bone structure

The Prime Functions of Discs

(See Figure 5).

Situated between the 24 vertebrae are the discs. Each disc consists of an outer casing of GRISTLE which surrounds a jelly- like central portion. The main function of the discs are to act like shock absorbers and to help form the joints of the spine. Unfortunately, as we get older the chemical make up of the discs alters, thus making them less able to withstand the strains to which they are constantly exposed. The discs in the lower spine are the most susceptible to damage because they are subjected to extremely high pressure when lifting heavy weights.

Probably the most common back injuries are torn or ruptured discs due to bad lifting posture. The vertebrae are held together by tough bands of sinewy tissue, known as LIGAMENTS, and the torn discs usually bulge backwards and may press on sensitive nerves causing pain in the legs etc. This condition is often referred to as a "SLIPPED DISC". (See Figure 6).

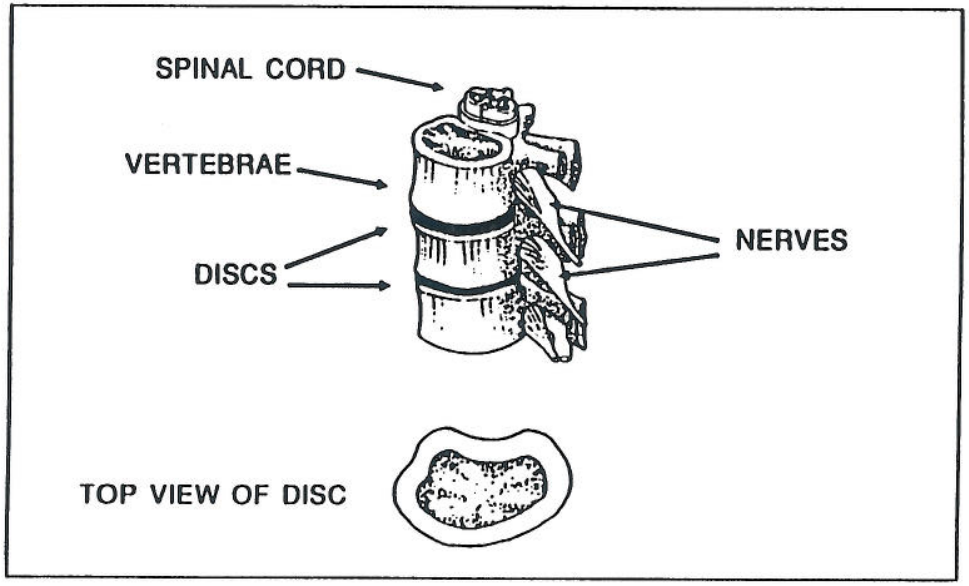

Figure 5

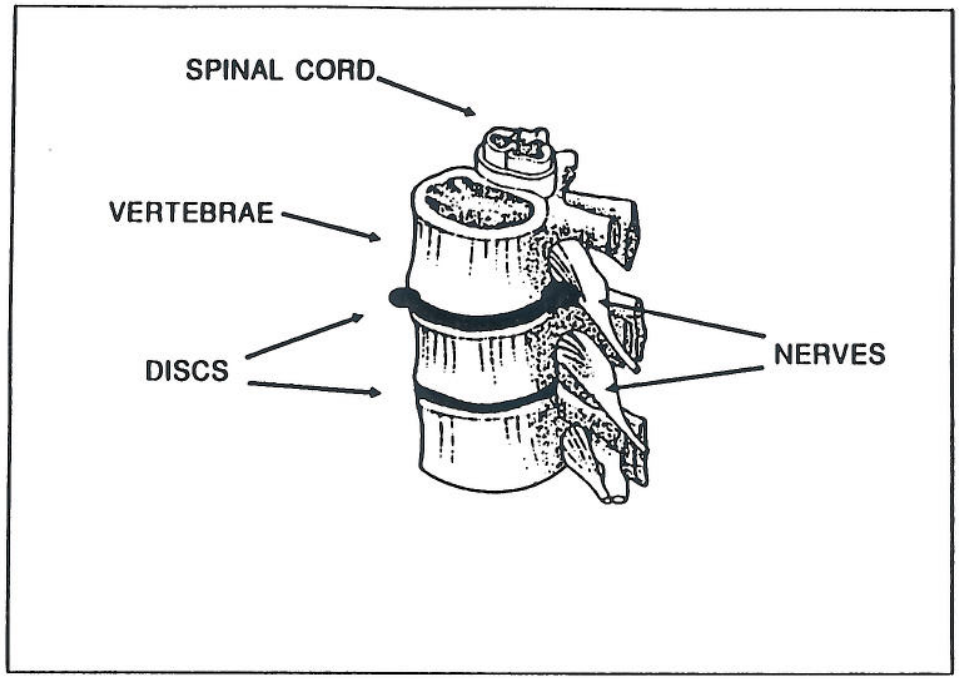

Figure 6 Slipped Disc

Definitions:

Strain	-	The overstretching of a muscle.
Sprain	-	Occurs at a joint. Caused by the wrenching or tearing of the ligaments and tissues associated with the joints of the body.
Cut type injuries	-	Range from a simple graze to deep severe cuts to the body which will require medical treatment.
Fracture	-	The word fracture is simply the medical term for a broken bone.

The largest percentage (63%) of workplace injuries are sprains or strains, commonly brought about by bad manual handling and lifting techniques. Top of the league are back strains caused by bad posture when lifting. Sprains to the back usually occur due to lifting too great a weight, or by twisting movements whilst lifting or carrying. Sprains to the wrist and ankle are common workplace injuries, usually caused by a person stumbling or tripping.

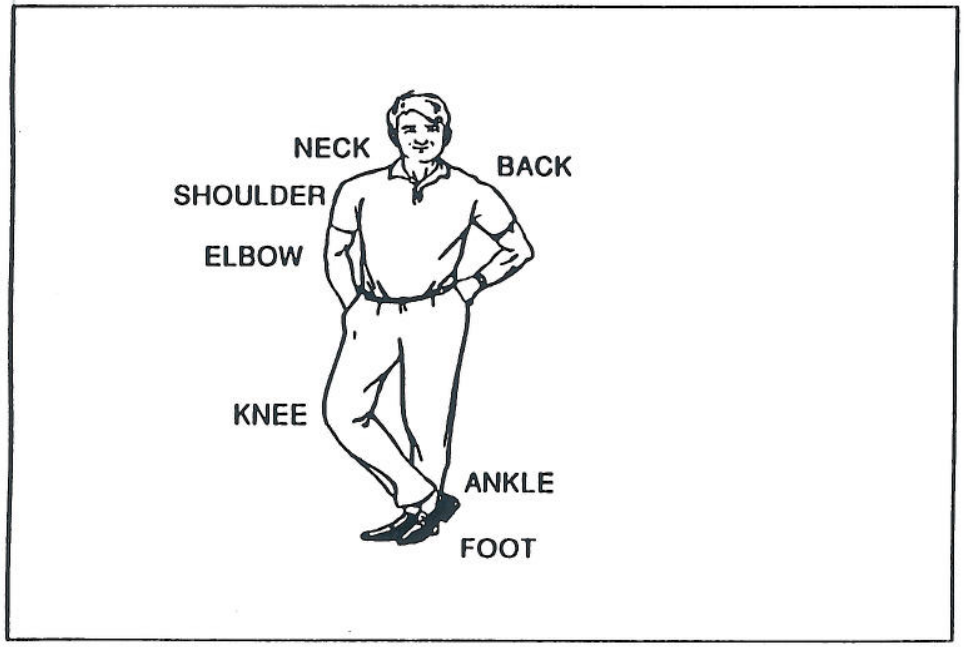

Figure 7 Areas of Injury

Cut injuries to the hand are usually caused by failure to wear protective gloves. A recent survey, carried out by one department of a Local Authority, proved that issuing protective gloves to the workforce, reduced hand injuries by 50%.

Cuts to arms, legs and chest areas can be caused by failure to assess the load properly. For example, damaged crates or boxes and sharp protrusions from packaging are often overlooked. Failure to check whether the load is correctly packaged or even suitable for manual handling are other factors.

Although fractures are bottom of our injury league, there is no such thing as a minor fracture. Even a broken finger causes severe pain and discomfort leading to loss of time from work. A fractured spine can lead to total disability or even prove to be fatal.

Fractures associated with bad manual handling are usually due to direct force eg. a person carrying an over weight load dropping it on their foot, or attempting to carry a load too far resulting in a similar injury. Incorrect hand positioning whilst manual handling can be attributed to fractures of the hand and fingers.

Imagine the following incident. A fit, athletic person not wearing gloves or protective footwear, incorrectly assesses a load. Although the load is lifted correctly, a cut injury is received to the hand, causing a jerking movement which damages the back. The load then drops, hitting a foot and fracturing several toes.

The person is off work for several months and, despite making a good recovery, is unable to pursue previous athletic pursuits due to the now weakened back.

This leads to a weight problem and depression about lack of fitness. Subsequent smoking and drinking to excess causes a heart attack and early death.

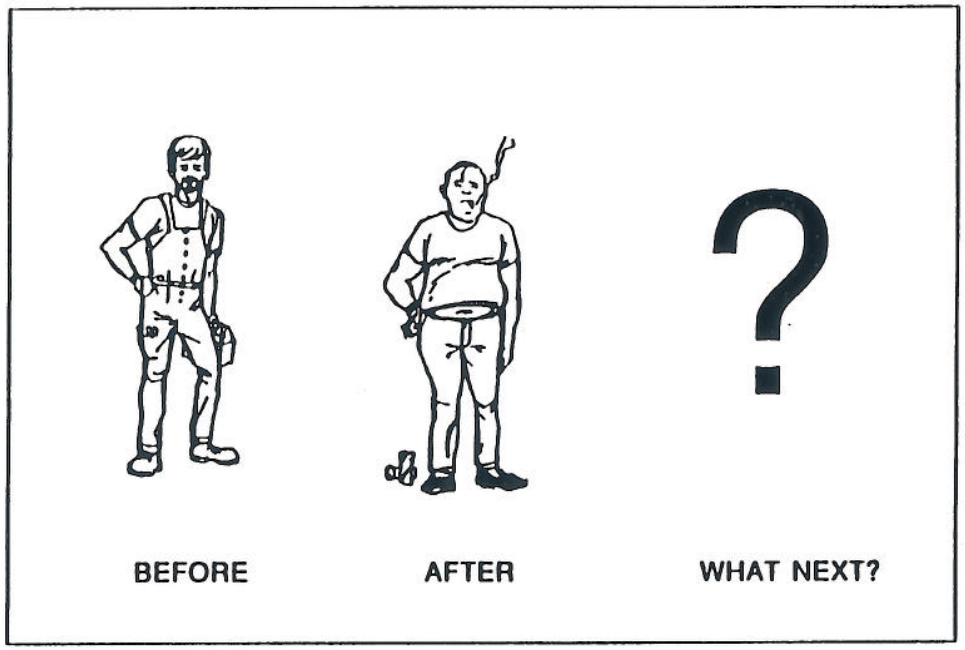

Figure 8 Before and After

BEFORE YOU ACT THINK OF THE CONSEQUENCES!!

Rules and Regulations

Duties of employees

The Council of the European Community published a directive in 1990 requiring all member states, including the U.K., to issue regulations on the minimum Health and Safety requirements for the handling of loads. The body responsible for the regulations in this country is the Health and Safety Executive.

The Health and Safety at Work Act 1974, states that:

"It shall be the duty of every employee whilst at work -

(a) To take reasonable care for the health and safety of himself and of other persons who may be affected by his acts or omissions at work; and

(b) as regards any duty or requirement imposed on his employer or any other person by or under any of the relevant statutory provisions, to co-operate with him so far as is necessary to enable that duty or requirement to be performed or complied with".

In broad terms this means that, whilst at your place of work, you are under a legal obligation to conduct yourself in a manner that does not lead to injury or danger to yourself, or any of your colleagues or members of the public. You also have a legal responsibility to comply with instructions given by your employer to you, regarding safe place of work and training etc.

Regulation 5 of the Manual Handling Operations Regulations supplement these general duties by stating:

"Each employee shall -

(a) make full and proper use of any equipment or system of work provided to him by his employer in compliance with regulation 4(b)(ii) of these regulations; and

(b) inform his employer about any physical condition suffered by him which might reasonably be considered to affect his ability to undertake manual handling operations safely".

This regulation applies directly to manual handling operations. You should co-operate with your employer in the making of assessments, observing safe systems of work, the safe use of equipment and reporting of defects and participating in safety training (the reason for this course). Regulation 5 also places a responsibility on the individual to inform their employers through the appropriate channels, of any medical condition, including pregnancy, which may affect their ability to safely handle loads.

Interpretation of terms used in Manual Handling Operations Regulations

Most legal regulations contain an interpretation section which explains in detail the meaning of words used in that particular Regulation. This is to help the legal profession fight or defend any legal action arising from that regulation. Definitions can also clarify to employers and employees exactly what is required of them, in order to comply with the relevant sections of a regulation.

We shall now look at three words or terms used in Manual Handling Operations Regulations.

1. Injury:

The word injury can be interpreted as physical damage to any part of the body caused by a load due to its weight; shape or size; or its external state. The latter includes slipperiness, sharp edges, roughness and extremes of temperature. However, if you are injured by the nature of the load's contents eg. if you are burnt due to a chemical leaking from a drum, this is not classed as an injury under Manual Handling Operations regulations. This type of situation is dealt with under a different set of regulations.

2. Load:

Load is defined as an individual movable object including humans and animals. Everyday objects which we take for granted become loads - tool boxes, document cases, typewriters - the list is endless. Within the terms of the Regulations any movable object which has to be lifted, carried or supported by human effort is regarded as a LOAD. Tools, implements and machinery used for lifting or carrying are not considered to be loads. For example; when moving ballast with the aid of a shovel, only the ballast on the shovel constitutes the load, however, several shovels tied together for transporting, becomes a LOAD.

3. Manual Handling Operations:

This, by definition, is the manual handling of a load by human effort. This includes transporting or supporting a load, the throwing of a load and the passing of a load from one person to another. The use of mechanical aids such as sack trucks or trolleys may greatly reduce the handling effort, but manual handling is still required to move, steady or support the load. The application of human effort for a purpose other than transporting or supporting a load is not classed as a Manual Handling Operation. For example; operating the control wheel on a ballast hopper or the pulling of a lever do not constitute a manual handling operation; nor does the action of pulling on a rope when lashing down a cargo.

Package Symbols and Metric Weights

Packaging symbols fall broadly into TWO categories; those concerned with the precautions to be taken when handling and storing packages and those which relate to the hazardous properties of the contents of a package. The symbols are covered in detail under a separate set of Safety Regulations (C.O.S.H.H.). However, we shall take a look at some safety risk symbols and warning diamonds that may well influence your decision to knowingly handle loads and packages.

IF IN DOUBT

FIND OUT

ASK YOUR SUPERVISOR

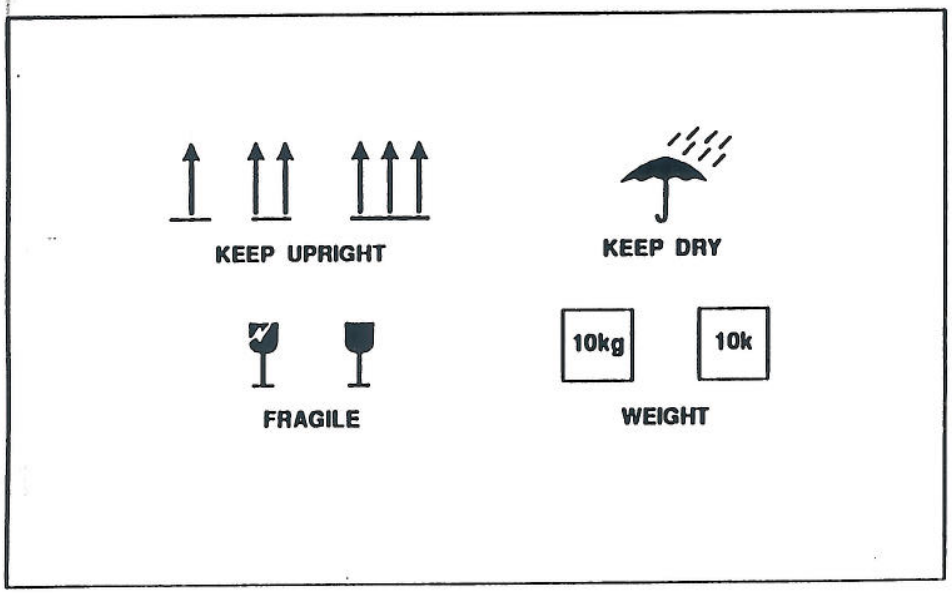

Figure 9 Package symbols

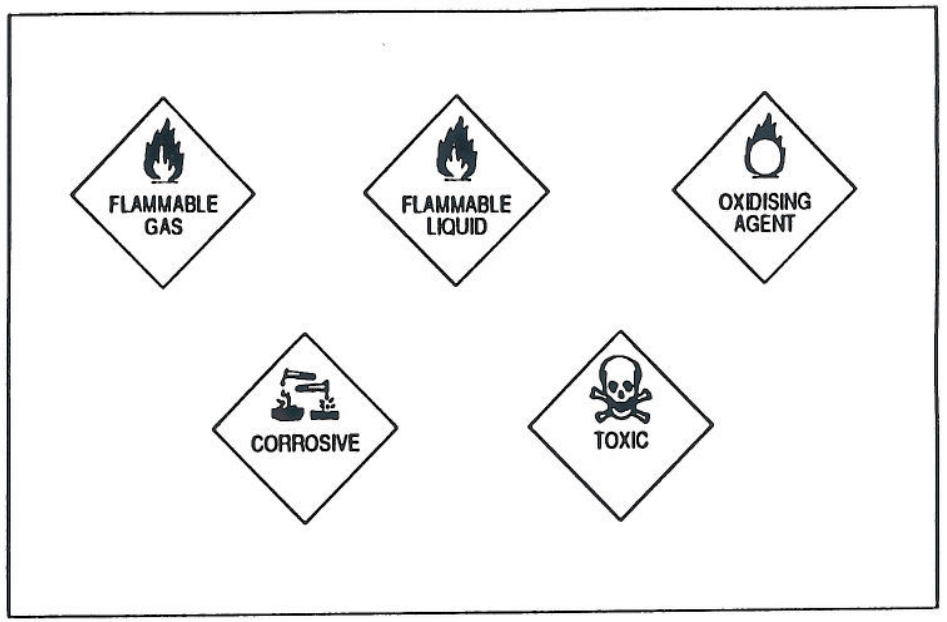

Figure 10 Warning Symbols

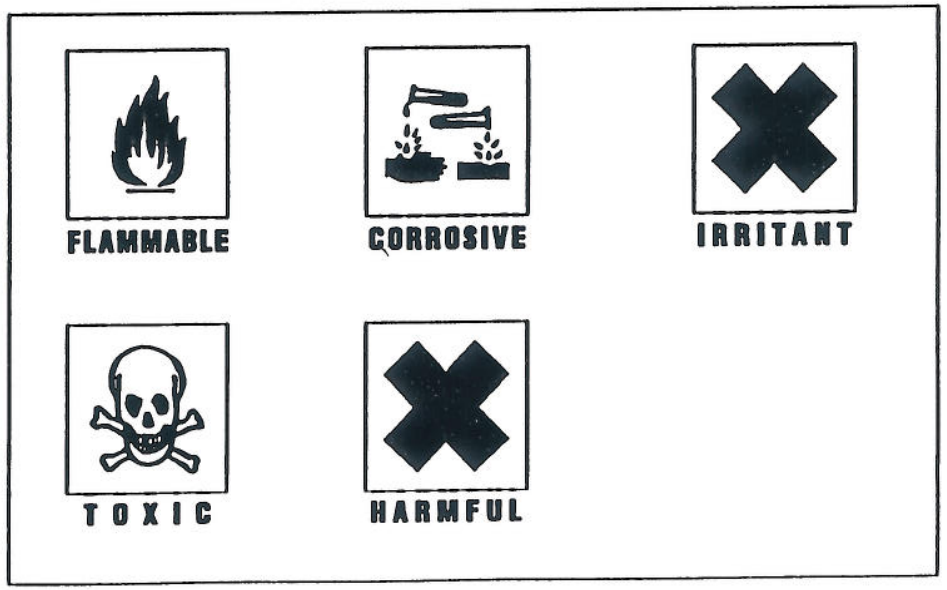

Figure 11 Hazard symbols

All loads and packages are now weighed in metric as Kilograms expressed as Kg or K. One Kilogram is approximately 2 pounds in weight. The following conversion table gives both the equivalent and approximate (in brackets) weights:

Kgm	Pounds	Approx.	Kgm	Pounds	Approx.
1	2.2	(2)	12	26.5	(24)
2	4.4	(4)	13	28.7	(26)
3	6.6	(6)	14	30.9	(28)
4	8.8	(8)	15	33.1	(30)
5	11.0	(10)	16	35.3	(32)
6	13.2	(12)	17	37.5	(34)
7	15.4	(14)	18	39.7	(36)
8	17.6	(16)	19	41.9	(38)
9	19.8	(18)	20	44.1	(40)
10	22.0	(20)	30	66.1	(60)
11	24.3	(22)	40	88.2	(80)
			50	110.2	(100)

As you can see, as the weight increases the approximate value decreases. It is recommended therefore that approximate weights are used only up to 10Kgs.

The factors dependent on whether to manually handle a load are explained later. We are only concerned with weight at this present time. The Manual Handling Operations Regulations state various guidelines on whether to manually handle a load or not. NO specific maximum weights are recommended in these guidelines for obvious reasons - personal capabilities etc.

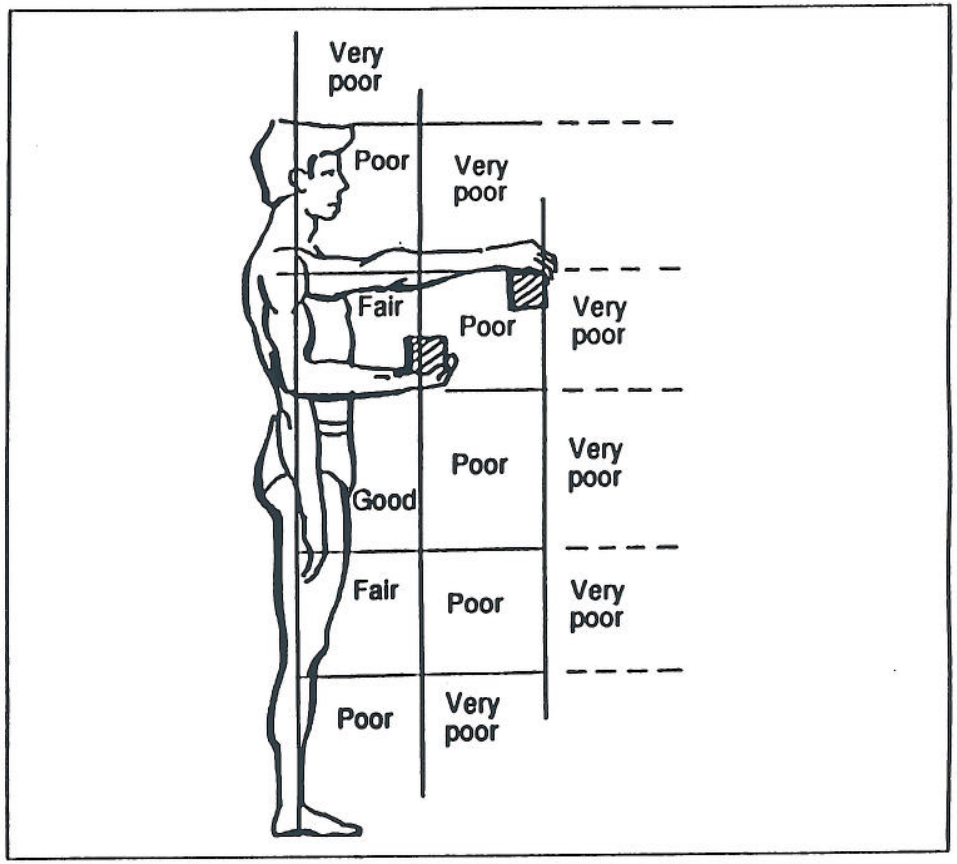

Figure 12 The Working Area

The diagram takes into account not only the weight of the load, but also its vertical and horizontal position during handling and the correct posture and lifting procedures to be adopted.

Correct Manual Handling

One of the most important factors to be taken into account when lifting is the correct posture.

a) The handler should be standing or crouching in a stable body position, with the back substantially upright.

b) The trunk is not twisted during the operation.

c) Both hands are used to grasp the load.

d) The hands are not more than shoulder width apart.

e) The load is positioned centrally in front of the body and is itself reasonably balanced.

f) The load is stable and readily grasped.

If all the factors are correctly carried out the degree of tension required to lift the load is distributed evenly throughout the back muscles. However, if a bad M.H.O. technique is used the tension on the lower back muscles is approximately 10 times greater than the load to be lifted.

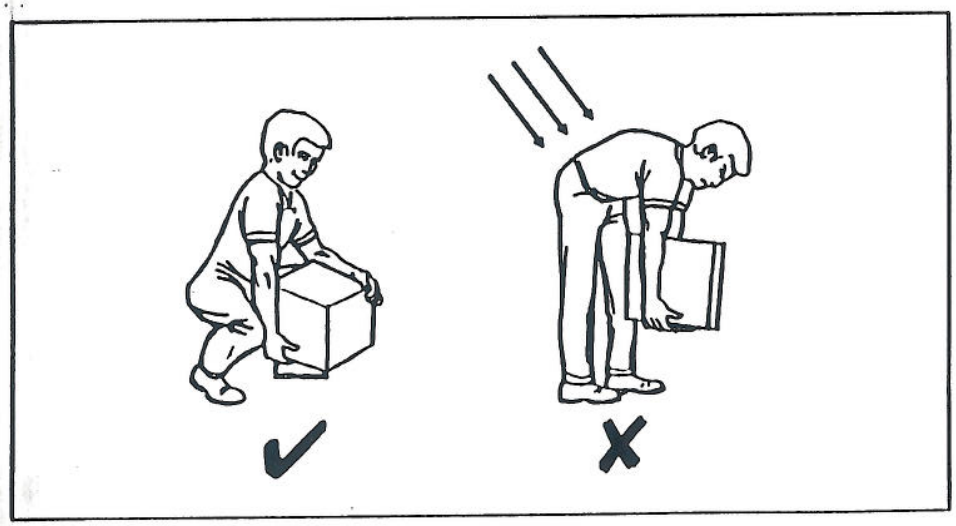

Figure 13 Good and Bad "mho" technique.

Factors to be considered for assessing Manual Handling Operations

Several factors have to be taken into account when deciding to manually handle a load. These cover the TASK, LOAD, WORKING ENVIRONMENT and INDIVIDUAL CAPABILITY, and must all be assessed before tackling the job in hand. This is known as the ergonomic approach.

The task:

a) Is the load held at a distance from the body?

b) Will the correct posture be adopted during the lifting handling operation?

c) Does the task involve twisting the trunk?

d) Does the task involve stooping?

e) Is there excessive movement of the back ie. repetitive lifting or carrying?

f) Does the load involve excessive pushing or pulling?

g) Is there a risk of sudden movement of the load?

h) Does the task involve frequent or prolonged physical effort?

i) Does the task involve insufficient rest or recovery periods?

The load:

Is it -

a) Heavy?

b) Bulky or unwieldy?

c) Difficult to grasp?

d) Unstable, with the contents likely to shift?

e) Sharp, hot or otherwise potentially dangerous?

The Working Environment:

Are there -

a) Space constraints preventing good posture?

b) Uneven, slippery or unsuitable floors?

c) Variations in level of floors or work surfaces?

d) Extremes of humidity, temperature or air movement?

e) Poor lighting conditions?

Individual Capability:

Does the job -

a) Require unusual strength, height etc.?

b) Create a hazard to those who are pregnant, or have a health problem?

c) Require special knowledge or training for its performance?

Taking all these factors into account it must now be decided whether to manually handle the load. If the answer is YES, one must consider if they are dressed for the occasion. If you are going to a wedding you would normally "dress up" for the occasion, likewise you SHOULD dress appropriately for any given manual handling operation, in other words wear PERSONAL PROTECTIVE EQUIPMENT.

Personal Protective Equipment or clothing includes hard hats, overalls, industrial gloves and steel toed boots or shoes. All should be well fitting, well maintained and restrict movement as little as possible. Any defective or worn out items should be replaced through the appropriate channels.

Hard Hats:

These prevent head injuries and can mean the difference between a headache and a fractured skull if worn correctly. The head harness should be adjusted comfortably for the individual's head. Any hard hat that is dropped or receives a heavy blow should be reported and exchanged for a new one.

Overalls:

Overalls worn correctly protect the body from cuts and bruises and distribute the weight of a load across the body. They should be well fitting and any fasteners, pockets or other features which could snag during manual handling operations should be concealed or removed if possible. This includes metal badges, name tags or sharp objects in upper pockets etc.

Industrial Gloves:

These protect the hands and fingers from a variety of injuries, such as cuts and bruises, splinters and burns. In most cases gloves improve the grip when lifting and carrying. If however, the type of glove used increases the risk during a handling operation, then the appropriate gloves should be worn for that particular operation where practical.

Gloves should be inspected frequently for damage; torn or ripped gloves are a potential danger and should be replaced. Whilst worn gloves reduce their protective qualities, gloves which are contaminated with oil and grease or any other "slippery substance", should not be used. Ideally gloves should be close fitting and restrict hand and finger movement to a minimum.

Safety Shoes:

Those with steel toe caps afford the best protection against foot and toe injuries, whereas safety boots give added protection and support to the ankles.

Consideration must be given as to the correct size of footwear. Boot or shoes which are too tight are obviously uncomfortable, may cause blistering of the feet and over a period of time result in deformity to the feet. Loose fitting boots or shoes again may lead to blistering due to friction. However, the inherent dangers are injuries caused by slipping, tripping or falling due to the footwear being loose fitting so reducing the stability to the wearer. Safety boots or shoes should be inspected frequently for damage, or signs of wear, and particular attention should be given to the state of the soles and heels. Footwear should be repaired or replaced before they themselves become a hazard to the wearer.

REMEMBER:

1. **WELL MAINTAINED PROTECTIVE CLOTHING, WORN CORRECTLY, REDUCES THE RISK OF AN ACCIDENT.**

2. **WELL MAINTAINED PROTECTIVE CLOTHING, WORN CORRECTLY, REDUCES THE SEVERITY OF THE INJURY IN THE EVENT OF AN ACCIDENT.**

Notes