



## Reducing injuries caused by sack handling in the food and drink industries

### Food Information Sheet No 31

#### Introduction

Manual handling of sacks is carried out extensively in the food and drink industries and is one of the main causes of musculoskeletal injury.

It is estimated that two-thirds of food and drink companies have at least some employees carrying out sack handling as a regular part of their daily tasks.

There are many operations where sack handling can be required, for example unloading shipping containers, stacking within warehouses, transporting within factories, tipping into hoppers and sieves and offloading from production lines.

Sacks can contain a wide variety of food substances, eg cocoa and coffee beans, tea, sugar, flour, malt, vegetables, fruit, nuts, powder etc. Traditionally, sack weights up to 50 kg and over have been used, although sack weights are now generally decreasing to 25 kg or below.

All sack handling operations are required to have a risk assessment carried out and action taken on the findings of the assessment to reduce any risk. This guidance will help with such an assessment and also offer practical advice on how to reduce manual handling injuries in food factories; it is not intended to cover agricultural applications.

#### Manual handling injuries

Manual handling and lifting causes 30% of all acute injuries in the food and drink industries; 60% of these injuries involve lifting heavy objects such as sacks. Chronic ill health, such as back and upper limb disorders, may also develop with time; these are known as musculoskeletal disorders. Both acute and chronic injuries can have long-term effects.

Stacking and destacking of sacks, boxes and crates is one of the top five causes of manual handling and musculoskeletal injuries in the food and drink industries. It accounts for 53% of handling injuries. Studies have shown that 75% of manual handling injuries are preventable.

#### Risk assessment

The Manual Handling Operations Regulations 1992<sup>1</sup> require risks from manual handling to be eliminated so far as is reasonably practicable or, where this is not possible, they should be minimised. To minimise the risk

it is first necessary to carry out a risk assessment. Useful guidance on this is available in the HSE leaflet *Five steps to risk assessment*.<sup>2</sup>

Factors that need to be taken into account in the risk assessment include:

- weight of sacks;
- size and shape of sacks (affecting balance of load and ease of grip);
- sack construction material, eg hessian, paper, polythene etc (affecting grip and stability);
- nature of load in sack (eg loose or solid);
- frequency of lifting (eg even with 25 kg sacks, more than 3 lifts per minute increases the risk of injury);
- distance and duration sacks are carried;
- whether frequency/duration of lifting is determined by the worker or by machine feed etc;
- the physical capability of persons lifting/carrying sacks, eg sex, size, age, pregnancy, previous injury;
- frequency and duration of rest breaks and whether these are determined by the worker;
- height from which sacks are picked up and put down;
- sufficient workspace to move freely and change posture, eg inside shipping containers;
- evenness of floor and any slip/trip risks;
- workplace temperature and lighting;
- restrictions in movement caused by any personal protective equipment worn.

Specific higher risk tasks include:

- stacking or emptying sacks into hoppers etc at or above shoulder height (unless the sack is carried on the shoulders);
- carrying sacks excessive distances;
- carrying sacks up or down steps;

- picking up sacks from floor level;
- twisting or stooping while lifting/carrying sacks, eg where space is restricted;
- unloading top rows of sacks in shipping containers while standing on a stack of pallets.

Consult effectively with trade union safety representatives or other employee representatives. Apart from being a legal requirement and a useful input to discussions, this will assist in workers having some ownership of the eventual solutions, which are then more likely to succeed.

Once the assessment has been carried out and actions to reduce the risk of manual handling injuries determined, these should be carried out as soon as possible.

### **Hierarchy of control measures - preventing injuries**

Details of case studies involving the practical implementation of examples covered in the following paragraphs are given in HSE booklet *Moving food and drink: Manual handling solutions for the food and drink industries*.<sup>3</sup>

#### **Eliminate sacks**

Consider replacing sacks with bulk storage arrangements such as metal silos or 1- or 2-tonne FIBCs (flexible intermediate bulk containers). Both eliminate manual handling.

FIBCs are large polypropylene bags that can be raised into position by mechanical means (eg by fork-lift truck). FIBCs are available with a variety of fill and discharge methods, including discharge spouts for hoppers that practically eliminate spillage and dust.

It may be possible to receive some ingredients in liquid form, such as sugar, particularly in processes where the ingredients are mixed with other liquids.

#### **Full mechanical handling**

Full mechanical handling of sacks should be used where this is reasonably practicable, for example using vacuum bag-lifting devices, conveyors and computerised vacuum lift-assisted palletisers. The provision of full mechanical handling should be especially considered where large numbers of sacks are handled or with higher sack weights.

#### **Partial mechanical handling**

Where full mechanical handling is not reasonably practicable, consider installing or using mechanical devices that assist manual handling. Such devices include scissor lifts with rotating tables to raise or

position the sacks at work height, platforms adjacent to hoppers to rest sacks on, trolleys/barrows etc. Bag splitters that automatically cut open sacks and can tip their contents into a hopper are also useful.

#### **Manual handling of sacks**

Where elimination of sacks or mechanical sack handling is not possible and sacks must be handled manually, ensure:

- sack weights are as low as reasonably practicable (ideally 25 kg or less) and no more than 32 kg unless two-person lifting is used;
- that only one sack is carried at once;
- sacks can be easily handled (eg sack material not slippery);
- the frequency and duration of sack lifting is within the control of the worker;
- job rotation is used where possible to minimise the time any one person spends sack handling;
- adequate rest periods are provided;
- sacks are handled at a comfortable working height (between waist and thigh if possible, unless carried on the shoulder) and not picked up or put down on the floor;
- sacks are not stacked above shoulder height;
- sacks are not carried excessive distances or up/down stairs;
- there is adequate space to manoeuvre in the work area;
- lifting is not carried out while standing on loose pallets etc;
- training is given in correct lifting techniques and the dangers of not lifting correctly;
- supervision is sufficient to ensure manual handling risks are minimised.

#### **Manual handling of sacks - sack weight, frequency of lifting and supply chain issues**

##### **Sack weight**

Traditionally sack weights up to 50 kg and more (ie up to 80 kg) have been used in the food industry, although sack weights are now decreasing.

As a guideline, a safe weight most people can lift is 25 kg or lower, when held close to the trunk, although a risk

assessment is still required for these loads. The norm is now 25 kg sacks for many ingredient suppliers.

If the sack is heavier than 25 kg, or held away from the trunk, the risk assessment needs to be more detailed. A commonly used 32 kg weight of sack can be handled with proper training under ideal conditions by a normal, fit, healthy adult male without aid. But the risk assessment needs to make sure there are no adverse factors (excessive frequency of lift, awkward access, stairs etc).

Sacks over 32 kg should generally only be used if mechanical aids are available, or there are two people for a combined lift.

### **Reduced sack weights versus increased frequency of lifting**

In general, it is better to reduce sack weights even if this means a greater number of lifts. For example, it is better to lift 100 x 25 kg sacks than 50 x 50 kg ones. But the frequency of lift should not be increased too far as the benefits are diminished by fatigue - general or localised (eg shoulders). Rest breaks should be allowed where needed. When unit loads are decreased it is important not to stack above shoulder height or to carry two sacks or the benefit is lost.

### **Supply chain**

A 'cradle to grave' approach will help control manual handling risks throughout the supply chain, which might include supplying raw materials, production, distribution and delivery. If suppliers and users can agree on how a product is supplied, handled and distributed, they can use purpose-made handling solutions at each stage. Each organisation in the chain has a legal duty to co-operate with the others.

Many user companies have successfully put pressure on suppliers to reduce sack weights from 50 kg to 25 kg. Some companies have specific policies in place to ensure they do not receive sacks weighing over 25 kg.

### **Unloading/loading shipping containers**

Handling sacks into and particularly out of shipping containers can present particular difficulties. These difficulties arise due to settlement of sacks in transit and the confined working space, which also makes mechanical aids more difficult to employ. If shipping containers are coming from abroad, it may be difficult to control the sack weight loaded.

One method of unloading containers is by use of a tipper lorry, which lifts the container to an angle so that the load is tipped out. Alternatively, a load lifter can be used for the same purpose and can, for example, tip sacks directly onto a conveyor.

Where manual unloading has to be employed, the risk assessment needs to be particularly detailed. One method of initial unloading, once the container doors are safely open, is to use a specially constructed elevated work platform (fitted with hand rails and access steps) placed in position behind the container, eg by using a fork-lift truck. This allows workers to unload the first few rows safely.

If sack weights are high, manual unloading should involve pairs of workers sharing the loads. A waist-high belt conveyor extending into the container can be used to transfer sacks out of the container onto, for example, an automatic palletiser or to a vacuum sack lifter. If a conveyor cannot be used, sacks should be loaded waist-high onto a pallet held by a fork-lift truck inside the rear of the container.

Loading sacks into shipping containers is less common in this country. One method is to use a vacuum lifter to load sacks onto a conveyor that runs into the container at shoulder height. Workers can then carry the sacks from the conveyor on their shoulders to the stacking position.

### **Legal requirements**

The Manual Handling Operations Regulations 1992<sup>1</sup> contain the main legal requirements relating to manual handling. Manual handling includes lifting, putting down, pushing, pulling, carrying or moving by hand or bodily force.

The Regulations require employers, so far as is reasonably practicable, to avoid the need for employees to undertake manual handling operations which involve the risk of injury.

If manual handling cannot be avoided, a risk assessment should be carried out and appropriate steps taken to reduce any risk from manual handling injuries to the lowest level reasonably practicable. Risk assessments have to be reviewed if the circumstances change.

Employees have a duty to make full and proper use of any safe system of work provided by their employer.

### **References**

- 1 *Manual handling. Manual Handling Operations Regulations 1992. Guidance on the Regulations L23* (Second edition) HSE Books 1998 ISBN 0 7176 2415 3
- 2 *Five steps to risk assessment* INDG163(rev1) HSE Books 1998 (single copy free or priced packs of 10 ISBN 0 7176 1565 0)
- 3 *Moving food and drink: Manual handling solutions in the food and drink industries* HSG196 HSE Books 2000 ISBN 0 7176 1731 9

## Further reading

*Injuries and ill health caused by handling in the food and drink industries* Food Information Sheet 23 HSE Books 2000

*Getting to grips with manual handling: A short guide for employers* Leaflet INDG143(rev1) HSE Books 2000 (single copy free or priced packs of 15 ISBN 0 7176 1754 8)

*A recipe for safety: Health and safety in the food industry* TOP05(rev1) HSE Books 1999 (single copy free or priced packs of 5 ISBN 0 7176 2432 3)

While every effort has been made to ensure the accuracy of the references listed in this publication, their future availability cannot be guaranteed.

## Further information

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