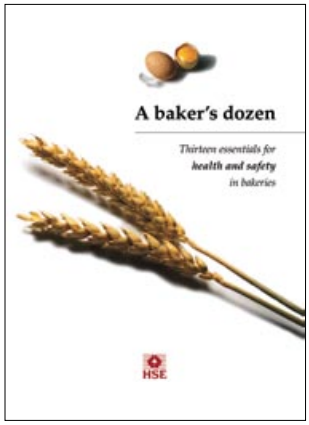
A Baker's dozen

Thirteen essentials for health and safety in bakeries



This is a free-to-download, web-friendly version of HSG233 (First edition, published 2003). This version has been adapted for online use from HSE's current printed version.

You can buy the book at www.hsebooks.co.uk and most good bookshops.

ISBN 978 0 7176 2616 8
Price £13.50

This comprehensive guide should help you reduce the risk of injuries and occupational ill health in your bakery. Packed with authoritative advice, it includes sections on bakery dust, manual handling, slips and trips, workplace transport, falls from height, machinery, noise and electrical safety.

First published 2003
Reprinted 2011

ISBN 978 0 7176 2616 8

This guidance is issued by the Health and Safety Executive. Following the guidance is not compulsory and you are free to take other action. But if you do follow the guidance you will normally be doing enough to comply with the law. Health and safety inspectors seek to secure compliance with the law and may refer to this guidance as illustrating good practice.

Contents

Introduction

About this book

1 This book is for people who have management, supervisory or other health and safety interests in bakeries. It is intended as an aid to health and safety management, in order to reduce the numbers of injuries and cases of occupational ill health. The information will be of use in:

- plant bakeries;
- craft bakeries;
- semi-automated craft bakeries;
- in-store bakeries;
- pizza manufacture;
- pastry manufacture;
- biscuit manufacture.

Figure 1 Operating a mixer in a craft bakery

2 Although most of the information in the book will apply to the processes in a range of premises, non-plant bakers may discover parts less relevant to them (eg transport), whereas plant bakeries may find they will require additional sources of information (eg on machinery/plant). However, most of the chapters will be of interest to bakeries of all sizes.

3 Approximately 95 000 people work in the UK baking industry. There are about 4500 small craft bakeries, each employing typically between 5 and 25 people, in addition to specialist pizza and pastry producers. At the other end of the scale there are about 150 large plant bakeries, each employing more than 100 workers. In between there is a range of medium-sized bakeries, about 350 in total, each employing 25-100 people.

4 This book has been written by the Health and Safety Executive (HSE), in liaison with the Health and Safety in Bakeries Liaison Committee (HSBLC), to highlight the main causes of injury and occupational ill health in bakeries. The HSBLC is a joint committee that identifies priorities and produces guidance for the bakery industry. It is represented by the following organisations:

- Federation of Bakers;
- National Association of Master Bakers;
- Scottish Association of Master Bakers;
- Association of Bakery Ingredients Manufacturers;
- Biscuit, Cake, Chocolate and Confectionery Alliance;
- Processing and Packaging Machinery Association;
- Bakers, Food and Allied Workers' Union;
- United Road Transport Union;
- Health and Safety Executive.

Figure 2 Bread rolls exiting a tunnel oven

Revitalising Health and Safety

5 In June 2000 the Health and Safety Commission (HSC) and the Department of Environment, Transport and Regions (DETR) launched a strategy statement on 'Revitalising Health and Safety'.

6 The statement set challenges for industry, to reduce by the year 2010:

- working days lost from work-related injuries and ill health by 30%;
- the incidence rate of fatal and major injury accidents by 10%;
- the incidence rate of cases of work-related ill health by 20%.

7 The Food and Drink Federation, the main food industry trade unions and HSE have jointly agreed a 'common strategy' to help the food industry achieve these challenging injury reduction and occupational ill-health targets. One of the agreed actions under the strategy is that food industry health and safety liaison groups will assist the industry by publishing health and safety guidance specific to the risks in their industry. The HSBLC and HSE have produced this book to fulfil that commitment.

Bakery industry priorities

8 In addition to the numerical targets stated in paragraph 6, HSC/HSE have identified certain priority topics requiring special attention. They are all covered in different chapters in this book and include:

- manual handling/musculoskeletal disorders;
- slips and trips;
- occupational asthma;
- workplace transport;
- falls from height;
- noise.

9 In addition to the priority topics, this book also contains useful guidance on other hazards found in bakeries, such as bakery machinery, confined spaces, fire and explosion, electrical safety and risks in cleaning. It also provides information on dealing with accidents and emergencies and has a useful 'Further reading' section.

10 HSE and Local Authority Inspectors will support the 'Revitalising Health and Safety' initiative and the 'common strategy' through the promotion of this book. In particular, the priority topics that cause most accidents and ill health in bakeries will be targeted.

Figure 3 Checking product in a large craft bakery

The challenge

11 The HSBLC and HSE are seeking, through this book, to encourage all those who run, or work in, bakeries to take up or continue with the 'Revitalising Health and Safety' challenge. If you run a bakery you can reduce your health and safety risks, and your costs, by concentrating health and safety efforts on the main causes of injury and occupational ill health in your premises. Once you have confirmed the main causes, which will probably be contained in this book, the guidance will help you to identify what action you need to take to reduce injuries and ill health.

12 Success is more readily achieved by ensuring the full involvement of the workforce and trade union/employee safety representatives in identifying both the problems and the practical solutions.

Figure 4 Removing loaves from an oven

13 Everyone should be involved in 'Revitalising Health and Safety' - this book can help you to meet the challenge.

Managing the priorities

The bakery industry injury rate

14 The bakery industry reported 1750 injuries during the period between April 2000 and March 2001. The overall reportable injury incidence rate (ie the number of injuries per 100 000 employees) for the bakery industry during this period was 2166, slightly below the food/drink industry average of 2270. Although the bakery industry rate compares favourably with some other food industries, it is more than twice that of biscuit manufacturing and significantly more than the average injury incidence rate for all manufacturing industries at 1194.

15 However, the bakery injury rate has fallen significantly (by 40%) over the past decade as many bakeries have concentrated on tackling the main causes of injuries. There is no reason why the injury rate should not continue to fall so long as these causes continue to receive priority attention.

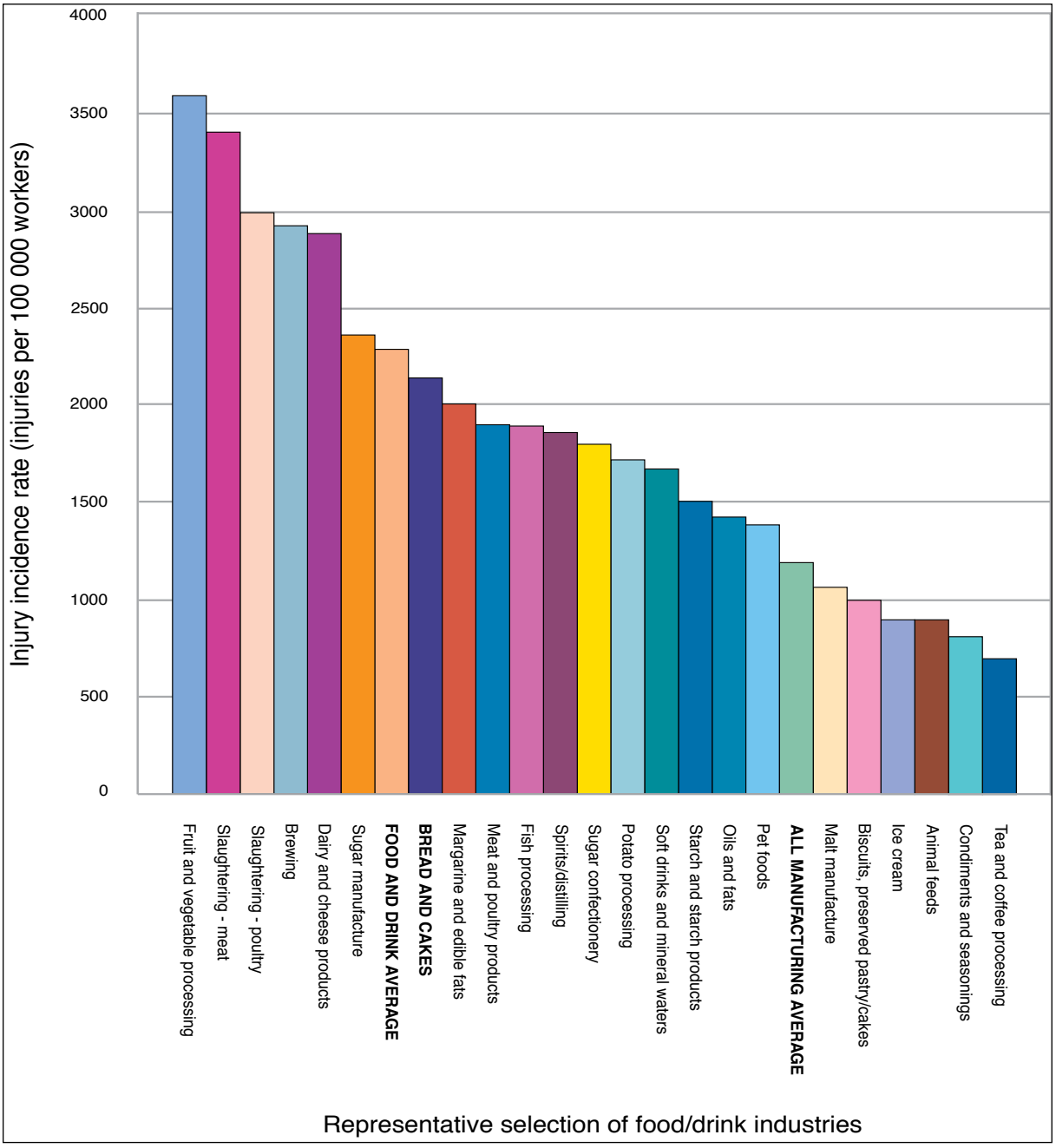


Figure 5 Bar chart showing injury rate in the bakery industry compared with other food/drink industries (2000/01)

The main causes of injuries and ill health in bakeries

Major injuries

16 The highest proportion of major injuries (broken bones, injuries requiring hospitalisation etc) are caused by workers slipping or tripping. In the past a slip or trip accident may not have been viewed as seriously as a machinery accident, for example. It is now clear from the pattern of 'major injuries' that workers who slip or trip are sustaining serious injuries resulting from the fall or impact with sharp objects or structures. Falls from height and machinery accidents also cause major injuries in bakeries.

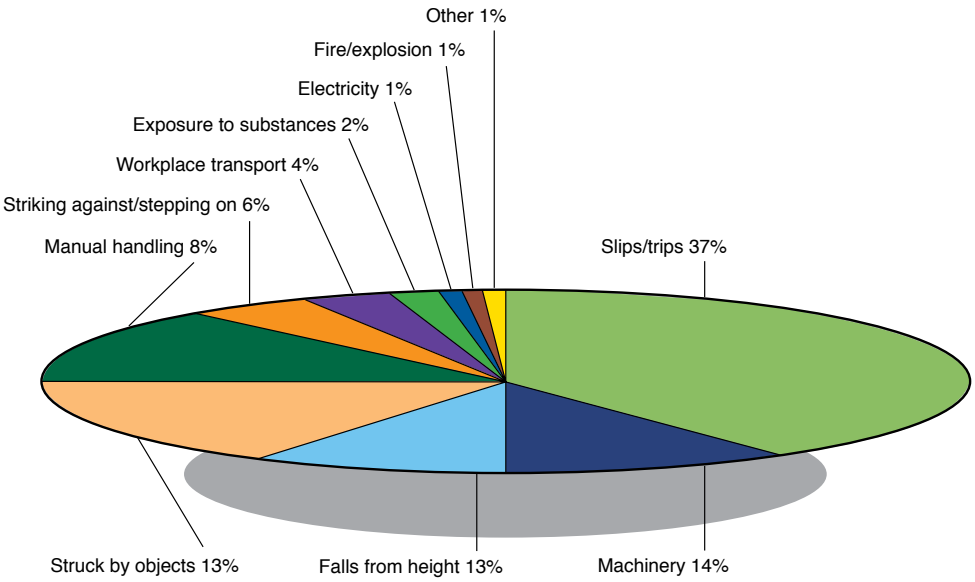


Figure 6 Causes of major injuries in bakeries (2000/01)

Over-3-day absence injuries

17 Handling heavy or awkward loads are the main cause of 'over-3-day' absence injuries, accounting for 32% of such injuries. As well as being the prime cause of 'major' injuries, slips and trips are also the second highest cause of 'over-3-day' absence injuries and account for almost a quarter of such injuries.

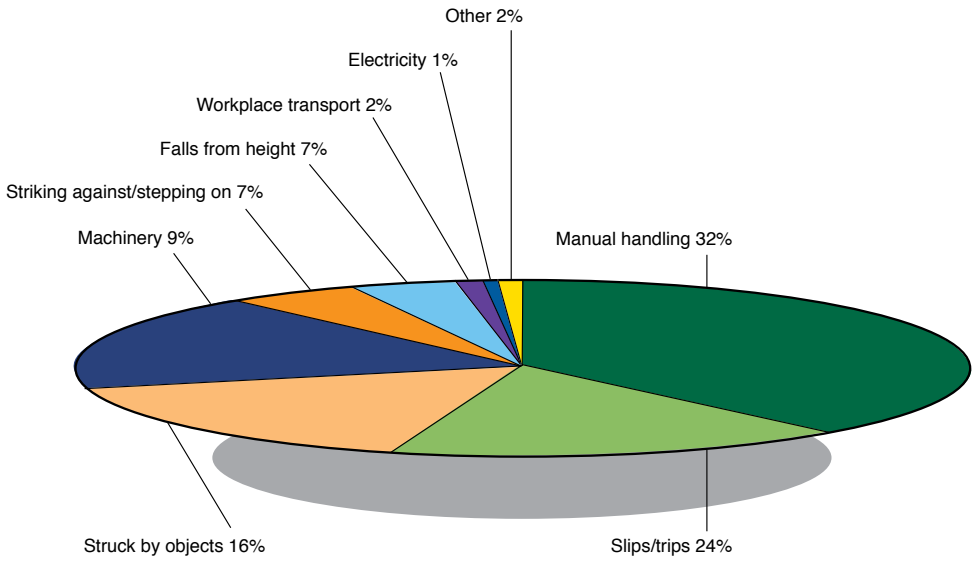


Figure 7 Causes of over-3-day absence injuries in bakeries (2000/01)

Fatal injuries

18 Although the number of fatalities in the bakery industry is not high, when they do occur the consequences are tragic. The main causes of fatal injury are workplace transport, falls from height and machinery. This reflects the situation in the food industry in general.

Occupational ill health

19 The three main concerns regarding occupational ill health in bakeries are:

- respiratory ill health, which covers a range of conditions including bronchitis (cough), rhinitis (running nose) and, less commonly but more seriously, occupational asthma and shortness of breath;
- musculoskeletal disorders;
- occupational dermatitis.

First steps - identifying the hazards

20 The first step in managing health and safety is to identify the health and safety priorities (the main hazards) in your workplace. This book will help you as it covers the recognised main hazards in bakeries, although you should ensure you do not have additional hazards peculiar to your site that will also need attention. Once the hazards are recognised, then a risk assessment can be carried out for each hazard, to determine the necessary preventative action.

Risk assessment - how to do it

21 For each hazard (eg flour dust) you need to ask yourself the following questions: who might be affected; what is the likelihood that an injury or ill health will occur; and how severe is the likely outcome? This is the risk assessment.

22 Many hazards in your bakery may already be well controlled, for example the in-running nips on the rollers of a dough brake will almost certainly be guarded, but you need to look further than this and ask questions about maintenance and setting of the guards.

23 Risk assessment can be broken down into five steps (see Table 1 for an example of this process):

- Look for the hazards.
- Decide who might be harmed and how.
- Evaluate the risks and decide whether the existing precautions are adequate or whether more should be done.
- Record your findings.
- Regularly review your assessment and revise it if necessary.

Figure 8 Risk assessment on manually operated bread slicer

Table 1 Example of a risk assessment for the mechanical parts of a manually operated, reciprocating bread slicer

Hazards	Who might be harmed	Existing precautions	Risk evaluation	Action required
Sharp, moving blades of bread slicer (possibility of cuts or amputation) **Transmission machinery (possibility of being drawn in, entanglement and crushing or amputation)**	Machine operator or other employees	Interlocked guard on sharpened side of blade Fixed guards on machine frame Training for employees Daily checks that interlock works and fixed guards are in place	Risk to trained machine operator during manual operation is low Risk to operator and other employees from access to sharp side of blades while emptying crumb tray	Interlock crumb tray so that machine will not operate unless tray is in position

Investigating accidents

24 Investigating any accidents that occur at your bakery is an important way of identifying further actions that you need to take as an employer. The outcome of the investigation can also inform future risk assessments.

25 Sometimes it is obvious what action needs to be taken. Other accidents/incidents are more complex and need to be more thoroughly investigated, for example by looking at systems of work. The following procedure can be used.

Check what happened

- Find out about the circumstances leading up to the accident/incident.
- Identify the hazards that contributed to the accident/incident, for example
  - plant, equipment, tools or substances in use;
  - work environment (such as floor surface, lighting, temperature);
  - the way the work is organised (who is doing what and when);
  - training and skills of those involved.

Prevent the accident/incident happening again

- Identify what has already been done to minimise the risk.
- Decide on additional precautions required to prevent similar accidents/incidents.
- Ensure the additional precautions are implemented.
- Review the new precautions after a while to ensure they remain effective.

Selection and training of workers and young people

Selection

26 Before selecting people for jobs you should identify if the job has any special physical or mental demands. You should then ensure that the person applying for the job can meet these demands. For example, before taking on someone as a weighing and mixing operative you should check to see if they have any history of respiratory ill health and, if they do, make the necessary arrangements to protect their health, such as more frequent health surveillance.

Training

27 All employees should have basic training in health and safety. All bakery workers should have training in the hazards arising from flour dust and other bakery ingredients and the precautions to take. All machine operators should be trained in the hazards of the machine they use and the precautions that apply.

28 You must also consider any specific legal requirements for job training, for example requirements for first-aiders (see Chapter 13) or for people driving fork-lift trucks (see Chapter 5).

Young people

29 The Management of Health and Safety at Work Regulations 1999 require that young persons (those under 18) should not be employed unless there has been a specific risk assessment for them which takes into account:

- inexperience, lack of awareness of risks, immaturity;
- the workplace and equipment;
- the degree of exposure to harm;
- organisation of processes and activities;
- training.

Figure 9 Young person at work on seeded roll production line

30 There are additional restrictions on employing children below the minimum school leaving age (MSLA). You must let the parents/guardians know the key findings of the risk assessment and the additional control measures you have introduced. You must take account of the risk assessment in deciding whether young people should be prohibited from certain work activities.

31 Although the legislation is now repealed and replaced by more general legislation, you should be aware that some machines in bakeries were classed as 'prescribed dangerous machines' under the Factories Act 1961. There was a strict legal duty that young people should not work at such machines unless they had been fully instructed as to the dangers of the machine, had received sufficient training, or were under adequate supervision by someone who had thorough knowledge and experience of the machine. These machines included:

- dough brakes;
- dough mixers;
- pie and tart machines.

32 You should keep this in mind when you are carrying out your risk assessments for young people and in deciding what machines they can use.

Managing contractors

33 If you have contractors working on your site, for example carrying out oven maintenance or doing roof repairs, it is not sufficient to assume that they are competent and working safely.

34 You should make enquiries of their competence and experience before contracting them and once they are on-site you should satisfy yourself that they are in fact working to a safe system of work. You must also be sure that the activities being carried out by the contractor will not endanger your own employees. For example, an engineer servicing a machine could remove a guard for access and not replace it or an electrician working at a height could drop a tool onto one of your workers below.

35 The Federation of Bakers operate a Contractor Passport Scheme, which is primarily aimed at the plant baking industry. Contractor companies must be health and safety audited to an acceptable level before they can obtain a passport. Further details are available from the Federation of Bakers (see 'Useful addresses' at the back of the book). Other contractor passport schemes are also in operation in the food and drinks industries.

Involving workers and safety representatives

36 Involving workers in assessing and finding solutions to health and safety problems has been shown to reduce injuries. If you consult effectively with trade union safety representatives or other employee representatives, significant improvements in health and safety standards can be made. Apart from being a legal requirement and a useful input to discussions, this will assist workers in having some ownership of the eventual solution, which is then more likely to succeed.

Key steps to successful health and safety management

- Identify the key health and safety priorities in your business
- Concentrate your efforts on these priorities
- Assess the risks to employees and others
- Eliminate risks where possible. If you can't, then reduce them to an acceptable level
- Devise safe systems of work
- Inform and train your workforce
- Involve your workforce and health and safety representatives in decision-making on health and safety issues
- Regularly review how well you are doing

Figure 10 Consultation between manager and employee representative

Employees have responsibilities too

Employees must:

- work in accordance with the training and instruction given by the employer;
- report situations which they believe to be unsafe;
- not engage in horseplay which could endanger themselves or other people.

Figure 11 Operating a bread slicer

Dust from flour and other ingredients

What are the health hazards?

37 Flour and bakery dust can cause:

- irritation to the eyes (conjunctivitis), resulting in watering, painful eyes;
- irritation to the nose (rhinitis), resulting in a runny nose;
- occupational dermatitis, resulting in redness, itching and blistering of the skin;
- asthma if the worker continues to breathe flour/bakery dust and becomes sensitised, resulting in attacks of breathlessness, tightness in the chest or wheezing.

Figure 12 Dust extraction on sieve unit

Figure 13 Dust extraction at sack-tip point

38 Once a person is allergic to bakery dust, exposure to even a very small quantity of it can bring on an asthmatic attack and it is possible that the person will never be able to work in a bakery again.

39 Ingredients used in baking such as egg powder, and fungal and bacterial alpha amylase present in flour treatment improvers, can also cause an allergic reaction.

40 Spices and seasonings added as flavourings in baking can cause irritant effects, for example black and white pepper, ground chillies, ground mustard and galangal. Others are more potent still and can cause an allergic reaction, for example garlic powders.

Flour and other bakery-ingredient dusts can cause harm to health. Reduce the amount of dust that people breathe in!

What the law says

41 The Control of Substances Hazardous to Health Regulations 2002 (COSHH) apply to flour dust and any other hazardous substances used in the your workplace. To comply with COSHH you need to follow these seven steps:

- Assess the risk to the health of your employees from flour dust, dust from other ingredients and any other hazardous substances.
- Decide what precautions are needed.
- Prevent or adequately control exposure.
- Ensure that control measures are used and maintained.
- Monitor exposure.
- Carry out appropriate health surveillance.
- Ensure employees are properly informed, trained and supervised.

42 This chapter will assist you in carrying out the risk assessment and deciding what precautions may be necessary.

Figure 14 Hopper outlet incorporating lid which locates over mixing bowl to contain dust

Exposure limits

43 Flour dust has a legal limit called a 'maximum exposure limit' (MEL). MELs are set for substances that cause the most serious health effects such as occupational asthma. For flour dust the MEL is set at 10 mg/m^3 (averaged over an 8-hour period). There is also a short-term exposure limit (STEL) of 30 mg/m^3 (averaged over a 15-minute period).

44 The 8-hour limit is designed to limit your employees' exposure over a full working day. The 15-minute limit is designed to prevent high bursts of exposure that can cause your employees to become allergic to flour more easily.

45 To comply with the MEL you not only have to ensure that your employees' exposure is below the limits, but there is also a duty to get as far below the MEL as you reasonably can. In practice, this means that if there is a technically achievable and cost-effective precaution that reduces airborne flour dust you must adopt it.

Figure 15 Removeable, covered flour sprinkler on production line

Assessing bakery dust levels and risk

46 The first step is to determine dust levels to which people are exposed. There are a number of ways of doing this:

- **using reference 'typical exposure levels'** at routine plant and craft bakery tasks which are not provided with dust extraction etc. This will help estimate the likely exposure of employees at different tasks and throughout a working day ('typical exposure levels' are contained in HSBLC booklet *Guidance on dust control and health surveillance in bakeries* - see 'Further reading' for Chapter 2);
- **using a dust lamp** that directs a narrow beam of light onto a dust cloud, allowing the naked eye to identify dust sources and enabling decisions to be made on improving control;
- **measuring airborne dust levels** using sampling apparatus. This can be carried out by an occupational hygiene consultant - the British Occupational Hygiene Society maintains a directory of consultants who can carry out such assessments. Alternatively, trained in-house staff can send samples to a suitable laboratory for analysis. Measuring dust levels is the only method that can positively prove that you are below the MEL on any particular day.

47 When you have determined the dust levels, these can then be compared with the flour MEL and STEL and any other appropriate MELs/STELs to help determine the risk. Other factors will need to be taken into account such as the presence and efficiency of extraction systems, other dust control measures, exposure of workers and any workers with existing allergies.

Figure 16 Use of a vacuum cleaner to clean up flour spillage

Controlling dust levels

48 Dust levels can be controlled either by making changes to plant and equipment (engineering controls) or by changing working practices.

Improving plant and equipment

49 Because flour dust has an MEL, the primary control must be to consider changes to plant and equipment. Concentrate on preventing dust becoming airborne in the first place. For example, provide or improve local exhaust ventilation to extract dust on machines and at processes that emit dust.

Figure 17 Mixer with top-rim dust extraction turned off

Figure 18 Mixer with top-rim dust extraction turned on

50 Some examples of local exhaust ventilation that significantly reduce generation of airborne dust are given in Figures 17-19. Further examples are contained in HSBLC booklet *Guidance on dust control and health surveillance in bakeries*.

51 The most common fault with dust extraction equipment is that it does not work as efficiently as when it was installed. Where you have dust extraction equipment it should be kept in efficient working order and good repair. A thorough examination and test of the equipment should be carried out at least every 14 months. This test will ensure that the airflow at the point where dust is being generated is adequate to draw air away from the operator. For example, the extraction rate at the face of an enclosure where sack opening and tipping is carried out needs to be between 2 and 5 m per second.

Improving working practices

52 Making simple changes to working practices can greatly reduce workers' exposure to flour dust. For the changes to be effective, it is necessary to provide training (and supervision to ensure that good practices are followed at all times). For example, you could measure the amount of flour being used for dusting to encourage employees to reduce this. Encouraging good working practices will also reduce waste. The training video *Breathe easy*, available from the Federation of Bakers (see 'Further reading' for Chapter 2), offers very useful guidance on improving many working practices.

Figure 19 Dust extraction at ingredients weighing station

53 Flour treatment improvers contain fungal and bacterial alpha amylase, both of which are respiratory sensitisers. These are commonly supplied in powder form in a flour carrier and become airborne easily, for example while weighing them or adding them to the mix. Alternative forms of flour treatment improver are becoming more widely available, for example pastes, liquids and dust-suppressed powders that eliminate or reduce the risk of breathing in the dust. If you use powder-based flour treatment improvers, you should investigate the possibility of using such alternatives.

Ten top tips for bakers

- Handle flour and powdered products carefully. Dropping flour from a height or throwing with force will cause dust to be thrown up.
- Use dredgers or sprinklers to spread dusting flour rather than hand throwing. Minimise the use of dusting flour.
- Avoid spillages of flour and where spillages do occur clean them up immediately.
- Take care to avoid raising dust when loading ingredients into mixers.
- Start up mixers on slow speed until wet and dry ingredients are combined.
- Avoid damage to ingredients bags.
- Minimise the creation of airborne dust when folding and disposing of empty bags. One effective method is to roll the bag up from the bottom while tipping, avoiding the need to flatten or fold empty bags.
- Avoid the use of compressed airlines for cleaning.
- Do not use brushes to dry-sweep dust as they cause high levels of airborne dust. Use high-efficiency industrial vacuum cleaners for general cleaning. Shovel up larger amounts gently.
- Wear a suitable respirator for any essential, short-term, dusty tasks.

Protective clothing and equipment

Overalls

54 For work in areas with high dust levels, such as cleaning filters, employers should provide overalls that prevent contamination of normal work clothes.

Respirators (respiratory protective equipment)

55 Respirators should only be worn where other control measures are not reasonably practicable or do not provide adequate control. Some activities are known to cause high short-term exposures (eg cleaning up large spillages and maintenance activities) and respirators should be worn for these activities.

Figure 20 Use of protective clothing and RPE for emptying vacuum cleaner drum

56 All respirators need to be properly selected for the individual wearer. The selection process should take account of the dust levels, the physical nature and duration of the work and the facial characteristics of the wearer. For tight-fitting respirators (such as disposable masks, half masks and full-face masks), the initial selection should include a face-fit test to ensure the wearer has the correct device. The test must be performed by a competent person using the appropriate test equipment. Test results should be recorded.

57 For workers with no facial hair, disposable masks classified as type FFP3 or half masks with P3 filters should provide sufficient protection for most short-term tasks. Powered respirators with P3 filters should be worn by people with facial hair (including those who are unshaven), and for longer-term tasks. Wearers should be trained in respirator use. Full details on respirators are given in HSE publication *The selection, use and maintenance of respiratory protective equipment: A practical guide* - see 'Further reading' for Chapter 2.

Health surveillance for respiratory issues

58 Flour dust and amylase in flour treatment improvers are respiratory sensitisers. It is therefore essential that health surveillance is undertaken to enquire positively about the early symptoms of ill health. As a minimum, the following arrangements should be in place:

- pre-employment screening that includes a questionnaire about present or past asthma or chest illness - advise new starters about what to look out for and that they should report symptoms;
- a questionnaire to be completed for all workers after employment at 6 weeks, 12 weeks (or similar intervals) and at least annually thereafter to enquire about any developing symptoms. The questionnaire must be administered by a responsible, trained person who must understand the purpose of the questionnaire, confidentiality requirements and what records must be kept;
- you must also identify a named occupational health professional or company, who can advise on any adverse findings from the questionnaire and who can make arrangements for further investigation where necessary.

Figure 21 Health surveillance is important for those exposed to flour dust

59 There are a number of options available for occupational health provision:

- in-house service (for larger companies);
- NHS occupational health department;
- private occupational health company;
- GP with occupational health qualification (Diploma in Occupational Medicine, as a minimum).

HSE's Employment Medical Advisory Service (EMAS) is able to provide lists of occupational health providers. To contact EMAS, look under Health and Safety Executive in your phone book.

60 Employers are required to keep an individual health record for each employee for at least 40 years. Each employee should be given information about the health risks described in this chapter, the relevant symptoms to look out for and the need to report any symptoms to the responsible, trained person.

Dermatitis

61 Occupational dermatitis is caused by the skin coming into contact with substances at work. Because of this it is sometimes called 'occupational contact dermatitis'. Symptoms of the condition can be redness, itching, scaling and blistering of the skin. In bakeries it is usually the hands and forearms that are affected.

62 If dermatitis is spotted early enough and precautions are taken, most people will make a full recovery. But some people will never recover as their skin has become allergic to the substance, so it makes sense to prevent dermatitis occurring in the first place. In bakeries dermatitis is most commonly caused by contact with liquid ingredients such as olive oil or divider oil, but handling flour/dough, sugar, spices, herbs and seasonings can also cause dermatitis.

63 To help identify any potential dermatitis problem you should consider including some questions on symptoms of dermatitis in the initial and regular health surveillance questionnaires. In any one case, or outbreak of cases, the cause of the problem should be identified. This may require a visit from an occupational health provider unless the cause is evident. Once the cause is identified you should decide what measures are required to prevent or control the problem. The following are potential solutions to common dermatitis problems:

- Can the problem be removed, for example by not using alcohol-based hand cleansers?
- Can contact with the foodstuff be avoided, for example by wearing suitable gloves? But remember that some people are allergic to latex and may need cotton-lined or disposable nitrile gloves.
- Consider providing an after-work moisturising cream to replace the natural oils the skin loses.

Manual handling

Is manual handling really a problem?

Lifting and carrying

64 In the bread and flour confectionery industry manual handling causes a quarter of all injuries and nearly a third of 'over-3-day' absence injuries reported to HSE under RIDDOR 95 (see Chapter 13). The majority of these injuries (66%) occur due to the weight of the load being lifted. Many injuries are caused by incorrect lifting methods, awkward shape of the load or lack of handles (where these can be provided). Many injuries are also caused by sharp edges on the object being lifted.

65 In addition to acute injuries, chronic injuries to the back, lower limbs and neck can occur from prolonged periods of lifting of heavy loads, over months or years. Incorrect lifting techniques, poor posture, frequency and duration of lifting all contribute to the development of long-term musculoskeletal problems. Injuries can be painful, for example where spinal injury occurs.

Figure 22 Fork-lift truck with pallet transporting flour sacks

Repetitive work

66 In bakeries, repetitive movements of the shoulder, arm, wrist and hands can cause work-related upper limb disorders (WRULDs), also known as repetitive strain injury (RSI). These disorders are made worse by the need for excessive speed, force or poor posture.

67 Tasks which can give rise to WRULDs are, for example, tin loading, lidding and de-lidding and packing. WRULDs are particularly prevalent in cake decorators, where the nature of the task involves rapid articulation of the joints. The damage to the joints concerned can be irreversible, so it is important to identify symptoms early on while something can still be done.

Figure 23 Use of rotating, adjustable-height stand for cake decorating

Bakery industry priorities

68 The following list sets out the main manual handling tasks carried out in the bakery industry that are known to cause injuries. These tasks represent the main priorities:

- lifting and carrying ingredients (unloading sacks from vehicles, movement in stores, tipping into sifters/mixers and dispensing);
- lifting and handling drums of liquids;
- handling product bowls and containers, for example planetary mixer bowls;
- lifting and handling dough from bowls into hoppers;
- handling tins and lids;
- loading and unloading deck ovens;
- cake decorating;
- packing;
- lifting and handling baskets and trays;
- pushing wheeled racks/roll cages;
- lifting and handling heavy items of plant and equipment (eg machine panels).

What the law says

69 The Manual Handling Operations Regulations 1992 apply to the manual handling of loads. Manual handling is defined as: 'any transporting or supporting of a load (including the lifting, putting down, pushing, pulling, carrying or moving thereof) by hand or bodily force'.

70 The Regulations do not apply to repetitive activities that do not constitute the transporting or supporting of a load, eg cake decorating, although this is still covered by more general health and safety legislation.

Avoiding the risk

71 The Manual Handling Regulations require employers to avoid, so far as is reasonably practicable, manual handling operations that put employees at risk of being injured. Use of mechanical handling equipment should be considered first.

Assessing the risk

72 The risk from any remaining manual operations should be assessed and, where it is significant, action should be identified to reduce that risk.

Reducing the risk

73 The actions identified to reduce risk should be implemented, for example using mechanical aids, lower weights of sacks/drums, changes to systems of work etc.

Training and information

74 Employees carrying out manual handling operations should be trained in safe manual handling techniques and safe use of mechanical aids. Information should also be provided on weights of loads.

Reviewing the assessment

75 The initial risk assessment should be reviewed if there have been significant changes in the manual handling operations it relates to, and you should take any action identified to further reduce risk.

Figure 24 Two-hand control, powered tin opener (avoiding repetitive had movements)

Managing and controlling the risks

Identification

76 Firstly identify which manual handling activities are causing a significant risk in your workplace. The priorities previously identified in paragraph 68 will help you to determine which tasks to focus on. Observe the work being done, discuss with your employees and look at injury history. Particular attention should be paid to moving heavy objects, awkward load shapes, strenuous pushing and pulling and stacking above shoulder height. You should also look at repetitive work (eg packing) that could lead to WRULDs.

Elimination

77 Manual handling and repetitive work identified as presenting a significant risk should be assessed in more detail to see if they can be avoided altogether, or if the task can be changed to reduce the risk. For example, can the task be automated or significantly assisted by mechanical means?

Preventive measures

78 For tasks that cannot be eliminated or automated, you will need to introduce suitable preventive and protective measures to reduce the risk of injury. If it is too costly to introduce all the measures at once, then they should be phased in as part of an overall risk reduction plan. Specific solutions to bakery industry manual handling problems are set out in Table 2.

Reporting of symptoms

79 You should encourage your workforce to report any symptoms of injury as soon as they notice them. Early reporting of symptoms enables early diagnosis, proper treatment and rehabilitation. In general, back pain can best be tackled by keeping gently active rather than resting. For WRULDs, the limb is best rested long enough to reduce inflammation. However, medical advice should be sought in all cases of back pain, WRULDs and similar disorders. Further information is given in the publications listed for Chapter 3 in the 'Further reading' section.

Training and information

80 You should provide training and information for your employees which should cover safe manual handling techniques - especially posture, lifting techniques and methods of carrying. Information should also be given on likely injuries and their causes and safe use of mechanical aids. Employees should be given information about loads they are required to handle, particularly if the load is heavy or the centre of gravity is offset.

Monitoring

81 Finally, you should check that your preventative measures have made improvements. You can do this by monitoring records of sickness absence and ill health, ensuring there is adequate supervision and monitoring the use of mechanical aids etc.

Figure 25 Adjustable-height, pedestrian-operated pallet truck transporting 25 kg sacks

Supply chain

82 Handling risks are often inherited from further up the supply chain, for example if you receive heavy ingredient sacks or large drums. If bakers and suppliers can agree on acceptable sack weights, drum weights etc, and how products should be handled, purpose-made handling solutions can be used at each stage.

83 It is also important to ensure that you are not causing manual handling problems for your distribution and delivery workers and for your customers. Each supplier in the chain has a legal duty to co-operate with the others in identifying problems and agreeing solutions.

Reducing the risks

84 Wherever possible, hazardous manual handling operations and repetitive work should be avoided, but where this is not possible it is necessary to identify what has to be done to make things safe.

85 The following table sets out a list of tasks known to be problematic in the bakery industry (see paragraph 68) and ways of avoiding or reducing the risk. You will also need to consider any other manual handling tasks not listed that may occur on your premises. If you find solutions other than those suggested you are free to use them.

86 Useful examples of case studies resulting in reduced manual handling risks can be found in the HSE book *Moving food and drink: Manual handling solutions for the food and drink industries* (see 'Further reading' for Chapter 3).

Figure 26 Pedestrian-operated pallet truck transporting 12.5 kg blocks of fat

Table 2 Manual handling tasks and methods of reducing risk

Type of task	Representative weight (or pushing or pulling force)	Suggested methods of avoidance or risk reduction
Lifting and carrying sacks, ingredients, boxes, packaging etc	9-50 kg	Installation of bulk handling (eg flour silo) Use of fork-lift truck and pallets Use of delivery chute from lorries Use of sack/drum trolleys (with special wheels if kerbs involved) Request manufacturers to reduce size and weight of packages Prevent stacking above shoulder height Use of two persons for loads more than 32 kg Reduction of tipping height for tipping ingredients (eg provision of tipping hopper) or provision of steps Provision of intermediate table for tipping ingredients and to avoid excessive lifting
Lifting and handling drums of liquid	Up to 25 kg	Use of fork-lift for large drums Use of truck with drum-lifting attachment Storage of barrels on racks to avoid lifting while dispensing Use of auto-dispensing pumps Use of drums (with taps) on racks to avoid lifting while dispensing
Handling product bowls and containers	10-50 kg	Use of wheeled rings to move bowls Reduce mix size Use of two people to lift where necessary Ensure wheels and floor surfaces are properly maintained
Handling dough from bowls into hoppers	10-50 kg	Installation of bowl hoist Fit horizontal shelf at edge of hopper for resting dough before tipping in Instruct operative on maximum dough size to be fed to machine
Handling tins and lids	8.5-17 kg	Automatic tin loading, lidding and de-lidding Rotation of staff to avoid excessive repetition of task Use of protective gloves to avoid burns

Table 2 Manual handling tasks and and methods of reducing risk (continued)

Type of task	Representative weight (or pushing or pulling force)	Suggested methods of avoidance or risk reduction
Loading and unloading deck ovens	8.5-17 kg	Use of fixed steps, ramp or platform to avoid lifting over head height Use of protective clothing to avoid burns
Cake decorating	Repetitive work	Use of rotating decorating stands Job rotation
Packing	Repetitive work	Selection and training of staff Job rotation
Lifting and handling baskets and trays	8.5-17 kg	Use of mechanical handling equipment Maintenance of trays Selection, training and monitoring of staff Use of protective clothing to avoid burns to hands
Pushing wheeled racks/ roll cages	Up to and exceeding 50 kg	Fit high specification wheel castors (with good quality bearings and wheels of suitable material and sufficient diameter) Regular maintenance of castors and wheels Prevent overloading and ensure centre of gravity is as low as possible Provide ramps where necessary but keep slope gradients to a minimum Floor maintenance (in both vehicles and premises) Provision and use of protective gloves to avoid burns and reduce trapping injuries Maintenance of vehicle tail lifts
Lifting/handling heavy items of plant and equipment (eg divider dies, mixing machinery paddles, machine panels)	Up to and exceeding 50 kg	Use of mechanical lifting equipment Use of more than one person for lifting Selection, training and monitoring for staff

Slips and trips

Why tackle slips and trips in bakeries?

87 Preventing slips and trips is especially important in the bakery and flour confectionery industry because they cause:

- 37% of major injuries, resulting in broken bones, hospitalisation etc;
- 24% of over-3-day absence injuries;
- significant losses to the industry through loss of key staff and liability (compensation, legal costs, insurance premiums and enforcement action).

88 Slips and trips in bakeries can be prevented, they are not inevitable. Controlling risks is cost-effective - some initiatives have reduced injuries by over 66%. This chapter gives guidance on what can be done to control the risks.

What the law says

89 The Workplace (Health, Safety and Welfare) Regulations 1992 have requirements for the construction of the floor surface to be suitable by not being 'slippery so as to expose any person to a risk to their safety' and for the floor to have 'effective drainage'. These requirements must be followed. There are also requirements for floors to be kept free from obstructions and holes, and for them not to slope or be uneven in such a way that they could expose a person to risk.

90 There are also duties on suppliers of floors, floor treatment substances and safety shoes to ensure the safety of their products.

Preventing slips - environmental factors

Prevent floor contamination

91 Slips account for about 72% of all slips and trips injuries in the bakery and flour confectionery industry. Most of these accidents occur because the floor is wet or contaminated with food products.

92 Flour, dough, batter, oil, water and wet cleaning products can all contaminate the floor and cause it to become more slippery. Water splashes from hand basins, leaks or drips from prover cabinets and drips from utensils that have just been used can all contribute to the amount of water on the floor and thus the slip risk. Some preventative measures are listed below.

Plant and equipment

- Maintain equipment so that product does not leak out of machines. For example, ensure that dough-divider oil reservoirs and pipes are maintained without leaks and prevent over-spray from oil-spraying equipment.
- If oil is still a problem, provide adequate drip trays to contain the oil and prevent it getting onto walkways.
- Ensure that prover cabinets are properly maintained to avoid leaks and drips.
- Use locally applied dust extraction equipment to contain bakery dust and avoid it settling out on the floor, for example around mixers.
- Where possible, position sinks in a separate area where splashing and drips will not affect the main production floor and provide towels for hand drying.

Figure 27 Drip tray to catch divider oil and prevent floor contamination

Cleaning regime

- Make sure that you have a cleaning regime that ensures that floors are kept free of contamination. Use dry methods, such as vacuum cleaners, for cleaning floors where possible.
- If you are cleaning wet, plan the cleaning so that the floor is dry before people have to walk on it. Always use marker cones to show which section of the floor is wet and remove them when the floor is dry.
- Ensure that there is adequate drainage for wet cleaning products to drain and adequate ventilation for floors to dry quickly.
- Clean spillages immediately. Use a dry cloth to absorb small amounts of liquids rather than wet mopping - even a small amount of water left from wiping a floor can make it very slippery.
- Some ingredients, such as poppy seed, can cause walking surfaces to become very oily if they are allowed to contaminate the floor. Any spillage of such ingredients should be cleaned up straightaway.

Figure 28 Cleaning stairs at a quiet time, using marker cones on wet areas

Figure 29 Drainage channels for wet cleaning of floor

Figure 30 Lidded container container for transporting liquid to avoid spillage and floor contamination

Increase the slip-resistance of the existing floor

93 If the surface of the floor surface is too slippery in certain areas, anti-slip strips or mats can often be used to reduce the slip risk. This may apply, for instance, around machines or where there is a locally increased risk of contamination.

Laying a slip-resistant floor with enough surface roughness

94 If you have still not managed to solve the problem after trying the measures described in the previous paragraphs, you may have to consider putting down a new floor that has better slip-resisting qualities. If you decide to make this investment you will be in the fortunate position of being able to specify a floor that exactly meets your requirements.

95 Experience has shown that laying a floor with a sufficient surface micro-roughness can greatly decrease the slips risk. Surface roughness is measured in Rtm, which is the maximum peak-to-trough distance of the granular surface of the floor. For example, a floor with a surface micro-roughness of at least 20 microns Rtm is usually adequate for floors contaminated with water but a greater micro-roughness of 70 microns Rtm will be required for olive oil contamination. Floors with a surface roughness of only 10 microns have been shown to be hazardous in wet conditions.

96 If product on the floor is inevitable then you should choose a floor with increased slip-resistance. HSE research has identified the levels of surface micro-roughness that are necessary to provide enough friction to reduce slipping risks. These suggested minimum roughness requirements are shown in Table 3. The Rtm values should be helpful in assessing floor specification requirements.

Table 3 Minimum levels of Rtm roughness to give enough friction to reduce slipping risks

Contaminant viscosity (cPs)	Contaminant	Minimum Rtm floor roughness
Less than 1	Clean water	20 µm
1-5	Milk	45 µm
5-30	Stock	60 µm
30-50	Olive oil	70 µm
Greater than 50	Margarine	Greater than 70 µm

97 Floor surfaces commonly used in wet areas include unglazed ceramic tiles, and those with a resin or rubber composition that incorporate non-slip aggregate into the wearing surface. Drainage may be assisted by ribbed or profiled surfaces. Ribbed, studded and textured rubber flooring performs just as well in dry or slightly wet conditions.

98 Table 4 will help you to draw up a specification for a floor that not only takes the slip risks into account but is also suitably hard-wearing and gives value for money.

Table 4 Specification factors for a new floor

Floor specification factors	Check and comments
Building ■ **Type** (eg brick-built, single-storey, floor area X m2) ■ **Uses** (eg a bakery) ■ **Floor location** (eg ground, suspended, mezzanine)	
Process ■ **Type of process** (eg bread and cake production) ■ **Type of plant** (eg dough mixing, dividing, moulding and ovens) ■ **Point loading on floor** ■ **Conditions of processing:** Floor wet or dry? Drainage capacity adequate? Product contamination (flour, oil, sugar)? Need for floor to be resistant to oil, cleaning substances, alkalis etc? Length of likely exposure of contaminant to floor? Operating temperature?	
Handling/transport ■ **Type, weight etc of handling equipment** (eg oven racks, bowl trolleys) ■ **Type of traffic** (eg pedestrian, FLT)	
Cleaning ■ **Preferred cleaning method** (eg dry cleaning system, water washing, steam-cleaning)	
Appearance ■ **Choice of colours should not mask contamination** (eg not white in bakery) ■ **Highlight surface level changes** (eg by colour)	

Table 4 Specification factors for a new floor (continued)

Floor specification factors	Check and comments
Details of construction required ■ **Special requirements** (eg cove, plinth, falls, drainage, jointing)	
Type and construction of existing sub-flooring ■ **Existing sub-floor type** ■ **Special requirements** (eg damp-proof membrane, contamination issues)	
Health, safety and hygiene requirements ■ **Contamination** (eg unavoidable contamination - water/food product) ■ **Slopes** (ie special considerations) ■ **Types of shoe sole being worn** (ie material and specification) ■ **Surface roughness desirable/ acceptable** (or coefficient of friction required) ■ **Hygiene requirements** (eg impervious, non-absorbent, washable and non-toxic)	
Installation considerations ■ **Contract issues** (eg access, cleanliness, time available, time before flooring put back into use) ■ **Process issues** (eg implications of drying odour for foodstuffs and taint characteristics, ambient temperature)	
Life expectancy of floor ■ **Minimum life expectancy**	

Hygiene considerations

99 As well as slips prevention, food hygiene is also an issue in bakeries. There should, however, be no conflict as floors with surfaces that are sufficiently rough to prevent slipping can be cleaned to the same standard as smooth floors. Research has shown that good cleanliness and hygiene depend on factors other than the micro-roughness of a floor surface.

100 For hygiene purposes, it is the removal of bacterial micro-organisms that is important, and micro-porosity (the ability of the surface to absorb water) has more significance than surface roughness. Both food hygiene and health and safety law agree in requiring you to avoid contamination and in stressing the importance of clean floors. The Department of Health advise that the floor is unlikely to be a critical point for hygiene except in certain high-risk situations such as chilled food with a short shelf-life.

Stairs

101 Ensure that stairs have adequate handrails and that edges of steps have clearly visible nosings. Non-slip strips on the nosings of steps can be used to reduce the risk of slipping. These must be adequately secured to the nosing.

Figure 31 Portable steps with non-slip coating applied to treads

Preventing slips - organisational factors

102 If there are floor areas that are unavoidably slippery then, as well as providing slip-resistant footwear (see paragraphs 103-105), the slips risk assessment for the area should consider organisational factors. For example, work tasks might be:

- mechanised to avoid the need for pushing, lifting, carrying, pulling etc while walking on a slippery floor;
- moved to safer areas; or
- slowed so operators do not have to hurry.

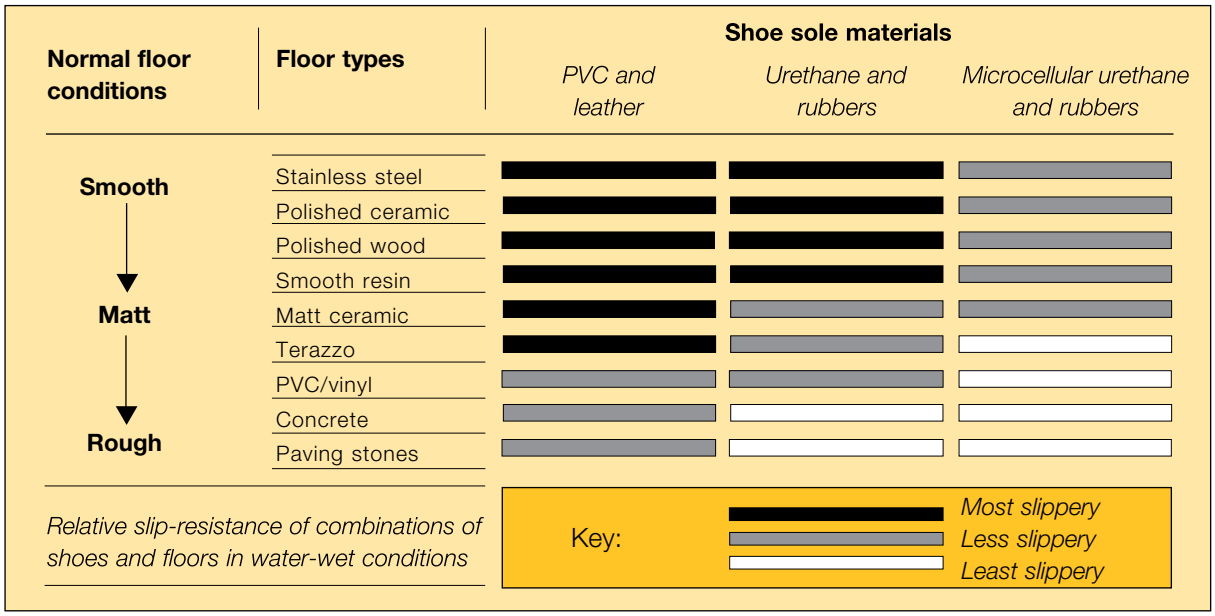
Preventing slips - selecting footwear

103 Footwear has a very important role in preventing slips in the workplace. Slip risks will vary with different types of shoe sole and shoe/floor combinations. Selecting the correct shoe sole material can have a dramatic effect in reducing serious slip injuries.

104 If you have decided that shoes are important in controlling slip risks, for example because of unavoidable floor contamination, you should provide footwear with soles which are effective in reducing the risk.

105 Select shoes with a suitable sole material, bearing in mind the type of floor and whether the conditions are wet or dry. In general, soft materials give good slip-resistance on dry surfaces, but performance varies on wet or greasy floors. Table 5 indicates the effectiveness of different combinations of shoe sole and floor surface in water-wet conditions. It is also important to keep shoe soles clean, for example avoid dough building up on soles.

Table 5 Shoe sole material and floor types



Notes on table: 1 For level floors only. **2** Each floor listed in the table is not profiled and is water-wet. Liquid contaminants, especially those that are more viscous than water, will increase the slipperiness of a particular combination. **3** Each floor listed is in the untreated state. **4** With wear, both floors and shoe soles may become more slippery. Microcellular urethanes, however, often remain unchanged with wear. **5** Waxing a floor can often reduce its slip-resistance, especially if the floor then becomes wet.

Preventing slips – worker involvement and training

106 Involve employees in analysing the risks and agreeing the control measures, particularly where footwear is concerned. It is especially important that employees are aware of the control measures and that there is adequate supervision to ensure good practice.

107 Provide training for employees, including temporary workers, on the key measures to prevent slip risks such as:

- the avoidance of spillages, reporting spillages and prompt cleaning up;
- reporting defects in plant and equipment or hazardous conditions;
- use of suitable footwear and its maintenance;
- the importance of thorough cleaning and drying of floors.

Preventing trips

108 Trips account for 28% of all slips and trips injuries in the bakery and flour confectionery industry.

The following measures will help to reduce trip injuries.

- Plan workflows so that ingredients such as flour sacks and drums or pieces of equipment do not cause obstructions in places where people walk. Dedicated areas should be provided for storage of ingredients and equipment in daily use.
- Plan waste disposal to ensure waste items do not obstruct the floors or walkways. For example, bins can be provided for empty sacks.
- Eliminate holes and uneven surfaces in floors inside buildings and work areas outside buildings. Regular inspection is important.
- Designate walkways and clearly mark their boundaries. Make sure pipes, electric cables etc do not cross walkways.
- Provide good lighting so that any obstructions that do occur can be seen.

Workplace transport

Is workplace transport really a problem?

109 Workplace-transport-related accidents are the main cause of deaths in the food industry and are a significant cause of serious injuries. The main causes of workplace transport injury are being struck by vehicles (57%) and falls from vehicles (22%). Trapping between a vehicle and another vehicle, wall etc causes 11% of accidents and being trapped by an overturning fork-lift truck (FLT) a further 6%.

Fork-lift trucks (FLTs)

110 Around one-third of transport accidents in workplaces involve FLTs. Most of these accidents involve FLTs striking employees or trapping them against fixed objects while going about their normal duties. Sometimes FLTs, if not driven with due care, can overturn and it is frequently the case that the driver is crushed by the overturning truck in an attempt to escape from the cab. Also, if loads on the forks are not correctly stabilised or secure, accidents can result from loads falling and injuring people.

111 Fatal and serious injuries also occur when workers fall from FLT forks, or from a pallet mounted on the forks, while gaining access to high areas.

Delivery vehicles

112 Over 30% of workplace transport injuries result from pedestrians being struck by lorries and vans. Vehicle reversing is the most hazardous activity as drivers have limited rear visibility. Injuries to pedestrians frequently occur if vehicle and pedestrian routes are not separated or if vehicles have to pass too close to buildings or fixed objects where there is a risk of pedestrians being struck or crushed. Not only are workers on-site at risk, but also members of the public during deliveries to retail outlets.

113 Over 20% of transport injuries result from falls from vehicles. In bakery operations most falls from vehicles are from cab steps, from the floor or tail lift at the rear of the vehicle or from steps giving access to the tops of tankers.

The priorities

114 The breakdown of injuries covered in the previous paragraphs helps identify the priority areas that need to be tackled in risk assessments:

- pedestrian safety and pedestrian/vehicle segregation;
- vehicle reversing;
- falls from vehicles;
- tail lifts on delivery vehicles;
- FLT operations;
- training;
- securing contents of delivery vehicles;

Risk assessment and safety precautions

115 Using the priorities described in paragraph 114 as a guide, risk assessment for transport risks should include the areas covered in the rest of this chapter.

Pedestrian safety and pedestrian/vehicle segregation

116 Nearly 70% of workplace transport accidents occur when pedestrians are struck or trapped by moving vehicles. The following issues should be considered.

- Have safe traffic routes been planned both for vehicles delivering to the site and vehicles taking goods from the site?
- Are vehicles and pedestrians kept separate?
- Do vehicles and pedestrians have separate doors into the building?
- Are appropriate speed limits enforced?
- Are adequate signs in place, eg indicating one-way direction, speed limit, no entry etc, and are mirrors fitted on blind corners?
- Are vehicles, including cars, parked in designated areas?
- Is access to loading yards restricted to essential personnel?
- Is the level of lighting adequate to ensure visibility of vehicles and pedestrians?

Figure 32 Barrier to separate pedestrians from vehicles

Figure 33 Separate pedestrian and vehicle entrances to site

Case study

A bakery worker was hit by an FLT as he stood in a space between breadbasket stacks at the side of a very congested passageway. He had stepped in-between the baskets to allow the truck to pass. As the truck went by it hit a barrier on the opposite side and was deflected back and hit the bakery worker who was knocked unconscious. Although the driver was trained, there was no segregation of vehicle and pedestrians and the area was congested.

Vehicle reversing

117 About a quarter of people struck by vehicles are injured when the vehicle is reversing. The following questions should be asked.

- Can reversing be eliminated or reduced, for example by one-way systems?
- Do vehicles have adequate all-round visibility? If not, have additional mirrors and other visibility devices been fitted?
- Is there need to mark reversing areas so they are clear to drivers?
- Is there a need for a banksman to direct reversing vehicles? Do they have somewhere safe to stand, are they trained and do they wear a high-visibility jacket?
- Do the vehicles need to have reversing aids such as CCTV, reversing alarms or proximity sensor/braking systems fitted? CCTV systems are inexpensive and can pay for themselves in reduced vehicle/building damage, as well as being an important safety aid.
- Have you considered risks to the public and other workers from reversing when drivers are delivering to retail outlets?

Figure 34 Banksman in high-visbility waistcoat reversing delivery vehicle

Figure 35 Ultrasound sensor mounted on rear of vehicle (brakes are automatically applied if the vehicle comes within 1 m of an object)

Case study

A bakery worker was injured while helping to load a delivery vehicle at a bakery. Another worker, who was not authorised to do so, tried to drive the van forwards to withdraw a loading ramp from the van and allow more room for the bread. The bakery worker who was injured was standing on the loading bay at the rear of the van when the vehicle rolled back. His arm was crushed between the van and the wall.

Falls from vehicles

118 Over a fifth of transport-related accidents occur when workers fall from the vehicle. The following issues should be considered in risk assessments.

- Is cab access well designed, with slip-resistant steps and handholds?
- Is the loading floor at the rear of the vehicle slip-resistant to prevent workers slipping from the vehicle onto the ground, even in wet conditions? Are suitable steps and handholds provided?
- Has the need to go on top of flour tankers and other tankers been eliminated by providing sampling and filling/discharging controls at ground level?
- Where tanker-top access is required, is it safe (eg side-mounted, curved access ladders to each man-lid or a top walkway is fitted with collapsible handrails)? Is a tanker-top access gantry with handrails provided on-site for cleaning and maintenance work?
- Are workers raised on FLT forks or on fork-mounted pallets? Fatalities regularly occur from this unsafe practice. Only properly constructed cages designed specially for lifting people should be used (see Chapter 6).

Figure 36 Delivery vehicle with fixed ladder for maintenance of refrigeration unit (controls are in the cab)

Tail lifts

119 Serious injuries have occurred on vehicle tail lifts. You should consider the following hazards in risk assessments.

- trapping feet between the moving platform fixed parts of the vehicle or the ground;
- trapping fingers or other parts of the body between moving parts;
- workers being crushed by loads falling or rolling from the platform;
- workers being crushed between the platform and fixed parts of loading bays;
- workers falling from the platform.

120 Tail lifts should be constructed to BS EN 1756-1: 2001, the harmonised European Standard on this equipment. Trapping points for feet and other body parts should be designed out where possible. Otherwise, special guards to cover the trapping points should be fitted. Further guidance is given in the Federation of Bakers Memorandum No 47 on tail lifts (see 'Further reading' for Chapter 5).

121 Loads should not be allowed to overhang the platform and the amount of tilt caused by a vehicle not being on level ground should not exceed five degrees in any direction. Any chocking devices fitted, such as combined ramps/stops, should be used to prevent loads rolling off the platform. When loading, the tail lift should not be loaded above the manufacturer's safe working load.

122 To reduce the risk of falls from tail lifts, the surface should have sufficient slip-resisting qualities to prevent slips, even in wet conditions.

123 The level of lighting in the vehicle, at the rear of the vehicle and at the loading point should be adequate.

Figure 37 Removing trays from tail lift with the aid of a long-handled hook

Figure 38 Tail lift in use

Case study

A worker was standing behind the tail lift of a lorry while trolleys of bread were lowered to the ground. The trolleys rolled off the tail lift onto the worker, who suffered severe cuts to his legs and ligament injuries. The operator of the vehicle fitted ramp extensions that could be set perpendicular to the tail lift to form a barrier to prevent trolleys rolling off in future.

FLT operations

124 Injuries to FLT drivers frequently occur when the FLT falls down the gap between the vehicle and the loading bay as the vehicle moves off. A system should be in place to prevent 'drive-offs' while the FLT is still loading. Options include:

- a solid mechanical restraint attaching the rear of the lorry to the loading bay which is only removed as part of a safe system of work, eg when the driver's keys are returned;
- a key exchange system, only returning the driver's keys when the lorry's rear doors are closed.

125 The strength of the vehicle floor should be checked as sufficient for the weight of the FLT being used.

Figure 39 Only trained and authorised drivers should use fork-lift trucks

Figure 40 Captive key and traffic-light system to prevent drive-offs at loading bay

Figure 41 Close-up of captive key system

Training

126 Drivers should be trained, competent and authorised to drive. Drivers' health, eyesight and hearing ability need to be taken into account. The Approved Code of Practice *Rider operated lift trucks: Operator training* covers training for FLT drivers (see 'Further reading' for this chapter).

127 The workforce should be informed of the rules for segregation of vehicles and pedestrians, vehicle movements and wearing high-visibility clothing.

Securing contents of delivery vehicles

128 Accidents occur when drivers open the doors of delivery vehicles and are struck by part of the load which has moved during transit. All loads should be secured to avoid potentially hazardous movement.

Falls from height

Why tackle falls from height risks?

129 Falls from height are one of the main causes of fatal injuries in bakeries and one of the highest causes of major injuries. Injuries tend to be serious (eg broken bones, fractured skulls) which means that time lost from work for recovery can be significant. Remember - even a fall from less than 2 m can result in fatal injuries.

Places where falls from height occur in bakeries

130 An analysis of fall-from-height accidents shows that there are specific places in bakeries where falls are most likely to occur. Targeting risk assessment at these areas will help reduce the risk of falls from height in your workplace.

- **Stairs** - about a third of fall-from-height accidents in bakeries involve people falling down stairs or from staircases, often when the stairs are wet or contaminated with food product.
- **Ladders** - where temporary access is required, use of untied ladders and step ladders results in a similar number of accidents to falls on stairs.
- **Vehicles** - falls from vehicles are also a main cause of injury, either from delivery vehicles or FLTs (see Chapter 5).
- **Plant and machinery** - the need to gain frequent access to plant and machinery, both for cleaning and checking product, increases the likelihood that an accident might occur.
- **Warehouse racking and shelving in stores** - falls from storage racking or shelves are also common, where workers try to retrieve goods stored at high level by climbing up the racking.
- **Internal roofs -** accidents often occur when workers gain access onto internal, non-loadbearing roofs for cleaning or retrieval of goods.

Activities being undertaken when falls occur

131 Analysis of fall-from-height accidents also shows that there are particular activities being carried out when most falls happen. Targeting risk assessment at these activities is therefore a priority. They fall roughly equally into three categories:

- cleaning;
- checking and sampling;
- maintenance.

Figure 42 Oven with handrails permitting safe oven-top access

132 Falls from plant and machinery often occur when cleaning is being carried out to meet hygiene requirements. For example, cleaning flour dust from ledges is often being undertaken when falls occur from temporary access equipment such as ladders and stepladders. Checking and sampling of product is an essential part of the baking process but also results in a substantial number of accidents every year involving falls from a height. Maintenance of bakery plant and equipment, often involving use of tools at a height, is also a common activity when falls occur.

133 Where falls are from vehicles, they normally happen during loading and unloading procedures. Falls also occur when workers stand on FLT forks, or on a pallet mounted on the forks, to gain access to high areas.

What the law says

134 The Workplace (Health, Safety and Welfare) Regulations 1992 require employers to take suitable and effective measures to prevent people falling any distance likely to cause personal injury. Essentially, this means that every worker must have a safe place of work at all times. Further guidance is given in the Approved Code of Practice to the Regulations (see 'Further reading' for Chapter 6).

How to prevent falls from height

135 In most cases when people fall from a height, safe access has not been provided. It is important that you carry out an assessment of all the tasks that your employees have to carry out at height and put the necessary systems and equipment in place for such work to be done safely, and for systems and equipment to be maintained. You also need to impress on employees that shortcuts to gain access to height are strictly forbidden.

136 Looking at the following issues, activities and common locations of falls will be helpful in carrying out risk assessments and establishing what action is required.

Figure 43 Permit-to-work at height sign

Installation of new plant

137 Installation of new plant offers opportunities to 'design in' safety.

- Fall-from-height risk assessments should be carried out on all capital and project plans.
- Specify plant and equipment where checking and sampling can be done from ground level.
- Specify plant and equipment with access platforms, walkways and staircases with handrails etc to prevent the need for temporary access arrangements.

Cleaning

138 Cleaning can be reduced by good design and maintenance of plant, but when it is required you should avoid the use of ladders where possible.

- The need to clean flour dust at a height can be reduced by providing and maintaining effective local exhaust ventilation equipment that will reduce the amount of dust in your premises.
- Clean high structures from ground level where possible, eg use a vacuum cleaner with an extension nozzle.
- If access to height for cleaning cannot be avoided, a safe system of work must be provided. For example, it is not acceptable to use a ladder if it involves carrying heavy cleaning equipment. Ladders are only acceptable if the job is short and both the user's hands are free.

Case study

A cleaner in a bakery was seriously injured when he fell 2.5 m from a stepladder. He had tried to climb the stepladder, carrying a vacuum cleaner to clean the top of an oven. A longer vacuum pipe would have prevented the need to climb while carrying the vacuum cleaner.

Sampling or checking

139 Plant should be designed to allow sampling and checking from ground level, or from permanent steps/platforms provided with handrails.

- Gauges and other measuring/monitoring equipment should be sited at ground level if possible. You should consider this when buying new plant and equipment.
- Clear vision panels can sometimes be fitted to plant to allow viewing from ground level.
- Where access to height is regularly required, provide permanent safe access, for example steps/platform with handrails around a divider hopper.

Case study

A flour delivery driver fell 3 m when the bottom of the unsecured ladder he was climbing slipped outwards. The driver was making a delivery of flour into a 20-tonne silo and he had climbed the ladder to tap the outside of the silo to see whether or not it was full. After the accident the company set up a system where all delivery drivers are accompanied and supervised on-site. A fixed stairway was also installed for access to the top of the silo.

Maintenance

140 A risk assessment should be carried out before any maintenance work commences.

- Where frequent access is needed to high places on or on top of plant and equipment, safe and permanent access should be provided.
- If access is only infrequent, then temporary access equipment (eg ladder or mobile scaffold) may be used, but it must be suitable for the purpose and safely used.
- As a last resort, equipment that will minimise the distance and the consequences of a fall may by used, for example clip-on safety harnesses.

Figure 44 Permanent-access stairs to plant with non-slip treads and handrails

Case study

An extraction pipe from a flour silo in a bakery had blocked. A bakery worker gained access to an inspection hatch, situated 3 m above floor level, using a pair of trestle steps steadied by another worker. To gain access to a further hatch, the bakery worker clambered along a 20 cm-wide cable tray, lost his balance and fell to the floor.

Falls caused by slipping

141 Many accidents attributed to falls from height are initially caused by slipping.

- If footwear or access equipment becomes contaminated, for example with dust, dough or oil, what would have been a slip accident can turn into a high fall if an employee is working at height. Ladders and work platforms should be cleaned regularly to avoid a build-up of contamination.
- Slip-resistant footwear should be used when working at height.
- For further information on slips prevention, see Chapter 4.

Falls on stairs

142 Falls on stairs are the most common fall accident in bakeries.

- Stairs should be maintained in good condition and have clearly visible nosings fitted with well-secured, non-slip strips if required.
- Handrails should be provided - on both sides if it is a wide stair.
- Often falls occur on stairs because the steps are contaminated with product or are wet from cleaning. It is important to set up a cleaning system that keeps stairs clear of product but also allows adequate drying time before they are used again.

Figure 45 Stairs with nosings and handrails

Figure 46 Temporary access platform with non-slip treads and handrails

Falls from warehouse racking

143 Unnecessary injuries occur when employees climb warehouse racking or shelving in stores to check or retrieve items; safe access should be provided, for example wheeled steps.

Access onto internal roofs/false ceilings

144 Access onto internal roofs/false ceilings that are non-loadbearing, for cleaning, maintenance and retrieval of goods, results in many accidents when the worker falls through the roof onto the floor below.

- Risk assessments for cleaning and maintenance work should ensure access is prevented onto roofs/ceilings that are non-loadbearing or safe to work on.
- The tops of chillers and freezers should not be used for storing equipment unless safe flooring, safe access and handrails have been provided.

Case study

A bakery worker fell 3.3 m from the loft of a bakery through a 1 cm-thick plasterboard ceiling fixed beneath unboarded joists, approximately 0.5 m apart. The worker had been cleaning flour from between the joists and fell as he was being handed up equipment. He suffered a fractured spine.

Storage in lofts and other elevated areas

145 Storage above floor level requires particular attention.

- Lofts and other elevated areas should not be boarded out and used for storage of flour, ingredients etc unless it has been confirmed that the joists etc are strong enough to take the planned load. You may need to consult a structural engineer.
- Safe access also needs to be provided to elevated areas, for example a fixed stair with handrails on the open sides.

Using fork-lift trucks for access

146 Fatalities regularly occur when workers fall from FLT forks.

- Standing on FLT forks (or a pallet mounted on forks) as a means of access must be prohibited.
- Use purpose-built access equipment instead, for example a tower scaffold.
- If FLTs are used as a means of access, then only properly constructed, fork-mounted cages, which must be secured to the forks, should be used. Further guidance is given in HSE publication *Working platforms on fork-lift trucks* (see 'Further reading' for Chapter 6).

Case study

A bakery worker climbed up some pallet racking to examine goods and could not get down. A fork-lift truck driver offered to give him a lift down on the forks. The worker fell from the forks (a distance of 2.5 m), breaking broke both wrists and an elbow. The fork-lift truck driver was inexperienced and was not trained.

Bakery and packaging machinery

Injuries caused by machinery

147 Machinery (and plant) is one of the main causes of fatal injuries in bakeries and the second highest cause of major injuries. The use of machinery in bakeries presents a variety of mechanical hazards including crushing, shearing, cutting/severing, entanglement and drawing-in/trapping. Food machines also present unique safeguarding problems because they have to be accessed frequently for product changing, maintenance and cleaning for hygiene purposes.

Machines that cause the most accidents

Bakery equipment

148 Dedicated bakery machines that cause a high number of accidents are shown, with their significant hazards, in Table 6.

Table 6 Hazards from bakery machinery

Bakery machine	Associated hazards
Depositors	Crushing and severing hazard at cut-off device (eg rotary valve), pistons and trapping between descending head and table
Dough moulders	Drawing-in and crushing hazard at rollers/belts
Mixers (twin-arm, spiral, trough, high-speed)	Entanglement, crushing and shearing in mixer blades. Trapping in bowl drive on spiral mixers or tilting bowl of trough mixers.
Dough/pastry brakes	Drawing-in and crushing hazard at in-running rollers
Pie and tart machines	Crushing and burning hazard between the blocking head and mould
Dough dividers	Severing hazard at the dividing knife
Roll plant	Crushing, drawing-in and severing hazard at dividing mechanisms and moulding parts
Provers	Trapping and crushing between pocket carriers moving in opposite directions and between pocket carriers and fixed parts of the frame. Trapping hazard on chain and sprocket drives.
Bowl hoist	Crushing under descending bowl, crushing by bowl falling from carriage, trapping and crushing between moving bowl/carriage and fixed parts of hoist
Bread slicer	Cutting on moving/stationary blades

Conveyors

149 Conveyors cause 30% of machinery injuries in the food industry. In bakeries, conveyors used to move product from one machine to another form an integral part of a process machine. Injuries on conveyors result from well known hazards such as in-running nips at rollers, traps at transmission parts (eg chain and sprocket drives) and other trapping points between moving and fixed parts.

Packaging machines

150 Machines used for packaging bakery products are the second highest cause of injuries. Most occur at forming dies, sealing mechanisms and cutting mechanisms. Table 7 identifies the significant hazards from a number of packaging machines.

Figure 47 Dough brake with trip guards

Table 7 Hazards from packaging machinery

Packaging machine	Associated hazards
Carton-forming machine	Crushing and shearing at forming die and drive mechanisms. Burning hazard if hot-melt glue is used
Case erector (semi-automatic)	Crushing hazard
Case taper (semi-automatic)	Drawing-in hazard on drive belts, cutting hazard at the cut-off knife
End-load cartoning machine	Crushing and shearing hazard at the forming die and drive mechanisms. Burning hazard if hot-melt glue is used
Flowrapping machine	Crushing, shearing and burning hazard at the sealing jaws
L-sealer (semi-automatic)	Crushing and burning hazard from sealing bar. Drawing-in hazard from conveyor belt
Shrink tunnel	Drawing-in hazard from conveyor. Burning hazard from hot air, surfaces and products
Stretchwrapping machine	Burning hazard from sealing plate

Power transmission mechanisms

151 A number of accidents also happen at transmission machinery (such as chain and sprocket drives) that is either contained within a specific machine or forms part of a process line. The hazards from transmission mechanisms are generally crushing, drawing-in and entanglement.

How most machinery accidents happen

152 Almost all accidents occur during normal bakery operations such as production activities, clearing blockages, cleaning and maintenance, all of which are foreseeable activities. Often guards are removed to clear a blockage and keep production running, resulting in operators being injured. Another hazard of removing guards to clear blockages is unexpected start-up of the machine. Although the hazardous parts may be stationary when the guard is removed, they can start up unexpectedly either because they are on an automatic cycle or because the operator accidentally triggers a sensor that would normally be triggered by the product. Further advice is given in paragraph 165.

Buying new machinery

153 The supply of new machinery is covered by the Supply of Machinery (Safety) Regulations 1992 (the Machinery Directive). These require manufacturers and suppliers to ensure that machinery is safe and is 'CE' marked. There is a checklist at the end of this chapter to help you when buying new machinery.

Machinery already in use on your premises

154 Existing machinery that is used by your employees and which pre-dates the Supply of Machinery Regulations will be covered by the Provision and Use of Work Equipment Regulations 1998 (PUWER). New machinery, once in use in your premises, is also covered by PUWER and the same requirements will apply.

Figure 48 Bowl hoist with fixed fencing around machine and interlocked, lift-up access gate

155 Under PUWER, you must ensure that the machine is:

- safe;
- suitable for the purpose for which it is being used;
- maintained and in good working order;
- inspected routinely to ensure that any safety-critical components and systems are in good working order;
- safe to use and can be cleaned and maintained safely.

Special safety problems with safeguarding food machinery

156 Most accidents on food machinery happen during unblocking, cleaning and maintenance. To ensure safety, food machinery must have the hazard designed out and should take into account the factors covered in the following paragraphs.

Fixed or interlocking guards?

157 Many accidents happen when fixed guards are removed while the machine is still running. Also, when fixed guards are removed, they are sometimes not replaced and employees can become complacent about access to hazardous moving parts.

158 If access is required to part of a machine more than once per shift, the guarding giving access to that area should be interlocked so that the machine cannot operate unless the guard is in place. These guards can be control guards (ie guards that start the machine when they are closed). This can reduce downtime significantly but is only allowed if the operator cannot be trapped between the hazardous part and the guard being closed. There should be no hazard from rundown time when the guard is opened. This can be achieved by motor braking or, if it is not possible to stop the hazardous part quickly enough, the interlocking guard should incorporate guard locking which means that the guard is locked until the hazardous part comes to rest.

159 Figure 49 shows an example of an interlocking guard used successfully on automatic dough dividers in the bakery industry.

Figure 49 Dough divider with hinged, interlocked, swan-neck device

Fixed guards

160 Fixed guarding (ie guarding that can be removed and is secured, using handtools, by screws, nuts, bolts etc) can be used if the guard does not have to be removed frequently. Guards should either enclose the danger area or prevent access by ensuring a suitable distance to any hazardous area. See Table 4 in BS EN 294: 1992 *Safety of Machinery. Safety distances to prevent danger zones being reached by the upper limbs*.

Design of interlocks

161 For hygiene reasons, some interlocking switches are not suitable in certain applications in the food industry, for example tongue-operated switches that have parts where food can accumulate and are difficult to clean effectively. Coded, magnetic interlocking switches are preferable in this situation. All interlocking devices should comply with BS EN 1088 *Safety of machinery. Interlocking devices associated with guards: principles for design and selection*.

Maintenance of guards and interlocks

162 Many accidents on bakery machines occur because interlocks have failed, been defeated or guards have fallen into disrepair. The bakery environment is relatively harsh, due to the nature of the product and also the frequency with which guards and interlocks are called upon.

163 It is essential that you have a system for checking and maintaining guards and interlocks because (due to the frequency of access needed to bakery machinery) their failure is likely to lead to a hazardous situation for the operator. Checks should be done by trained personnel at the beginning of each start-up and should be recorded. These records should then be acted upon to ensure that the necessary maintenance work is carried out. You should also have a planned, preventive maintenance system for machinery that operates in tandem with your machinery checks.

Figure 50 Bread slicer with interlocked, infeed tunnel guard

Stored energy

164 Many accidents occur on bakery machines because, although the machine has been switched off or access has been gained via an interlocked guard, there is still stored energy in the machine (such as compressed air). This can cause hazardous parts to operate unexpectedly. The machine should be designed so that access to the hazardous parts is not possible unless all energy from them has been dissipated.

Unexpected start-up

165 Where frequent access is needed into the hazard zone (as is common with bakery machinery) there is a chance that the machine will start unexpectedly if the power is interrupted and then reinstated. The design should take account of this, ie if the power supply is interrupted the hazardous parts should stop or return to a safe position, and the machine should need to be reset before further operation is possible.

Slips

166 Because of the need for frequent access for cleaning or unblocking, there is an increased risk of employees slipping, either at ground level or falling from a height if access at height is needed for cleaning or unblocking. The presence of food product or lubricant spilling onto walkways or steps is an additional hazard. Bakery machines should be designed so that the food product and any lubricants are properly contained within the machine. Where spillage of product onto the floor is unavoidable you should consider fitting non-slip areas around the machinery or on walkways (see Chapter 4).

Hygienic design

167 Suppliers and manufacturers of machinery must also consider hygienic design as food safety hazards can arise from:

- microbiological causes such as spoilage, organisms or toxins;
- chemicals used as cleaning agents, disinfecting agents and lubricants;
- foreign bodies such as pests or materials used in the construction of the machine.

168 Advice on design criteria to meet food hygiene risks is given in BS EN 1672-2 *Food processing machines. Safety and hygiene requirements: basic concepts. Part 2. Hygiene requirements.*

Machinery isolation and lock-off

169 Before any clean-down or maintenance work is started, machines should be isolated. This means disconnection of the machine from all sources of energy. Either the electrical plug for the machine should be removed or the isolating switch should be used. Where pneumatic energy is used, means of isolating the pneumatic supply must be clearly and unambiguously marked and the supply should be isolated.

170 Where there is a possibility that the machine could be accidentally reconnected while someone is working on it, putting them in danger, there should be a system for locking-off the isolation devices, for example by using personal padlocks. More information on isolation procedures is given in Federation of Bakers Safety Memorandum No 25 *Isolation - Personal danger boards and padlocks.*

Figure 51 Lockable isolator switch

Safeguarding standards for machines that cause most accidents

Conveyors

Existing machinery

171 The principle hazard areas (in-running nips and transmission parts) have traditionally been safeguarded by fixed guards. However, analysis of injury figures indicates that fixed guarding alone is not effective because guards are removed for cleaning and not replaced, so further precautions are required. If fixed guards are used, they need to be designed to allow safe cleaning of the conveyor without guard removal. Alternatively, guards can be interlocked where frequent access is required, for example more than once per shift.

New machinery

172 Designers of conveyors need to consider eliminating in-running nips and trapping points by design, for example the use of lift-out rollers, and by guarding which is interlocked or permanent but allows access for safe cleaning and clearing of product. For example, close-fitting, permanent guarding is suitable for in-running nips created between the belt and end rollers (see Figure 52). Information on safeguarding flat-belt conveyors is given in BS EN 619: 2002 *Continuous handling equipment. Safety requirements for equipment handling unit loads*, which supersedes BS 5667: 1980 Part 19 *Specification for continuous mechanical handling equipment. Safety requirements.*

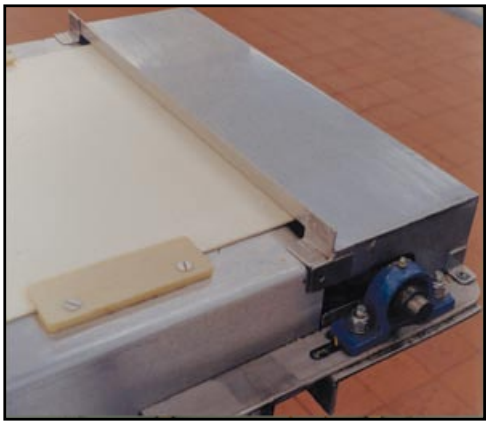


Figure 52 Fixed guard over in-running nip end roller of conveyor

Bakery machinery

173 Table 8 identifies the main bakery machines, some of the precautions that can be used and the appropriate standard or guidance for those machines. British Standards are available from the British Standards Institution (see the end of the 'Further reading' section for the address etc).

Table 8 Safeguarding precautions for bakery machinery

Machine	Precautions	Relevant standards or guidance
Depositor	Access to cut-off device/valve via hopper may be prevented either by fixed bars in hopper or an interlocked guard covering hopper Access to cut-off device via outlet may be prevented by extending outlet so that it is not possible to reach into hazardous part, or force of cut-off device should not be sufficient to cause serious injury For ease of cleaning and unblocking, outlet tubes or hoppers may be interlocked so that the cut-off device cannot operate when the operator has access There should be no stored energy in the machine that could cause hazardous parts to operate when interlocked guards are opened	BS EN 294: 1992 *Safety of machinery. Safety distances to prevent danger zones being reached by the upper limbs* CEN 'C' standard (prEN) on food machinery depositors proposed
Dough moulder	The operator should not be able to reach any hazardous in-running nip either at the infeed or the delivery opening. At the infeed, feed devices such as 90-degree safety flaps, sliding drawers or swan necks may be used. Interlocked access panels are also acceptable. If it is possible to reach hazardous parts through the delivery opening then a guard should be fitted For ease of cleaning and unblocking, interlocked guards that lift off, allowing access to rollers and belts can be fitted	BS EN 12041: 2000 *Dough moulders* Federation of Bakers Safety Memorandum No 40 (*French-stick moulders*)
Mixers	Guarding should be provided to prevent or reduce access to trapping points between paddles, beaters or ribbons and the mixing bowl The level of guarding will depend on the severity of the hazard On small planetary mixers a bowl extension ring is sufficient. Large machines may need to have an interlocked guard that completely prevents hand access to the bowl On dough mixers (spiral), there should be an interlocked guard over the top of the bowl. Any traps created by the bowl drive mechanism should be protected by a fixed or interlocked guard or contained within the casing of the mixer On trough mixers, access to the mixing trough should be prevented by interlocking guards. It should not be possible to reach hazardous parts with the guards open. On mixers that can tilt, access to any trapping points between the tilting bowl and the frame of the machine should be prevented. This may be achieved by a hold-to-run control for tilting the bowl sited in a fixed position at a safe distance from the tilting bowl and with a clear view of all sides of the mixer	BS EN 453 2000 *Dough mixers* BS EN 454 *Planetary mixers* Draft prEN *Mixers with horizontal shafts*

Table 8 Safeguarding precautions for bakery machinery (continued)

Machine	Precautions	Relevant standards or guidance
Dough and pastry brakes	Guards should be fitted on either side of reversing dough and pastry brakes to prevent access to the in-running nip. They may be fixed or trip guards. The dimensions for both fixed and interlocked guards are given in BS EN 1674: 2000	BS EN 1674: 2000 *Dough brakes*
Pie and tart machines	Access to the blocking head and mould should be prevented. This can be achieved by having a combination of fixed and interlocked hinged guards with a selection of false tables or safety frames, depending on which pie moulds are being used. Any gaps in guards should not permit access to the blocking head and mould	BS EN 13390: 2002 *Pie and tart machines*
Dough dividers	Access to the moving dividing knife via the hopper should be prevented. Open-topped hoppers do not prevent access even if they are high off the ground as the accident history shows that operators use steps to enable them to reach into the hopper Preventing access can be achieved by use of a hinged, interlocked swan-neck guard (see Figure 8). Alternatively, a hinged, interlocked cover can be used or any other equally effective means to prevent access. Applying edible oil to the sides of the feed hopper may help to prevent dough sticking Access to hazardous parts via the discharge should be prevented if it is possible to reach hazardous parts through it	Draft prEN 12042 *Dough dividers*
Roll plant	Access to the hazardous moving parts, for example the dividing mechanism, and the bun moulding mechanisms should be prevented. At the infeed, access may be prevented by any one of a number of solutions, eg swan-neck, 90-degree safety flap, sliding drawer device Access to hazardous parts via the discharge should be prevented if it is possible to reach hazardous parts through it Access to the roll plant for clearing blockages and misfeeds may be fairly frequent. The use of interlocked guards will help to ensure safe access as well as reducing downtime	None published
Provers	Clearances between pocket carriers moving in opposite directions to each other and clearances between pocket carriers and fixed parts of the frame of the machine should be large enough to prevent serious injury to the hand or arm. Clearances are given in BS EN 12403: 2000 Points where chains pass over sprockets should be fitted with fixed guards if it is possible to reach them through the infeed or discharge openings of the machine	BS EN 12403: 2000 *Intermediate provers*

Table 8 Safeguarding precautions for bakery machinery (continued)

Machine	Precautions	Relevant standards or guidane
Bowl hoist	Access to the area underneath the descending bowl and to trapping points between the bowl/bowl carriage and the hoist may be achieved either by the use of fixed fencing around the machine with an interlocked gate for access, or a hold-to-run control. The control should be located in a fixed position where the operator cannot be struck by the descending bowl and must have a clear view of the hazard area. The maximum speed of the bowl during the last 500 mm of descent should be less than 0.2 m per second	Draft prEN 13288 *Lifting and tilting machines for bakeries*
Bread slicer	The slicing blades should be protected by an interlocked guard. The distance from the bread infeed opening to the cutting blades should be greater than or equal to 850 mm. If it is possible to reach the sharpened side of the blade from the outfeed opening it should also be provided with an interlocked guard. If access to the blades is possible when the crumb tray is open/removed the crumb tray should be interlocked	Draft prEN 13954 *Bread slicers*

Packaging machinery

174 Table 9 identifies the main types of packaging machines, some of the precautions that can be used and the appropriate standard for those machines.

Table 9 Safeguarding precautions for packaging machinery

Machine	Precautions	Relevant standards or guidance
Carton-forming machine	Interlocked guards around main moving parts. Fixed guards for drive mechanisms. Interlocking device required on the carton magazine to stop machine before the last few cartons are used. Minimum reach distance of 850 mm to nearest danger zone at the carton discharge. Solid acrylic guards required if hot-melt glue is jetted under pressure	Draft prEN 415-7
Case erector (semi-automatic)	Erecting plates must not exert a force greater than 70 N	Draft prEN 415-7
Case taper	Design of drive belts should eliminate the risk of drawing-in. The tape cut-off knife should be designed so that it cannot be accessed when in operation and is protected when tape reels are changed	Draft prEN 415-7
End-load cartoning machine	Interlocked guards around main moving parts. Fixed guards for drive mechanisms. Interlocking device required on the carton magazine to stop machine before the last few cartons are used. Minimum reach distance of 850 mm to nearest danger zone at the carton discharge. Solid acrylic guards required if hot melt glue is jetted under pressure. Trip flap to be fitted where a bucket infeed conveyor enters the interlocked guards	EN 415-3: 2000

Table 9 Safeguarding precautions for packaging machinery (continued)

Machine	Precautions	Relevant standards or guidance
Flowrapping machine	Interlocked guards to protect sealing jaw mechanisms with 850 mm minimum reach distance from the discharge to the nearest danger zone. Infeed chain dogs should be designed to eliminate hazards, eg snapping out if force greater than 150 N is exerted on the dogs	EN 415-3:2000
L-Sealer (semi-automatic)	Operating handle designed so that parts most likely to be touched are less than 50°C	Draft prEN 415-5
Shrink-tunnel	Drawing-in hazards on conveyor to be eliminated by design. External surfaces of the tunnel to be less than 65°C or if hotter warning symbol to be fitted	Draft prEN 415-5
Stretch-wrapping machine	Workstation to be designed so that the risk of burning from the heater plate is minimised	Draft prEN 415-5

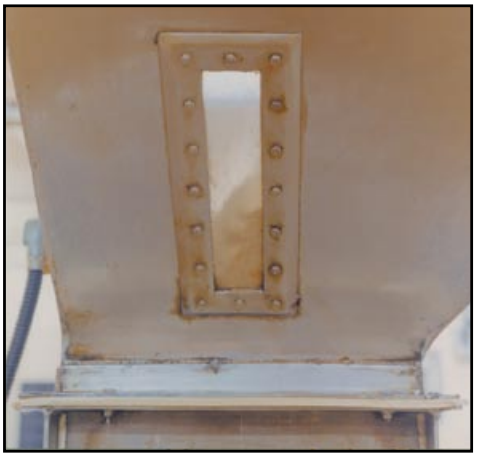


Figure 53 Vision panel on dough-divider hopper (see Table 8)

Figure 54 Dough-divider with sliding-drawer dough feed and use of divider oil to prevent dough sticking

Checklist for buying new machinery

Which regulations apply?

The supply of new machinery is covered by the Supply of Machinery (Safety) Regulations 1992 (The Machinery Directive). These require manufacturers and suppliers to ensure that machinery is safe and is 'CE' marked.

Is CE marking a guarantee of safety?

No. The manufacturer is claiming that the machine complies with the law. You still need to check the machine is safe before it is used.

What should I talk to a supplier (or manufacturer) about?

Tell the supplier where the machine will be used. Is it part of a line? Is it manually or automatically fed?

What should I ask the supplier?

What health and safety risks are there when using the machine?

Are there any dangerous parts and, if so, will they be effectively safeguarded?

Is an emergency stop button required/provided and will other stop buttons be necessary because of the way the machine is installed?

How will the machine be isolated for maintenance?

When isolated, is residual energy (eg pneumatic) dumped and, if not, can hazardous parts operate unexpectedly?

Will dust be produced by the machine in significant quantities and, if so, can an existing extraction system be adapted to the new machine or what other measures have been taken to control dust (eg lid on mixer)?

What has been done to eliminate the risk of electric shock, particularly during maintenance work, when control panel doors may be open?

What is an acceptable method of cleaning the machine to avoid risks from water getting into electrical parts (eg damp wiping)?

Is there clear information about installation, maintenance and breakdown procedures?

Is there an instruction handbook for the machine?

If problems arise with similar machines bought by other users will the supplier notify you?

Does the supplier (or manufacturer) have service back-up or a helpline, so that you can get further assistance if you need it?

Noise

The risk - hearing loss

175 Loud noise can cause permanent hearing loss and, in some people, permanent tinnitus (ringing in the ears). It is a difficult health problem to detect as the effects build up over a long period of time. If you cannot hear clearly what someone is saying (in a normal voice) two metres away, then the noise level, if experienced for prolonged periods, may be sufficient to cause permanent hearing loss.

176 In bakeries it is rare for noise levels to be extreme for prolonged periods, but by taking a few simple and inexpensive precautions you can ensure that the risks are reduced.

Noise levels in bakeries

177 There are some noise sources in bakeries where the noise exposures can exceed the levels at which you are required to take action (see paragraphs 183 and 184). Table 10 gives some examples of noise levels.

Table 10 Noise levels from bakery plant

Noise source	Typical noise level dB(A)
Dough-mixing room	85
Baking plant	85
Bread slicing	85-90
De-panning	90
Pneumatic exhausts	85-95
Moving racks (squeaky wheels)	up to 107

Noise reduction

178 The best way to lower exposure to noise is to reduce it at source so that everyone is protected. Providing hearing protection should be the last option as it depends on workers wearing it.

179 Before you buy new machinery you should ask for noise data from the manufacturer. It should specify noise levels at the operator's work position and you can use this information to inform your decision about which machine to buy. Machinery suppliers are obliged under the Supply of Machinery (Safety) Regulations 1992 to state the noise level at machinery workstations if it exceeds 70 dB(A).

180 For existing machinery, you may have to consider moving particularly noisy machines into areas where there are no workers or few workers. Other options include enclosing machinery, fitting anti-vibration mounts, fitting pneumatic silencers or acoustic screening.

Figure 55 Hearing protection to reduce noise exposure

Figure 56 Rubber knock-out bar on de-planning table

181 Table 11 gives examples of possible noise reduction solutions for some of the highest noise sources in bakeries.

Table 11 Noisy plant and equipment - some solutions

Source	Solutions
General machinery/ plant noise	■ Purchase low-noise machinery ■ Segregate noisy machines to areas where there are few workers ■ Line guards and machine panels with noise-dampening material ■ Fit anti-vibration mountings to machines ■ Enclose the machine/plant ■ Ensure good maintenance to stop rattles and noise from wear
De-panning (manual)	■ Ensure that a proprietary knocking-out table with rubber bar is used ■ Maintain rubber bar to ensure that noise from knocking-out is deadened ■ Avoid dropping tins and trays on the floor and stack tins carefully
De-panning (automatic)	■ Fit heavy plastic curtain strips to sides and around inlet/outlets of de-panner ■ Fit silencers to fan exhausts
Pneumatic exhausts	■ Fit silencers
Moving racks (squeaky wheels)	■ Specify good quality castors/bearings and low-noise wheels when purchasing trolleys ■ Regularly maintain wheels/bearings ■ Improve flooring to reduce damage to wheels/bearings and cut down noise

182 Guidance on practical methods to reduce noise is contained in the HSE publication *Sound solutions for the food and drink industries* (see 'Further reading' for Chapter 8).

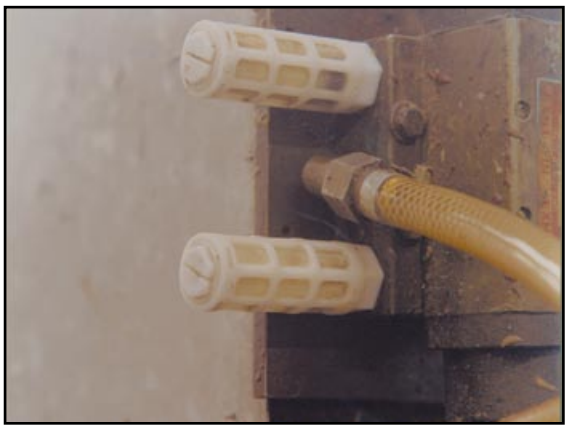


Figure 57 Two silencers on pneumatic lines on a pie and tart shell machine. The noise level before the silencers were fitted was 113 dB(A). After they were fitted the noise level was reduced to 86 dB(A)

What the law says

Current legislation

183 The Noise at Work Regulations 1989 have two action levels set at 85 and 90 dB(A):

- At the first action level of 85 dB(A), you need to inform your workers about the risks to their hearing and provide hearing protectors if they want them. Where hearing protectors are provided, appropriate instruction and training in their use should be given.
- At the second action level of 90 dB(A), you need to control noise exposure by doing all that is reasonably practicable to reduce it other than by providing hearing protectors, for example by making machinery quieter.
- Where it is not reasonably practicable to reduce noise exposure below 90 dB(A), ear protection zones should be marked with the recognised signs to restrict entry. You should ensure workers in these zones make full and proper use of hearing protectors.

Proposed legislation

184 New noise regulations are likely to come into effect in 2005. It is proposed that the existing first and second action levels (mentioned above) would be replaced by exposure action values of 80 and 85 dB(A) and a personal exposure limit value of 87 dB(A).

- At the lower action value of 80 dB(A), hearing protectors would be required to be made available, workers appraised of hearing risks and shown how to wear the hearing protectors.
- At the upper action value of 85 dB(A), hearing protectors would be required to be worn and appropriate instruction and supervision provided. Workers would also have the right to have their hearing checked (ie health surveillance) by a doctor or other suitably qualified person.
- The personal exposure limit value of 87 dB(A) would be a limit of noise exposure to the ear that should not be exceeded, for example by making machinery quieter, segregation or enclosure of machinery or providing hearing protection.

Confined spaces

Dangers from confined spaces

What is a confined space?

185 A confined space can be any space of an enclosed nature where there is a risk of death or serious injury arising from hazardous substances or dangerous conditions.

Hazards of confined spaces

186 Hazards can arise in confined spaces in bakeries from:

- a lack of oxygen;
- poisonous gases or fumes;
- liquids or solids that can suddenly fill the space, eg free-flowing solids in silos;
- hot conditions leading to a dangerous increase in body temperature;
- risk of explosion from flour and other combustible dusts (see Chapter 11).

Where are there confined spaces?

187 Examples of confined spaces in bakeries include:

- silos;
- ovens, provers and coolers;
- basements.

Figure 58 Flour silos are confined spaces

Figure 59 Padlocked access hatch to flour silo

Reducing the risk

Entry into silos

188 The consequences of accidents in confined spaces are severe. In previous years in the food manufacturing industry, entry into silos has caused as many as a fifth of food manufacturing industry fatalities. Due to increased vigilance this has significantly reduced in recent years, but close attention must still be paid to planning entry into silos and similar confined spaces if fatal accidents are to be prevented.

189 Where possible, entry into confined spaces should be avoided. If you have a silo on your premises you should check that you have done all that is necessary to avoid employees having to enter.

- Is your silo designed so that blockages are unlikely to occur and the need for access for cleaning is minimised?
- If blockages occur, can vibration pads, an air fluidisation bed, or other flow-aids be installed?
- Is remotely operated, silo-cleaning and unblocking equipment used? This should be constructed to an explosion-protected standard (see Chapter 11).
- Is silo entry prevented if the silo still contains enough flour to pose an engulfment or asphyxiation risk?

190 If entry into the silo is unavoidable, then:

- a strict system of work for entry must be followed. The system for entry into a silo should normally take the form of a 'permit-to-work', which is a formal, written check to ensure that all the elements of a safe system of work are in place before people are allowed to enter;
- you must ensure that it is not possible for flour to be fed to the silos while a person is inside and you must also ensure that any other mechanical plant within the silo is isolated and that sources of ignition are excluded. Any lights or other electrical equipment taken in should also be suitable for a hazardous area (see Chapter 11);
- you should make arrangements for emergency rescue before anyone enters the confined space. These arrangements will depend on the number of people involved, communications, equipment etc.

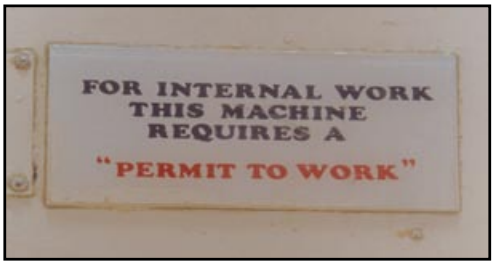


Figure 60 Permit-to-work sign on tunnel oven

191 Remember that engaging a contractor to carry out work in a silo on your premises does not exempt you from responsibility and you must satisfy yourself that the work they are doing is being carried out safely.

Case study

An employee of a specialist silo-cleaning subcontractor was hit by 75 kg of flour while attempting to clear a blockage inside a silo. When the contractor was in the silo, the controls preventing flour movements to the silo failed due to incorrect valve selection at an earlier stage. A 'holding pot' discharged into the silo. The permit-to-work system had broken down.

Ovens

192 There are a number of risks relating to entry into ovens in bakeries. These include risks from:

- fuel gas (explosion and low oxygen);
- electricity;
- entrapment in moving parts of the oven (where present);
- hot environment;
- combustion fumes (carbon dioxide and low oxygen).

193 If entry into your oven is necessary then there must be a formal safe system of work for entry, which may take the form of a 'permit-to-work'. The system should ensure, before any person is permitted to enter:

- any fuel source (eg gas), electrical energy and any other forms of moving energy are securely isolated so that they cannot be turned back on while someone is inside the oven;
- the oven has been cooled to a temperature that does not pose a risk (the permitted temperature will depend on the activity to be carried out and the length of time of exposure - see Federation of Bakers Safety Memorandum No 31 *Entry into ovens for purposes of clearing blockages* or *effective emergency repairs*);
- the oven has been ventilated to remove residual combustion fumes; and
- arrangements have been made for rescue.

Case study

Two fitters entered a 23 m-long tunnel oven to retrieve a grid that had fallen from a conveyor. The oven had not been allowed to cool to a safe working temperature, the work took place in a confined, dark space with moving machinery and there was no means of escape in the event of an emergency. Both fitters were overcome by the heat and subsequently became trapped in the oven conveyor and died.

Basements

194 Basements are probably not perceived as being hazardous in the same way as the other examples given in this chapter. However, basements may be considered confined spaces where there are difficulties of access and other hazards may be introduced.

195 If you have a basement bakery, or store ingredients in a basement, you should consider the risks to employees. These include risks from:

- build-up of hazardous gas or fumes;
- asphyxiation due to lack of oxygen;
- heat stress due to excessive temperatures; and
- restricted means of escape.

196 Although working in a basement will not necessarily require a formal written system of work, there are some essential checks that you must carry out to make sure that the atmosphere in the basement is safe and does not have the potential to become dangerous.

- Is your basement adequately ventilated and is the intake air from a clean air supply with no potential to become contaminated by fumes from, for example, oven combustion gases?
- Do you have flame-failure devices fitted to gas-fired equipment so that unburned gas cannot continue to escape in the event of flame failure?
- Do you have gas appliances regularly serviced to ensure efficient combustion and fume removal to a safe place, and that gas pipes are free from leaks?
- If necessary, have you fitted a low-oxygen-level alarm in the basement?
- Is the basement kept at a safe and comfortable working temperature?
- Is there any unnecessary storage of combustible materials?
- Is there an adequate means of escape for all employees from the basement in the event of a fire?
- Have you consulted the fire brigade about means of escape?

The law and further guidance

197 Access and work in confined spaces are covered by the Confined Spaces Regulations 1997. Guidance in the Approved Code of Practice on the Regulations (see 'Further reading' for Chapter 9).

Chemical cleaners

Chemical cleaners - hazardous substances

198 In bakeries there are a variety of cleaning chemicals used for different purposes, such as cleaning floors, hard surfaces, ovens and machines. Many of these chemicals are classed as hazardous substances because they present a hazard either to the eyes, skin or respiratory tract.

199 Most chemical cleaners will be covered by the Chemicals (Hazard, Information and Packaging for Supply) Regulations 2002 (CHIP) and they should come with a warning label and a safety data sheet. These should contain information about the effects of the substance being supplied, for example it may be labelled as an 'irritant' and have a risk phrase such as 'avoid contact with skin'. They should also give information on suitable protective clothing where appropriate. If a chemical cleaner is supplied without a safety data sheet you can request one from the manufacturer or supplier of the cleaner.

200 The Control of Substances Hazardous to Health Regulations 2002 (COSHH) also apply to any hazardous cleaning chemicals that you use in your workplace (see paragraph 206).

201 Typical chemicals used in bakeries include:

- sodium hydroxide (used for cleaning hard surfaces and, in stronger concentrations, for cleaning ovens);
- bleach (a mixture of calcium hydroxide and chlorine);
- other detergents and sanitisers.

Figure 61 Lockable, safe store for cleaning chemicals

Figure 62 Cleaning chemicals on storage shelves

Risks from chemical cleaners

202 Many of the cleaning substances used are irritant in their dilute form (less than 10%), eg for cleaning hard surfaces, but in their concentrated form are corrosive, eg for cleaning ovens.

203 The main risk if the chemical is labelled as 'irritant', is from irritation on skin contact, but there may also be a risk of contact dermatitis where there is prolonged contact with cleaning substances, even in weak solutions. Cleaners labelled 'corrosive' will require additional care in handling them.

204 Use of low-foaming agents, typically in blends of detergents and sanitisers, can lead to cases of dermatitis because workers are more inclined to increase the concentration as there is little foaming effect.

205 Other risks are splashing onto the eyes (where serious damage can occur depending on the strength of the solution) or respiratory irritation. It is particularly important when cleaning in a confined or semi-confined space that precautions are taken to avoid respiratory inhalation of aerosols or vapours from cleaning substances.

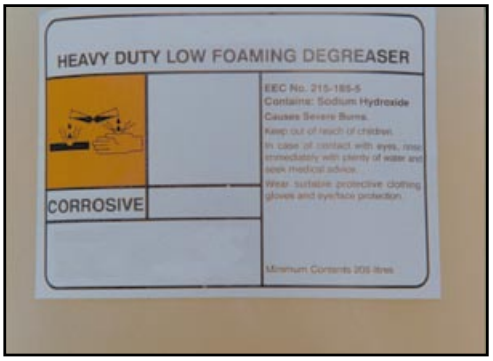


Figure 63 Warning label

Case study - use of sodium hydroxide solution

A bakery employee sustained a chemical injury to his left eye while attempting to clear a blockage in the lance of a spray gun being used to spray a solution of sodium hydroxide for cleaning/disinfection. Since the accident the company reviewed procedures and all defective equipment has to be taken to the workshop for proper investigation.

COSHH

206 Under the Control of Substances Hazardous to Health Regulations 2002 (COSHH), you should carry out an assessment that includes:

- making a list of the hazardous chemicals you use;
- an assessment of the risk in using these chemicals;
- measures to control operator exposure, covering
  - safe storage,
  - chemical compatibility,
  - working concentrations and safe dilution procedures,
  - application procedures and equipment,
  - protective clothing that must be worn;
- any health surveillance requirements;
- information and training requirements;
- provision of washing facilities;
- emergency action plan (eg for spillage);
- waste disposal - environmental considerations should be contained in the safety data sheet.

Case study - inadequate cleaning procedures

An employee in a bakery slipped on a wet floor that had just been cleaned with a strong cleaning solution. He suffered a dislocated shoulder and burns. There were no signs warning of the wet floor and the cleaning solution was stronger than it needed to be.

Incompatibility of some chemicals

207 Some chemicals that are relatively harmless on their own may become extremely hazardous when mixed. For example, mixing hydrochloric acid with any alkali-based cleaner will cause a cloud of chlorine gas to be released. It is particularly important that employees are warned of this possibility and that cleaners are not decanted into smaller containers unless they are fully labelled in line with the original container. The use of plastic or glass soft-drink bottles for storing cleaning chemicals should be forbidden.

Case study - mixing incompatible chemicals

Two incompatible chemicals were mixed in a bakery. Chlorine gas was given off and five employees were overcome by the gas and taken to hospital. The bakery had to be evacuated. The method that employees had been trained in for assessing compatibility of chemicals was to 'sniff' for the presence of chlorine.

Fire and explosion

The main hazards in bakeries

208 Although fires and explosions rarely occur in bakeries, when they do the effects are inevitably serious. The main fire and explosion hazards in bakeries arise from:

- flour and ingredient dusts;
- fuel gas;
- oven fires;
- deep fat fryers;
- hot work.

Flour and ingredient dust

209 Dust explosions in the food industry have caused serious accidents resulting in multiple fatalities. Dust explosions generally start as a 'primary explosion' inside plant which, if it ruptures, causes a much larger 'secondary explosion' as disturbed dust in the workroom ignites and explodes, often causing severe structural damage.

210 A flour or ingredient dust cloud will explode when:

- the concentration of dust in air falls within the upper and lower explosive limits;
- a source of ignition of the required energy is present.

Figure 64 Connecting earthing cable to flour tanker

Prevention of primary explosions

211 Fortunately, dust explosions are rare in the bakery industry but if they do occur they tend to be in silos or dust filters. It is therefore important to exclude all sources of ignition from within silos where possible. In particular:

- Electrical or mechanical equipment used within silos should be specially designed to avoid the risk of causing an ignition. Electrical and non-electrical equipment supplied for use in explosive dust atmospheres after 1 July 2003 is subject to the Dangerous Substances and Explosive Atmospheres Regulations (DSEAR). New equipment needs to be marked with the sign of explosion protection, 'Ex' in a hexagon.
- All metalwork that may be in contact with flour dust should be electrically bonded and earthed to dissipate static electricity.
- During bulk delivery of flour to your premises the road tanker must be bonded to the plant or a proprietary earth stake before delivery starts and the connection must be kept in place during the delivery.

Prevention of secondary explosions

212 The following basic precautions should ensure that the chance of a secondary explosion occurring is minimised and that, if an explosion does occur, its effects are controlled.

- Where possible, you should locate silos and dust filters in the open air, outside the bakery building.
- Plant and equipment inside the building should be enclosed to prevent escape and accumulation of dust in the building.
- Regular checks should be made to ensure that damage has not occurred to plant and equipment that is allowing quantities of flour and ingredients to escape into the bakery.
- You should maintain scrupulous cleanliness, so that dust on surfaces in the building is reduced to a minimum. In particular, make sure that ledges and surfaces are included in the cleaning schedule, and make sure that they can be safely reached for cleaning with a vacuum cleaner (see Chapter 6 'Falls from a height').
- Maintaining slight negative pressure on silos and vessels will prevent escape of dust.

- Silos and dust collection vessels should be fitted with explosion relief panels. Explosion relief should normally be ducted to outside or, if this is not possible, directed to a safe area away from the workforce. Guidance on calculating the explosion relief requirements is given in the HSE publication *Safe handling of combustible dusts: Precautions against explosions* (see 'Further reading' for Chapter 11).
- As far as possible, exclude obvious ignition sources from areas where unplanned explosive dust concentrations might occur.

Figure 65 Flour silo sited in open air, outside bakery

Figure 66 Bonding connection between metal pipework on either side of viewpoint

Fuel gas

213 Most gas explosions in bakeries occur in ovens or other gas equipment that is manually lit.

214 The high number of accidents that occur when manually igniting gas equipment is attributable to the delay between turning the gas on and applying the ignition source. All modern gas equipment should be fitted with flame-failure devices, such as a thermo-electric valve, in which:

- gas is turned on and the ignition source is applied simultaneously;
- if there is no ignition source, the valve automatically cuts off the supply of gas;
- if the flame is blown out during use, this will be detected and the supply of gas stopped.

215 Some older equipment is not fitted with flame-failure devices (as it was not a requirement at the time of manufacture) and eventually these will be replaced by newer, safer equipment. If you have such equipment you should consider having a flame-failure device fitted. Where such devices cannot be fitted then you must train and supervise staff in a safe system of work.

216 All gas appliances should be regularly serviced by a competent gas service engineer. The appliance manufacturer's instructions should explain exactly what should be done during the service.

217 It is advisable to have a readily accessible gas shut-off valve in the work area so that in the event of an emergency the gas supply to all appliances in that area can be shut off at once. Staff should know where the gas valve is located, or where the main gas valve at the meter is situated. There should be clear, written instructions at the point of shut-off that describe the method to shut off the gas supply. Each appliance should also have its own shut-off valve for maintenance purposes, or for shut-off in an emergency.

218 All staff responsible for lighting up, shutting down or adjusting oven burners should be trained in safe procedures.

Figure 67 Gas-fired equipment should be fitted with flame-failure devices

Case study

A gas explosion occurred at a bakery as a result of a faulty gas installation in a proving room. The standard of the gas installation was poor and included a rubber hose and gas ring to heat a small water tank. There was no flame-failure device. The cause of the leak that led to the explosion was faulty pipework.

Oven fires

219 Flash fires in ovens can be caused by a build-up of ingredient dust, oils or fats in the oven and in flues and ducts. These materials can cause a serious fire if present in large amounts. Deposits of oils and fats are particularly hazardous because the flashpoint (the point at which a substance can evolve sufficient vapour to form an explosive mixture with air) reduces significantly as the greasy deposit is heated and reheated. The flashpoint can reduce to below that of the top temperature of the oven, causing an ever-present risk of ignition. It is essential that an inspection and cleaning regime is followed. Further guidance is given in the Federation of Bakers Safety Memorandum No 57 *Oven fires*.

Case study

A pie company regularly seasoned pie tins by coating the tins with oil and baking off the oil in an indirectly fired oven. The flashpoint of the oil was 170° C. The flashpoint temperature (which may have been reduced by successive seasonings) was reached and a crack in the heat exchanger caused the vapour to ignite, which in turn caused a large and damaging fire in the oven.

Deep fat fryers

220 The ignition of hot cooking oil or fat in deep fat fryers is also a potential fire hazard in bakeries. Fryers should be fitted with a working thermostat and also a high-temperature, automatic cut-out device to limit the oil temperature should the thermostat fail.

221 The electricity supply switch and/or gas valve for the fryer should be clearly marked and positioned where it can be safely operated to turn off the heat source if the oil or fat catches fire.

222 Ventilation hoods, filters, flues and drainage channels should be inspected and cleaned regularly to remove grease build-ups that can ignite and cause a fire. Access points for inspection should be provided in the ducting.

223 Staff should be trained to use deep fat fryers and drain them safely. Fryers that are in use should not be left unattended. Appropriate fire-fighting equipment and a fire blanket should be available for use in the vicinity of the fryer. A notice should be prominently displayed giving details of action required if there is a fire. Further advice on this can be obtained from your local Fire Prevention Officer.

Hot work

224 Careless use of welding or flame-cutting equipment and other hot work has resulted in many incidents. Any hot work on the items of plant above should only be done under a documented permit-to-work system. Federation of Bakers Safety Memorandum No 1 *Working safely* gives further guidance on safe systems of work and permit-to-work systems.

Fire risk assessment

225 Under the Fire Precautions (Workplace) Regulations 1997, you must carry out a risk assessment to establish what the risks are from fire in your workplace and what general fire precautions are required to safeguard your employees or others who visit your premises (eg customers). For guidance on this see *Fire safety: An employer's guide*, under 'Further reading' for Chapter 11.

Electrical safety

What are the hazards?

226 It is all too easy to forget that electricity at normal mains voltage can kill. Each year about 1000 accidents at work involving shock and burn are reported and about 20 of these are fatal.

227 Wet conditions, for example when bakery equipment is being cleaned, increase the risk of electric shock.

Electricity at Work Regulations 1989

228 These Regulations require that:

- you assess electrical risks to ensure that risks from electrical equipment in your workplace are reduced to an acceptable level;
- precautions, including the adoption of safe systems of work, are taken against the risk of death or personal injury from electricity used in the workplace;
- so far as is reasonably practicable, all electrical systems are constructed, maintained and operated at all times to prevent danger.

229 Guidance on the Regulations is published in the Memorandum of Guidance on the Electricity at Work Regulations 1989 (see 'Further reading' for Chapter 12).

A safe installation - a good starting point

230 Every electrical installation should be properly installed by a competent electrician. Untrained people can easily make deadly mistakes without realising it. This may mean bringing in outside contractors. If so, make sure that they are competent to undertake the work; companies that are members of bodies such as the Electrical Contractors Associations in England, Wales and Scotland (ECA/SELECT) or the National Inspection Council for Electrical Installation Contracting (NICEIC) have their work checked periodically.

Fixed machinery installations - what to look for

231 Each machine supplied via a permanent cable must have an isolator in the supply. It may be on the frame of the machine or on a nearby wall, and should be clearly marked to show which machine it supplies. The isolator should ideally be the type that can be locked-off using, for example, padlocks to secure the isolation. This should form part of a safe isolation procedure (locking-off procedure), which may include a permit-to-work system if justified by the circumstances and level of risk.

Small machines with flexible cables

232 Small machines are usually connected to sockets by flexible cables. Working areas should have sufficient sockets to avoid the need for trailing cables.

233 Plugs on electrical cables must be properly connected and the cable secured in the cord grip.

234 Standard domestic 13-amp, square-pin plugs are not suitable for use in wet environments. Plugs and sockets designed specifically for use in wet conditions, with terminals protected against water ingress, must always be used.

235 Flexible cables should be checked frequently for damage, loose plugs etc. Damaged cables must be taken out of service without delay. **Do not try to carry out makeshift repairs to damaged cables.**

Fuses, protection and earthing

236 The correct fuses or circuit-breakers should be used in accordance with the current rating of the equipment and cables.

237 Power cables to machines must be protected against damage, for example armoured and/or sheathed or installed in conduit.

238 Earth connections must be in good condition.

Water ingress

239 There is a risk of electric shock if water gets into electrical equipment. This may happen during cleaning. Hoses and pressure-washers present the greatest risk. If wet or moist conditions are likely, splash-proof, hose-proof or watertight equipment should be used.

240 Machine manufacturers must state whether machines should be cleaned with water and, if so, must state in the instruction handbook for the machine what method of cleaning is suitable.

241 BS EN 60529:1992 *Specification for degrees of protection provided by enclosures* (IP code) explains the IP rating of electrical equipment for use in dusty and/or wet environments.

Pressure-washers and steam-cleaners

242 Pressure-washers should be regularly checked, electrically tested and maintained in accordance with the manufacturer's instructions for the continued safe operation of the equipment. Where metalwork on the equipment is earthed, testing of the earth connections is particularly crucial to its continued safe operation.

243 A sensitive (30 mA residual operating current) residual current circuit-breaker (RCCB), also known as an earth-leakage circuit-breaker (ELCB) or residual current device(RCD), should be fitted in the supply to pressure-washing units and steam-cleaners. Such devices can improve protection in wet or hazardous areas. They should be checked regularly using the test button provided.

Figure 68 Pressure-washer being used for cleaning delivery vehicle

Maintaining and testing electrical equipment

244 All electrical installations and equipment should be maintained to prevent danger. This should include an appropriate system of user checks on the equipment. These checks should be backed up at appropriate intervals by more detailed inspection and testing of the equipment by a competent person. More detailed guidance on the frequency of testing can be found under 'Further reading' for Chapter 12.

Figure 69 Testing the RCCB on a weatherproof (IP56) socket outlet with integral RCCB protection

Finally…

245 If in doubt, ask the advice of a competent person such as an electrician, technician or engineer.

Accidents and emergencies

Reporting injuries, occupational diseases etc

246 Reporting of injuries, occupational diseases and certain dangerous occurrences are required by the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995 (RIDDOR 95). In particular:

- work-related deaths, 'major injuries' and 'dangerous occurrences'* must be reported to HSE, or the Local Authority, by the quickest practicable means - usually telephone;
- work-related deaths, 'major injuries' and all other injuries where someone is unable to do their normal work for more than three days must be reported in writing to HSE or the Local Authority within ten days of the accident on Form 2508 (see paragraph 248);
- occupational diseases (eg occupational asthma) relating to work activities must be reported to HSE or the Local Authority, when discovered, on Form 2508A (occupational asthma, occupational dermatitis and some conditions caused by repetitive movements of the upper limbs are reportable diseases that can occur in bakeries);
- keep records of reportable injuries, dangerous occurrences and diseases.

Figure 70 First-aid room

247 Reporting an injury or occupational disease does not suggest that you have accepted responsibility or liability for the event. It is simply informing the relevant enforcing authority that an incident has occurred at your premises. Under RIDDOR 95 it is an offence not to do so.

248 If you are reporting an injury, occupational disease or dangerous occurrence to HSE then the report should be made to:

Incident Contact Centre
Caerphilly Business Park
Caerphilly
CF83 3GG
Telephone: 0845 300 9923
Fax: 0845 300 9924
Website: www.riddor.gov.uk

* 'Major injuries' include serious fractures, amputations, hospitalisation etc. 'Dangerous occurrences' include explosion, fire, collapse of a lifting machine, scaffold collapses etc. The HSE guide to the Regulations has full definitions, see 'Further reading' for Chapter 13.

First aid

249 The Health and Safety (First Aid) Regulations 1981 require that you have:

- adequate and appropriate equipment and facilities for giving first aid to employees;
- an 'appointed person' to take charge in an emergency whenever people are at work - if you have a very small business this person may well be you. The 'appointed person' is not a qualified first-aider but must take charge of the first-aid arrangements, including looking after the first-aid box and calling the emergency services when required. Short courses are available for 'appointed persons' covering emergencies, cardio-pulmonary resuscitation, the unconscious casualty and the wounded or bleeding;
- qualified first-aiders. Whether you need these (and, if you do, the number you will require) will depend on the nature of your business, the number of employees and the location of your establishment;
- qualified first-aiders must have the right training and are given a certificate valid for three years - after that a refresher course and re-examination is necessary. Training organisations are registered with HSE's First Aid Approval and Monitoring Section, Room 118, Quay House, Quay Street, Manchester M3 3JB Telephone: 0161 952 8326.

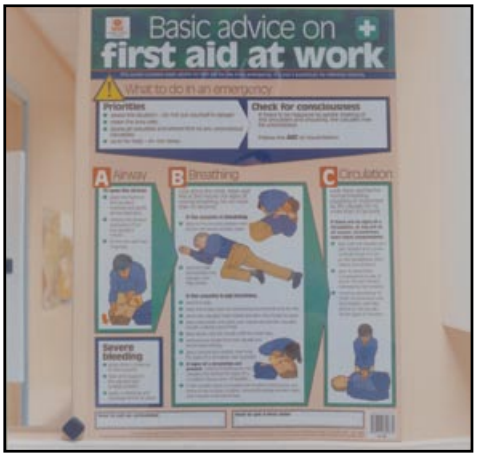


Figure 71 First-aid poster with essential information

Figure 72 Fully stocked first-aid box - a legal requirement

Emergency procedures

250 If things go badly wrong, your employees and the public may be exposed to serious and immediate danger. Procedures need to be in place to deal with emergencies such as serious injuries, explosion and fire. Whether these procedures need to be written will depend on the scale of your operation.

251 If you operate a small bakery, your concerns may be limited to a serious injury, a fire or a small-scale gas explosion. In this sort of case your arrangements need only be simple and straightforward. These could include:

- making sure emergency exits are kept clear at all times;
- clearly marking your premises from the road so that the emergency services can quickly identify the correct site;
- displaying a simple site plan with the main gas supply shut-off valve and electrical isolator marked.

Figure 73 Gas shut-off valve

252 If you have a larger-scale operation then you may need formalised arrangements in writing. These should include details on:

- how to raise the alarm in an emergency so that all employees understand that there is an emergency;
- evacuation procedures and muster points;
- emergency plant shut-down procedures;
- displaying a detailed site plan with shut-off valves and electrical isolators marked;
- nominated competent person to take control;
- qualified first-aiders appointed.

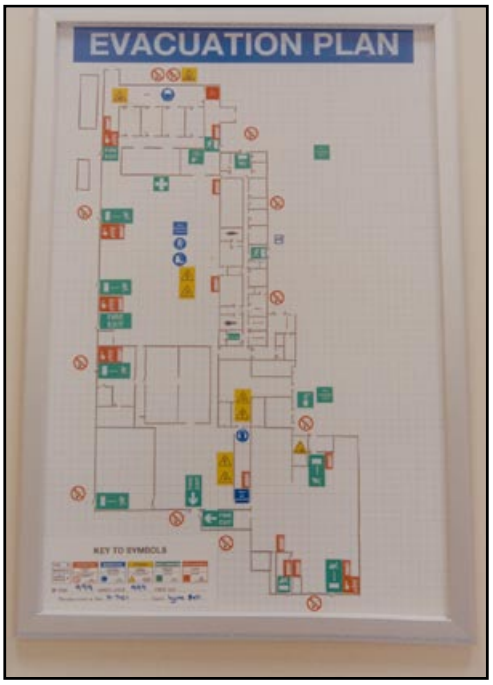


Figure 74 Evacuation plan showing assembly points and isolation points for utilities

Further reading

1 Managing the priorities

HSE priced publications

Successful health and safety management HSG65 (Second edition) HSE Books 1997 ISBN 0 7176 1276 7

The costs of accidents at work HSG96 (Second edition) HSE Books 1997 ISBN 0 7176 1343 7

Health risk management: A practical guide for managers in small and medium-sized enterprises HSG137 HSE Books 1995 ISBN 0 7176 0905 7

Essentials of health and safety at work HSE Books 1994 ISBN 0 7176 0716 X

Management of health and safety at work. Management of Health and Safety at Work Regulations 1999. Approved Code of Practice and guidance L21 (Second edition) HSE Books 2000 ISBN 0 7176 2488 9

Young people at work: A guide for employers HSG165 (Second edition) HSE Books 2000 ISBN 0 7176 1889 7

HSE free publications

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

Priorities for health and safety in the bakery and flour confectionery industry Food Information Sheet FIS4 HSE Books 1995

Priorities for health and safety in the biscuit manufacturing industry Food Information Sheet FIS10 HSE Books 1997

Five steps to risk assessment Leaflet INDG163(rev1) HSE Books 1998 (single copy free or priced packs of 10 ISBN 0 7176 1565 0)

Consulting employees on health and safety: A guide to the law Leaflet INDG232 HSE Books 1996 (single copy free or priced packs of 15 ISBN 0 7176 1615 0)

Working alone in safety: Controlling the risks of solitary work Leaflet INDG73(rev) HSE Books 1998 (single copy free or priced packs of 15 ISBN 0 7176 1507 3)

An index to health and safety guidance for the food and drink industries Food Information Sheet FIS7(rev1) HSE Books 2001

Non-HSE publications

Risk assessment in bakeries National Association of Master Bakers 1994

Permit-to-work systems Safety Memorandum 52 Federation of Bakers

Guidance on the control of contractors Safety Memorandum 55 Federation of Bakers

Practical aspects of risk assessments Guidance Note 1 The Food and Drink Federation

The Disability Discrimination Act 1995: A guide for everybody DL160 November 1996. Available from the Disability Rights Commission - see the 'Useful addresses' section for contact details.

2 Dust from flour and other ingredients

HSE priced publications

Control of substances hazardous to health. The Control of Substances Hazardous to Health Regulations 2002. Approved Code of Practice and guidance L5 (Fourth edition) HSE Books 2002 ISBN 0 7176 2534 6

Medical aspects of occupational asthma Medical Guidance Note MS25 (Second edition) HSE Books 1998 ISBN 0 7176 1547 2

Preventing asthma at work. How to control respiratory sensitisers L55 HSE Books 1994 ISBN 0 7176 0661 9

The selection, use and maintenance of respiratory protective equipment: A practical guide HSG53 (Second edition) HSE Books 1998 ISBN 0 7176 1537 5

An introduction to local exhaust ventilation HSG37 (Second edition) HSE Books 1993 ISBN 0 7176 1001 2

Maintenance, examination and testing of local exhaust ventilation HSG54 (Second edition) HSE Books 1998 ISBN 0 7176 1485 9

HSE free publications

Respiratory sensitisers and COSHH: Breathe freely - An employers' leaflet on preventing occupational asthma Leaflet INDG95(rev2) HSE Books 1995 (single copy free or priced packs of 15 ISBN 0 7176 0914 6)

Breathe freely: A workers' information card on respiratory sensitisers Pocket card INDG172 HSE Books 1994 (single copy free or priced packs of 25 ISBN 0 7176 0771 2)

Occupational dermatitis in the catering and food industries Food Information Sheet FIS17 HSE Books 1997

Non-HSE publications

Guidance on dust control and health surveillance in bakeries - also available as part of an interactive training package *Breathe easy*, which includes the guidance booklet, video and training notes Federation of Bakers 1999

COSHH spices and seasonings Guidance Note No 51D BMMA

3 Manual handling

HSE priced publications

Moving food and drink: Manual handling solutions for the food and drink industries HSG196 HSE Books 2000 ISBN 0 7176 1731 9

Manual handling: Solutions you can handle HSG115 HSE Books 1994 ISBN 0 7176 0693 7

Upper limb disorders in the workplace HSG60 (Second edition) HSE Books 2002 ISBN 0 7176 1978 8

Manual handling. Manual Handling Operations Regulations 1992. Guidance on Regulations L23 (Second edition) HSE Books 1998 ISBN 0 7176 2415 3

HSE free publications

Injuries and ill health caused by handling in the food and drink industries Food Information Sheet FIS23 HSE Books 2000

Reducing injuries caused by sack handling in the food and drink industries Food Information Sheet FIS31 HSE Books 2001

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)

Upper limb disorders: Assessing the risks Leaflet INDG171 HSE Books 1994 (single copy free or priced packs of 10 ISBN 0 7176 0751 8)

Roll cages and wheeled racks in the food and drink industries: Reducing manual handling injuries Food Information Sheet FIS33 HSE Books 2003

Non-HSE publications

The Manual Handling Operations Regulations 1992: Guidelines for Employers in the Baking Industry (including retail outlets) National Association of Master Bakers 1993

General outline assessment of manual handling operations in relation to bread, roll or confectionery baskets Federation of Bakers

4 Slips and trips

HSE priced publications

Slips and trips: Guidance for the food processing industry HSG156 HSE Books 1996 ISBN 0 7176 0832 8

Workplace health, safety and welfare. Workplace (Health, Safety and Welfare) Regulations 1992. Approved Code of Practice L24 HSE Books 1992 ISBN 0 7176 0413 6

HSE free publications

Slips and trips: Summary guidance for the food industry Food Information Sheet FIS6 HSE Books 1996

Preventing slips in the food and drink industries: Technical update on floor specifications Food Information Sheet FIS22 HSE Books 1999

Stop slips: Managing slips to reduce injuries and cost Video HSE Books 2000 ISBN 0 7176 1819 6

5 Workplace transport

HSE priced publications

Workplace transport safety: Guidance for employers HSG136 HSE Books 1995 ISBN 0 7176 0935 9

Rider-operated lift trucks. Operator training. Approved Code of Practice and guidance L117 HSE Books 1999 ISBN 0 7176 2455 2

Safety in working with lift trucks HSG6 (Third edition) HSE Books 2000 ISBN 0 7176 1781 5

Working platforms on fork-lift trucks Plant and Machinery Guidance Note PM28 (Second edition) HSE Books 2000 ISBN 0 7176 1233 3

HSE free publications

Workplace transport safety in food and drink premises Food Information Sheet FIS21 HSE Books 1999

Managing vehicle safety at the workplace: A short guide for employers Leaflet INDG199 HSE Books 1995 (single copy free or priced packs of 10 ISBN 0 7176 0982 0)

Reversing vehicles Leaflet INDG148 HSE Books 1993 (single copy free or priced packs of 15 ISBN 0 7176 1063 2)

Non-HSE publications

BS EN 1756-1: 2001 *Tail lifts. Platform lifts for mounting on wheeled vehicles. Safety requirements. Tail lifts for goods* British Standards Institution

Tail lifts Safety Memorandum 47 Federation of Bakers

6 Falls from height

HSE priced publications

Health and safety in roof work HSG33 (Second edition) HSE Books 1998 ISBN 0 7176 1425 5

Working platforms on fork-lift trucks Plant and Machinery Guidance Note PM28 (Second edition) HSE Books 2000 ISBN 0 7176 1233 3

Workplace health, safety and welfare. Workplace (Health, Safety and Welfare) Regulations 1992. Approved Code of Practice L24 HSE Books 1992 ISBN 0 7176 0413 6

HSE free publications

Preventing falls from height in the food and drink industries Food Information Sheet FIS30 HSE Books 2001

Tower scaffolds Construction Information Sheet CIS10(rev) HSE Books 1997

General access scaffolds and ladders Construction Information Sheet CIS49(rev1) HSE Books 2003

Working on roofs Leaflet INDG284 HSE Books 1999 (single copy free)

Non-HSE publications

Resting stages on silo ladders Safety Memorandum 34 Federation of Bakers

7 Bakery and packaging machinery

HSE priced publications

Safety in meat preparation: Guidance for butchers HSG45 HSE Books 1988 ISBN 0 7176 0781 X

Health and safety in kitchens and food preparation areas HSG55 HSE Books 1990 ISBN 0 7176 0492 6

Safe use of work equipment. Provision and Use of Work Equipment Regulations 1998. Approved Code of Practice and guidance L22 (Second edition) HSE Books 1998 ISBN 0 7176 1626 6

Pie and tart machines HSG31 HSE Books 1986 ISBN 0 11 883891 1

Supply of Machinery (Safety) (Amendment) Regulations 1994 SI 1994/2063 The Stationery Office 1994 ISBN 0 11 045063 9

HSE free publications

Effective purchasing procedures for equipment in the food and drink industries Leaflet INDG323 HSE Books 2000 (single copy free)

Hygienic design of machinery in the food and drink industries Food Information Sheet FIS24 HSE Books 2001

Buying new machinery: A short guide to the law and some information on what to do for anyone buying new machinery for use at work Leaflet INDG271 HSE Books 1998 (single copy free or priced packs of 15 ISBN 0 7176 1559 6)

Safeguarding flat belt conveyors in the food and drink industries Food Information Sheet FIS25 HSE Books 2001

Packaging machinery: Safeguarding thermoform, fill and seal machines Food Information Sheet FIS26 HSE Books 2001

Packaging machinery: Safeguarding palletisers and depalletisers Food Information Sheet FIS27 HSE Books 2001

Packaging machinery: Safeguarding pre-formed rigid container packaging machines Food Information Sheet FIS28 HSE Books 2001

Non-HSE publications

CE or PUWER? The application of legislation to machinery maintenance, assemblies, modification, refurbishment and resale PPMA 2002

Safety Memoranda 1-60 Federation of Bakers

Codes of Practice for the safeguarding of bakery machinery Parts 1, 2 and 3 BCCCA

British Standards

All the British Standards referred to in this book are available from the British Standards Institution (see ‘How to order publications’ at the end of this section for the address etc).

8 Noise

HSE priced publications

Sound solutions for the food and drink industries: Reducing noise in food and drink manufacturing HSG232 HSE Books 2002 ISBN 0 7176 2548 6

Reducing noise at work. Guidance on the Noise at Work Regulations 1989 L108 HSE Books 1998 ISBN 0 7176 1511 1

Sound solutions: Techniques to reduce noise at work HSG138 HSE Books 1995 ISBN 0 7176 0791 7

HSE free publications

Reducing noise exposure in the food and drink industries Food Information Sheet FIS32 HSE Books 2002

Noise at work: Advice for employers Leaflet INDG362 HSE Books 2002 (single copy free or priced packs of 10 ISBN 0 7176 2539 7)

Protect your hearing or lose it! Pocket card INDG363 HSE Books 2002 (single copy free or priced packs of 25 ISBN 0 7176 2540 0)

Wear ear protection properly: Protect your hearing or lose it! Poster MISC185 HSE Books 1999 (single copy free or priced packs of 5 plus 5 leaflets INDG298 and 30 pocket cards INDG299 ISBN 0 7176 2484 6)

9 Confined spaces

HSE priced publications

Safe work in confined spaces. Confined Spaces Regulations 1997. Approved Code of Practice, Regulations and guidance L101 HSE Books 1997 ISBN 0 7176 1405 0

HSE free publications

Safe work in confined spaces Leaflet INDG258 HSE Books 1997 (single copy free or priced packs of 20 ISBN 0 7176 1442 5)

Non-HSE publications

Safe systems of work: Entry into provers and coolers Safety Memorandum 30 Federation of Bakers

Entry into bakery ovens for purposes of clearing blockages or effecting emergency repairs Safety Memorandum 31 Federation of Bakers

Entry into tunnel ovens for inspection of internal surfaces Safety Memorandum 56 Federation of Bakers

Recommended safety precautions for employees entering bins NABIM

10 Chemical cleaners

HSE priced publications

A step by step guide to COSHH assessment HSG97 HSE Books 1993 ISBN 0 7176 1446 8

The technical basis for COSHH essentials: Easy steps to control chemicals HSE Books 1999 ISBN 0 7176 2434 X

HSE free publications

Controlling exposure to disinfectants used in the food and drink industries Food Information Sheet FIS29 HSE Books 2001

Occupational dermatitis in the catering and food industries Food Information Sheet FIS17 HSE Books 1997

COSHH: A brief guide to the regulations. What you need to know about the Control of Substances Hazardous to Health Regulations 2002 (COSHH) Leaflet INDG136(rev2) HSE Books 2003 (single copy free or priced packs of 10 ISBN 0 7176 2677 6)

Preventing dermatitis at work: Advice for employers and employees INDG233L HSE Books 1996 ISBN 0 7176 1246 5

The idiot's guide to CHIP 3: Chemicals (Hazard Information and Packaging for Supply) Regulations 2002 Leaflet INDG350 HSE Books 2002 (single copy free or priced packs of 5 ISBN 0 7176 2333 5)

Read the label: How to find out if chemicals are dangerous Leaflet INDG352 HSE Books 2002 (single copy free or priced packs of 15 ISBN 0 7176 2366 1)

Why do I need a safety data sheet? CHIP 3 Leaflet INDG353 HSE Books 2002 (single copy free or priced packs of 10 ISBN 0 7176 2367 X)

11 Fire and explosion

HSE priced publications

Standards of training in safe gas installation. Approved Code of Practice COP20 HSE Books 1987 ISBN 0 7176 0603 1

Fire safety: An employer's guide HSE Books 1999 ISBN 0 11 341229 0

Safe handling of combustible dusts: Precautions against explosions HSG103 HSE Books 1994 ISBN 0 7176 0725 9

HSE free publications

Gas appliances: Get them checked – keep them safe Leaflet INDG238(rev2) HSE Books 2002 (single copy free)

The safe use of gas cylinders Leaflet INDG308(rev1) HSE Books 2002 (single copy free or priced packs of 10 ISBN 0 7176 2332 7)

Precautions at manually ignited gas-fired catering equipment Catering Information Sheet CAIS3 HSE Books 1995

Safety during emptying and cleaning of fryers Catering Information Sheet CAIS17(rev1) HSE Books 2001

Dust explosions in the food industry Food Information Sheet FIS2 HSE Books 1993

Non-HSE publications

Working safely Safety Memorandum 1 Federation of Bakers

Safety precautions at gas fired appliances to reduce explosion risk in the baking industry Safety Memorandum 50 Federation of Bakers

Bulk flour systems: Safe systems of working Safety Memorandum 51 Federation of Bakers

Oven fires Safety Memorandum 57 Federation of Bakers

The prevention of fire and dust explosions in flour mills and bulk flour containers NABIM

The explosibility of dispersed flour dust NABIM

12 Electrical safety

HSE priced publications

Electricity at work: Safe working practices HSG85 (Second edition) HSE Books 2003 ISBN 0 7176 2164 2

Maintaining portable and transportable electrical equipment HSG107 HSE Books 1994 ISBN 0 7176 0715 1

Electrical risks from steam/water pressure cleaners Plant and Machinery Guidance Note PM29 (Second edition) HSE Books 1995 ISBN 0 7176 0813 1

Memorandum of Guidance on the Electricity at Work Regulations 1989 HSR25 HSE Books 1989 ISBN 0 7176 1602 9

HSE free publications

Do you use a steam/water pressure cleaner? You could be in for a shock! Leaflet INDG68(rev) HSE Books 1997 (single copy free)

Electric storage batteries: Safe charging and use Leaflet INDG139 HSE Books 1993 (single copy free)

Electrical safety and you Leaflet INDG231 HSE Books 1996 (single copy free or priced packs of 15 ISBN 0 7176 1207 4)

Non-HSE publications

BS 7671: 2001 *Requirements for electrical installations. IEE Wiring Regulations. Sixteenth edition* Institution of Electrical Engineers

BS EN 60529: 1992 *Specification for degrees of protection provided by enclosures* (IP code) British Standards Institution

Code of Practice for In-Service Inspection and Testing of Electrical Equipment IEE 2001 ISBN 0 85296 776 4

BS 7671 IEE 1998 *Guidance Note 3 Inspection and Testing* ISBN 0 85296 956 2

13 Accidents and emergencies

HSE priced publications

A guide to the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995 L73 (Second edition) HSE Books 1999 ISBN 0 7176 2431 5

First aid at work. The Health and Safety (First Aid) Regulations 1981. Approved Code of Practice and guidance L74 HSE Books 1997 ISBN 0 7176 1050 0

Accident book BI 510 HSE Books 2003 ISBN 0 7176 2603 2

Basic advice on first-aid at work Poster HSE Books 2002 ISBN 0 7176 2265 7

HSE free publications

RIDDOR explained: Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995 HSE31(rev1) HSE Books 1999 (single copy free or priced packs of 10 ISBN 0 7176 2441 2)

Protecting your health at work Leaflet INDG62(rev) HSE Books 1996 (single copy free or priced packs of 10 ISBN 0 7176 1169 8)

Your work and your health: What your doctor needs to know Leaflet INDG116 HSE Books 1992 (single copy free)

First aid at work: Your questions answered Leaflet INDG214 HSE Books 1997 (single copy free or priced packs of 15 ISBN 0 7176 1074 8)

Basic advice on first aid at work Leaflet INDG347 HSE Books 2002 (single copy free or priced packs of 20 ISBN 0 7176 2261 4)

Report of an injury, dangerous occurrence or case of disease. RIDDOR 1995 Form 2508/2508A HSE Books 1996 ISBN 0 7176 1078 0

How to order publications

For details of how to order HSE publications, please see the inside back cover.

British Standards are available from:
BSI Customer Services,
389 Chiswick High Road,
London W4 4AL
Tel: 020 8996 9001
Fax: 020 8996 7001
Website: www.bsi-global.com

The Stationery Office (formerly HMSO) publications are available from;
The Publications Centre,
PO Box 276,
London SW8 5DT
Tel: 0870 600 5522
Fax: 0870 600 5533
Website: www.tso.co.uk
(They are also available from bookshops.)

Useful addresses

ABIM
Association of Bakery Ingredients Manufacturers
4a Torpichen Street
Edinburgh
EH3 8JQ
Tel: 0131 229 9415

BCCCA
Biscuit, Cake, Chocolate and Confectionery Alliance
37-41 Bedford Row
London
WC1R 4JH
Tel: 0207 404 9111

BFAWU
Bakers, Food and Allied Workers Union
Stanborough House
Great North Road
Stanborough
Welwyn Garden City
Hertfordshire
AL8 7TA
Tel: 01707 260 150

BOHS
British Occupational Hygiene Society
Suite 2
Georgian House
Great Northern Road
Derby
DE1 1LT
Tel: 01332 298101

BMMA
British Meat Manufacturers Association
11/12 Buckingham Gate
London
SW1E 6LB
Tel: 0207 828 1224

BSI
British Standards Institution
389 Chiswick High Road
London
W4 4AL
Tel: 0208 996 9001

CCFRA
Campden and Chorleywood Food
Research Association
Chipping Campden
Gloucestershire
GL55 6LD
Tel: 01386 842000

DRC
Disability Rights Commission
FREEPOST MID02164
Stratford-upon-Avon
Warwickshire
CV37 9BR
Tel: 08457 622 633

FDF Food and Drink Federation
6 Catherine Street
London
WC2B 5JJ
Tel: 0207 836 2460

FOB Federation of Bakers
6 Catherine Street
London
WC2B 5JW
Tel: 0207 420 7190

IEE Institution of Electrical Engineers
PO Box 96
Stevenage
SG1 2SD
Tel: 01438 767328

NABIM National Association of British and Irish Millers
21 Arlington Street
London
SW1A 1RN
Tel: 0207 7493 2521

NAMB National Association of Master Bakers
21 Baldock Street
Ware
Hertfordshire
SG12 9DH
Tel: 01920 468 061

PPMA Processing and Packaging Machinery Association
New Progress House
34 Stafford Road
Wallington
Surrey
SM6 9AA
Tel: 0208 773 8111

SAMB Scottish Association of Master Bakers
Atholl House
4 Torpichen Street
Edinburgh
EH3 8JQ
Tel: 0131 229 1401

SSA Seasoning and Spice Association
6 Catherine Street
London
WC2B 5JJ
Tel: 0207 420 7106

URTU United Road Transport Union
76 High Lane
Chorlton-cum-Hardy
Manchester
M21 9EF
Tel: 0800 526 639

Further information

For information about health and safety, or to report inconsistencies or inaccuracies in this guidance, visit www.hse.gov.uk/. You can view HSE guidance online and order priced publications from the website. HSE priced publications are also available from bookshops.

British Standards can be obtained in PDF or hard copy formats from BSI: http://shop.bsigroup.com or by contacting BSI Customer Services for hard copies only Tel: 020 8996 9001 email: cservices@bsigroup.com.

The Stationery Office publications are available from The Stationery Office, PO Box 29, Norwich NR3 1GN Tel: 0870 600 5522 Fax: 0870 600 5533 email: customer.services@tso.co.uk Website: www.tsoshop.co.uk/ (They are also available from bookshops.) Statutory Instruments can be viewed free of charge at www.legislation.gov.uk/.