



## Priorities for health and safety in the flour and grain milling industries

### Food Information Sheet No 13

#### Introduction

This sheet has important information for employers and employees in the flour and grain milling industry. Your attention will be drawn to the aspects of the working environment which deserve special attention. The information in this sheet is based on an analysis of the accidents which have been reported to HSE and local authorities by employers. The information is also based on HSE investigations. You should assess all the aspects discussed in this sheet carefully to make sure that adequate precautions are in place, and that they are in place permanently. Usually, once a risk is identified, it will be clear what the appropriate precaution is. If you need further guidance on a particular topic, please refer to the Useful information section.

#### The priorities

Table 1 lists the relative importance of the different situations which cause accidents. The table shows, as does other reported experience, that it is important to focus on the following, as they cause about 75% of all injuries:

- (a) avoid entry into silos, which can cause fatal injuries by engulfment;
- (b) transport - avoid falls from vehicles, and ensure fork lift truck safety;
- (c) safe movement of lorries;
- (d) falls from stairs and ladders;
- (e) slips and trips;
- (f) machinery - conveyors, transmission, mixers, mills and rotary valves;
- (g) handling - heavy bags and plant;
- (h) release of flour treatment chemical substances;
- (i) fire and explosion risks.

#### Occupational ill health

Because reports from employers do not include occupational ill health the analysis can only cover safety. But experience of the industry suggests the occupational ill health priorities are likely to be:

- (a) chronic ill health from manual handling, eg of bags and plant, and repetitive strain injury (RSI), eg from packing;
- (b) occupational lung disease from grain and flour dust exposure;
- (c) noise-induced hearing loss from noisy areas in mills.

#### The risks compared with other industries

In 1991-92 the overall incidence rates, that is the number of injuries per 100 000 employees, were 171 for major injuries and 1943 for injuries causing over a three day absence (O3D), totalling 2114 overall.

Before 1989-90 the flour and grain milling industry had a relatively high rate of injuries, especially major ones, making it one of the most hazardous sectors in the food industry. However, since then the performance has improved significantly. Overall the rate has been halved and now approaches the average for general manufacturing as a whole.

#### Scope of this guidance

This guidance uses reports from employers whose main activity is coded to Standard Industrial Classification (1980) 4160. This covers milling, flaking and rolling grain and the production of grain products including uncooked cereals, eg oatmeal, but excludes ready-to-eat breakfast cereals. It includes the splitting and grinding of peas, beans and other pulses, but excludes the preparation of compound animal feeds.

The figures used are for 1991-92, the last year for which such detailed incidence rates are available. But the figures are still typical of recent years, and the analysis of the cause of these accidents covered a three year period.

The analysis only included injuries reported to employees on and off site. Visitors, contractors and the self-employed were excluded, but the number of these injuries is unlikely to be significant.

#### Safety checklist

This checklist includes the most common situations that cause accidents, as well as a list of preventative measures.

Table 1

<i>Cause</i>	<i>Relative importance</i>	<i>Significant factors</i>
Handling	22% of all reported injuries.	60% of injuries where the case was specified where from heavy items rather than awkward (11%) or sharp (15%). Bags account for most injuries, especially to drivers and packers, but maintenance lifting is also important.
Falls	17 % of all injuries, but the main 32% cause 35% of major injuries higher than usual in industry.	Involved ladders (20% of which led to major injuries). 20% involved stairs and 18% vehicles (40% of which were major).
Slips and trips	16% of all injuries, but the third main cause of major injuries (16%).	Slips and trips occurred in equal numbers. Tripping accidents were a higher proportion than usual. The causes were evenly split between those caused by obstructions and unevenness.
Struck by falling and moving objects (including hand tools)	13% of all injuries.	50% were by moving objects displaced and only 17% from hand tools.
Exposure to harmful substances	10% of all injuries. About 3 times the all industry average rate.	75% were from a release of substances, eg typically SO <sub>2</sub> , Cl <sub>2</sub> from flour treatment plant and 24% from splashes.
Machinery	9% of all injuries, but the second main cause of major ones (22%).	48% of specified injuries were at conveyors and 14% at transmission machinery. Other important machines were mixers, roller mills and rotary valves.
Striking against objects when moving	7%	
Transport	2%	90% involved fork lift trucks.
Fire	1%	
Electrical	1%	

**Handling**

- (a) avoid heavy, sharp or awkward lifting and pulling movements, and eliminate or reduce manual handling of bags and heavy plant during maintenance;
- (b) where it is not reasonably practicable to mechanise, assess the factors leading to the risk and take appropriate precautions, especially establishing safe lifting techniques.

**Falls**

- (a) identify where access will be needed and arrange permanent, safe access;
- (b) check condition and use of ladders;

- (c) maintain stairs;

- (d) avoid the need for access onto the top of bulk grain vehicles (eg use a ground based sheeting system) and road tankers or, if not reasonably practicable, make sure there is safe access onto working platforms and guardrails.

**Slips**

- (a) measures to avoid spillage and leakages to floor;
- (b) measures to contain spillages which cannot be avoided, so they do not contaminate the floor;
- (c) measures to clear up spillages and dry the floor immediately;
- (d) effective cleaning, preferably out of hours;

- (e) drying wet floors after cleaning.

### **Trips**

- (a) avoid obstructions in walkways and at work stations;
- (b) avoid uneven floors.

### **Struck by moving object**

- (a) secure, accessible storage for materials and products;
- (b) appropriate methods of handling goods;
- (c) appropriate selection and training in use and maintenance of hand tools.

### **Exposure to harmful substances**

- (a) assess how substances can be used safely;
- (b) use enclosed filling systems and maintain plant to avoid leakages etc - eg flour treatment plants;
- (c) have personal protective equipment available for use quickly.

### **Machinery**

- (a) check hazards and guarding, especially at conveyors, mixers, mills, rotary valves and belt drives, sprocket and shafting.

### **Fire and explosion**

- (a) maintain plant and inspect critical areas for early signs of heating - consider temperature detectors etc;
- (b) take appropriate dust explosion precautions at the plant.

### **Useful information**

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

2 *Health and safety in retail and wholesale warehouses* HS(G)76 1992 HSE Books ISBN 0 11 885731 2

3 *A recipe for safety: Health and safety in the food industry* TOP 05 1994 HSE Books ISBN 0 7176 0911 1 (available in priced packs of five)

4 *An index to health and safety guidance in the food industry* FIS7 1996 HSE Books

5 *Health and safety in flour mills* 1992 NABIM

6 *Manual handling: Solutions you can handle* HS(G) 115 1994 HSE Books ISBN 0 7176 0693 7

7 *The Manual Handling Operations Regulations 1992 Guidelines for Employers in the Flour Milling Industry* NABIM Safety Guide No 3

8 *Safety in the use of timber pallets* PM15 1993 HSE Books ISBN 0 7176 0714 3

9 *Safe use of ladders, step ladders and trestles* GS31 1984 HSE Books ISBN 0 11 883594 7

10 *Slips and trips: Guidance for the food industry* HS(G)156 1996 HSE Books ISBN 0 7176 0832 8

11 *The Control of Substances Hazardous to Health Regulations 1988: Guidance for employers in the flour milling industry* 1993 NABIM Safety Guide No 1

12 *Health and safety in flour mills* NABIM

13 *Safety in working with lift trucks* HS(G)6 1992 HSE Books ISBN 0 11 886395 9

14 *Workplace transport safety* HS(G)136 1995 HSE Books ISBN 0 7176 0935 9

15 *Access onto the tops of road tankers in the flour milling industry* NABIM Guidance Note

16 *Prevention of falls from grain lorries* NABIM Guidance

17 *Sheeting and unsheeting of tipper lorries* HS(G)148 1996 ISBN 0 7176 0888 3

18 *Safe handling of combustible dusts* HS(G)IO3 1994 HSE Books ISBN 0 7176 0725 9

19 *Dust explosions in the food industry* FIS 2 1993 HSE Books

20 *Fire and dust explosions in flour mills and bulk flour containers* 1992 NABIM

21 *Noise at work* Noise Guide No 1 *Legal duties of employers to prevent damage to hearing* Noise Guide No 2 *Legal duties of designers, manufacturers, importers and suppliers to prevent damage to hearing. The Noise at Work Regulations 1989* 1989 HSE Books ISBN 0 7176 0454 3

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