Reducing noise exposure in the food and drink industries

Food Information Sheet No 32

Introduction

Exposure to noise at work can cause irreversible hearing damage. It is one of the commonest health problems and can be difficult to detect as the effects build up gradually over time.

Often the dangers can be reduced by relatively simple and inexpensive means. This information sheet gives advice on the legal requirements and hierarchy of control for dealing with noise exposure in the food and drink industries. It also gives typical noise levels in particularly noisy food and drink processes and indicates solutions that companies have adopted to reduce noise at these processes. HSE has a number of general publications on noise at work. These are listed under 'Further reading'.

Noise levels in the food/drink industries

Most food and drink industries have processes which emit high noise levels exceeding the 85 dB(A) and 90 dB(A) Action Levels at which employers are required to take action (see 'Legal requirements'). Typical noise levels (measured in dB(A)) which have been recorded in food/drink industries are as follows:

Drinks	Bottling halls	85-95
	Bottle filling/labelling	85-95
	De-crating/washing	85-96
	Casking/kegging	85-100
	Cooperage machines	>95
Meat	Animals in lairage	80-110
	Powered saws	up to 100
	Blast-freezers/chillers	85-107
	Bowl-choppers	>90
	Packing machinery	85-95
Milling	Mill areas	85-95
	Hammer mills	95-100
	Grinders	85-95
	Seed graders	90
	Bagging lines	85-90
Bakery	Dough-mixing room	85
	Baking plant	85
	De-panning	90
	Bread slicing	85-90
	Fruit washing	92
Dairy	Production areas	85-95
	Homogenisers	90-95
	Bottling lines	90-95
	Blast-chillers	87-95
	Pneumatics	85-95
Confectionery	Hopper feed	95
	Mould-shakers	90-95
	Wrap/bagging	85-95
	High boiling	85

These levels only represent a small sample of the many food and drink processes but show that the higher 90 dB(A) Action Level is often reached if employees spend a significant part of their time in these areas.

Hierarchy of control measures to prevent noise exposure

Protection is best achieved by controlling noise at source. Follow this sequence to reduce exposure - wearing hearing protection is the last resort:

- When considering the purchase of machinery or plant, obtain noise data from the manufacturer/supplier to inform your decision. The data should specify noise levels at the operator's positions.
- Try to move noisy machinery/plant into areas where there are no workers, or few workers (eg into an outbuilding or into a dedicated room).
- Where machinery/plant has to remain in the working area, enclose it within a sound-insulating enclosure if possible.
- Where enclosure is not possible, reduce noise by other engineering means such as:
  - lining guards/panels with noise-dampening material;
  - providing acoustic screens;
  - lining the inside of hoppers with impact-deadening material;
  - fitting anti-vibration machine mountings;
  - fitting silencers to exhaust systems;
  - ensuring good maintenance to stop rattles and prevent noise from wear.
- Where noise levels still exceed 90 dB(A) ensure workers wear hearing protection (earplugs or earmuffs) within the designated and clearly marked zones.
- Duration of exposure can be reduced by job rotation or providing a noise refuge.

Noisy processes and some of the solutions found to be successful

Process	Typical noise level (dBA)	Solutions implemented
Glass bottling	90-95 (dairy) 85-95 (brewing and soft drinks) 100 (high-speed bottling, 400-800 bottles per minute)	● Replace glass bottles with plastic ones ● Design out noise at source: specify acceptable noise level when purchasing machinery ● Reduce inter-bottle impact: slow down speed of line and increase spacing of bottles ● Dampening of impact surfaces: fit dampening material at impact points ● Fit acoustic enclosure over bottle conveyor ● Provide acoustic barrier around cap feeder bowl and fit noise-reducing mountings ● Limit worker exposure time: job rotation
Product impact on hoppers	95 (confectionery) >90 (frozen food) >100 (animal feed)	● Design out noise at source: specify acceptable noise level when purchasing machinery ● Reduce product-hopper impact: reduce drop-height of product ● Reduce or fill in gaps at feed and take-off of palletisers ● Reduce impact noise: - use hopper made of sound-deadened steel - line inside of hopper with impact-deadening material - line outside of hopper with noise-dampening material - line guards/panels with noise-dampening material (can produce 5 dB(A) noise reduction)
Wrapping, cutting wrap, bagging etc (eg sweets)	85-95	● Design out noise at source: specify acceptable noise level when purchasing machinery ● Reduce drop height of product ● Enclosure: - line cover panels with noise-dampening material - fill any gaps in cover panels with noise-absorbing material - fit full acoustic enclosure over bagging line ● Regularly maintain machinery ● Limit worker exposure time: job rotation ● Provide noise refuges for workers
Bowl-choppers (meat)	>90	● Design out noise at source: specify acceptable noise level when purchasing machinery ● Maintenance: regularly maintain rotating parts, machine mountings and sharpen blades ● Fit acoustic hood/enclosure over bowl-chopper ● Fit noise-dampening material to bowl or panels ● Segregate bowl-choppers from quieter machinery/areas ● Limit worker exposure time: job rotation ● Provide noise refuges for workers

Pneumatic noise and compressed air	85-95	● Design out noise at source: specify acceptable noise level when purchasing machinery ● Replace compressor with a less noisy model ● Move compressor outside or to a people-free area or enclose compressor (but ensure no overheating) ● Use low-noise air nozzles ● Fit manifolds/silencers on exhausts ● Regularly maintain potentially noisy equipment
Milling operations	85-100	● Design out noise at source: specify acceptable noise level when purchasing machinery ● Locate mill in a separate room away from workers ● Enclose hammer mills, roller mills and mixers with acoustic enclosures ● Fit noise-dampening material to panels ● Reduce drop-height of pallets and line hoppers with impact-absorbing material ● Enclose outside of pipes carrying particulate product (eg with half-cylinder sheet steel lined with 50 mm mineral wool slabs which can provide 10-15 dB(A) noise reduction) ● Limit worker exposure time: job rotation ● Provide noise refuges for workers
Saws/cutting machinery	85-107 (meat)	● Design out noise at source: specify acceptable noise level when purchasing machinery ● Ensure preventative maintenance/inspection is carried out on blade alignment, blade sharpening, lubrication, floor-mountings etc ● Use noise-dampening on saw blades ● Limit worker exposure time: job rotation
Blast-chillers/freezers	85-107	● Design out noise at source: specify acceptable noise level when purchasing machinery ● Replace plant with a less-noisy model ● Enclose plant with acoustic panelling (eg sheet steel outer skin, perforated steel inner skin, with 75 mm mineral wool slabs in between, can provide >20 dB(A) noise reduction) ● Limit worker exposure time: job rotation ● Noise refuges for workers
Manually pushing wheeled trolleys/racks	Up to 107 (from wheels/wheel bearings - especially those subject to high/low temperatures in ovens/freezers)	● Design out noise at source: specify good quality wheels/bearings when purchasing trolleys ● Regularly maintain wheels/bearings ● Improve flooring to reduce damage to wheels/bearings and cut down noise ● Use conveyors to move product where possible ● Improve layout to minimise movement of product
Packaging machinery	85-95	● Design out noise at source: specify acceptable noise level when purchasing machinery ● Install noise-reducing enclosures ● Fit silencers to noisy exhausts ● Limit worker exposure time: job rotation

Legal requirements

The Noise at Work Regulations 1989 require employers to have a competent person assess noise levels to which workers are exposed.

If the noise level exceeds 85 dB(A) - the First Action Level - 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.

If the noise level exceeds 90 dB(A) - the Second Action Level - you need to control noise exposure by doing all that is reasonably practicable to reduce it other than by providing hearing protectors. An example of this would be to make machinery quieter.

Where it is not reasonably practicable to reduce noise exposure below 90 dB(A), these 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.

Advice on health surveillance is given in *Health surveillance in noisy industries: Advice for employers* (see 'Further reading').

Employee consultation

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

Further reading

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

Introducing the Noise at Work Regulations: A brief guide to the requirements for controlling noise at work Leaflet INDG75(rev) HSE Books 1989 (single copy free or priced packs of 15 ISBN 0 7176 0961 8)

Noise at work: A guide for employees Leaflet INDG99(rev) HSE Books 1991 (single copy free or priced packs of 20 ISBN 0 7176 0962 6)

Health surveillance in noisy industries: Advice for employers Leaflet INDG193 HSE Books 1995 (single copy free or priced packs of 10 ISBN 0 7176 0933 2)

Keep the noise down: Advice for purchasers of workplace machinery Leaflet INDG263 HSE Books 1997 (single copy free or priced packs of 15 ISBN 0 7176 1480 8)

Ear protection: Employers' duties explained Leaflet INDG298 HSE Books 1999 (single copy free or priced packs of 5 plus 5 posters MISC185 and 30 pocket cards INDG299 ISBN 0 7176 2484 6)

Protect your hearing Pocket card INDG299 HSE Books 1999 (single copy free or priced packs of 25 ISBN 0 7176 1924 9 or priced pack of 30 plus 5 posters MISC185 and 5 leaflets INDG298 ISBN 0 7176 2484 6)

Wear ear protection properly (poster) MISC185 HSE Books 1999 (single copy free or priced pack of 5 plus 30 pocket cards INDG299 and 5 leaflets INDG298 ISBN 0 7176 2484 6)

Work is underway on a book of case studies providing solutions used by companies to reduce noise exposure in the food and drink industries. This is due to be published by HSE Books in 2003.

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

Further information

HSE priced and free publications are available by mail order from HSE Books, PO Box 1999, Sudbury, Suffolk CO10 2WA Tel: 01787 881165 Fax: 01787 313995 Website: www.hsebooks.co.uk (HSE priced publications are also available from bookshops.)

For information about health and safety ring HSE's InfoLine Tel: 08701 545500 Fax: 02920 859260 e-mail: hseinformationservices@natbrit.com or write to HSE Information Services, Caerphilly Business Park, Caerphilly CF83 3GG. You can also visit HSE's website: www.hse.gov.uk

This leaflet contains notes on good practice which are not compulsory but which you may find helpful in considering what you need to do.

Printed and published by the Health and Safety Executive 03/02 FIS32 C100