

MANUAL HANDLING IN THE RED MEAT INDUSTRY

1ST EDITION

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MANUFACTURING



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The information presented in *Manual Handling in the Red Meat Industry* is intended for general use only. It should not be viewed as a definitive guide to the law, and should be read in conjunction with the *Occupational Health and Safety Act 2004*. While every effort has been made to ensure the accuracy of this guide, the advice contained herein may not apply in every circumstance. Accordingly, the Victorian WorkCover Authority cannot be held responsible, and extends no warranties as to:

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WorkSafe Victoria is a division of the Victorian WorkCover Authority.

FOREWORD

The red meat processing industry comprises both abattoirs for beef, mutton and pork as well as smallgoods manufacturers and rendering plants.

A significant contributor to the Victorian economy, the industry has an annual turnover in excess of \$890 million.

WorkSafe Victoria has developed this publication – detailing some common manual handling tasks carried out in the industry – to help reduce the risk of injury.

Manual handling is the primary cause of musculoskeletal disorders (MSD), such as muscle strains and injuries to ligaments and other structures in the back and upper limbs, accounting for more than half of all injuries in the red meat processing industry.

This publication provides practical guidance on a range of risk control solutions currently used at workplaces in Victoria. WorkSafe encourages everyone involved in the red meat processing industry to read this publication and take action to implement solutions to control risk wherever reasonably practicable.

WorkSafe would like to acknowledge and thank the employers, employees, industry associations, unions, ergonomists, and health and safety representatives involved in the development of this publication.

INTRODUCTION

This guide demonstrates WorkSafe's expectations on how to best reduce the risk of MSD arising from manual handling in the red meat industry. Many risk controls outlined here have been implemented in the red meat industry in Victoria.

MANUAL HANDLING

In the red meat industry, manual handling covers a wide range of activities such as slaughtering, boning, smallgoods manufacturing, rendering, retail butchering, wrapping and packing. Undertaking these tasks incorrectly can result in musculoskeletal disorders and other types of injuries. However, not all manual handling is hazardous.

Hazardous manual handling refers to actions with any of the following characteristics:

- Repetitive or sustained application of force.
- Repetitive or sustained awkward posture.
- Repetitive or sustained movement.
- Application of high force.
- Exposure to sustained vibration.
- Manual handling of live persons or animals.
- Unstable or unbalanced loads or loads which are difficult to grasp or hold.

MUSCULOSKELETAL DISORDERS

MSD are sometimes referred to as 'sprains and strains' and describe injuries and diseases of the musculoskeletal system.

This includes injuries to joints, ligaments, intervertebral discs and other structures in the back, as well as injuries to joints, ligaments, tendons, muscles and nerves in the wrists, elbows, arms, shoulders, neck, abdomen (eg. hernia), hips, knees and legs. Some of these conditions can be described as repetitive strain injury (RSI), occupational overuse syndrome (OOS), cumulative trauma disorder (CTD) and work-related musculoskeletal disorder (WRMSD).

In the *Occupational Health and Safety (Manual Handling) Regulations 1999* (Manual Handling Regulations), all of these conditions are referred to as musculoskeletal disorders (MSD).

THE LEGAL FRAMEWORK

There is a legislative framework around controlling risk and consultation in the workplace. This guide shows ways to comply, primarily with the *Occupational Health and Safety (Manual Handling) Regulations 1999*.

THE OCCUPATIONAL HEALTH AND SAFETY (MANUAL HANDLING) REGULATIONS 1999

Under these regulations the employer has a duty to:

- identify tasks involving hazardous manual handling;
- assess the risk of developing a musculoskeletal disorder associated with the task; and
- control the risk by eliminating the risk or reducing it so far as is reasonably practicable.



GENERAL

- Postures, movements and forces known to be associated with MSD should be eliminated from the workplace wherever possible.
- Employees should not be required to routinely work above their shoulder height, below their knees or at full reach distance.
- Physical changes to workplace design, layout and plant are more effective than administrative risk controls.
- To accommodate different people and tasks, workstations should be easy to adjust.

Hazard identification

This guide identifies some tasks performed within the red meat industry that are hazardous and have resulted in MSD. **This is not a comprehensive list of all tasks involving hazardous manual handling within the industry.**

Risk assessment

This guide follows the risk assessment format used in the WorkSafe publication *Manual Handling* (Code of Practice No. 25, 2000).

It helps indicate which risk factors may be in your workplace and, in particular, demonstrates those that result in high-risk work practices which may put people at risk of developing MSD.

The guide cannot replace the requirement for risk assessment and risk control, as the risk of developing MSD will vary depending on the circumstances in each workplace. To ensure a reduction in MSD, employers should review risks and develop and implement a plan for controls in consultation with employees.

Risk control

Risk controls are shown in the guide. Under the Manual Handling Regulations it is the duty of an employer to carry out risk controls including:

1. eliminating the risk (eg. redesign so as to eliminate handling); or
2. if it is not practicable to eliminate the risk, reduce the risk so far as is reasonably practicable.

In either case, the risk can be controlled in any of the following ways:

- a. altering the workplace or environmental conditions (eg. using conveyors).
- b. altering the systems of work (eg. adjusting work rates, regular maintenance on equipment, job rotation, etc.).
- c. changing the objects (eg. breaking down a carcass to reduce weight).
- d. using mechanical aids (eg. pallet lifters, height adjustable trolleys or forklift attachments).

A combination of controls often gives the best solution.

Consult health and safety representatives (HSRs) and employees and trial proposed solutions to determine if they are right for your workplace or if further modifications or different controls are needed. Once the controls are in place, they should be monitored to assess their suitability and success.

Providing information, training and instructions in manual handling techniques are not suitable ways of controlling risk, unless all other ways to control risk are not practicable.

When such training is provided, it must be task-specific and competency-based to be effective. Supervisors must be competent in undertaking manual tasks and be supported in this role. There should be appropriate supervision of safety as well as production.

You should always check the legislation referred to in this material and make your own judgement about what action you may need to take to ensure you have complied with the law.

Note: This guide should be read together with the *Occupational Health and Safety (Manual Handling) Regulations 1999* and the WorkSafe publication *Manual Handling* (Code of Practice No. 25, 2000). On 1 July 2007 new consolidated regulations will come into effect, replacing current manual handling regulations.

CONSULTATION

Since 1 January 2006, all employers are required to consult employees, so far as is reasonably practicable, on matters that may directly affect employees' health, safety or welfare. This includes consultation with an independent contractor and any employees of the independent contractor.

Where there are elected HSRs, the employer must consult with them to identify hazards and assess risks and risk control, as well as consulting on any proposed changes in the workplace, plant, substances or work processes that could impact on the health, safety or welfare of the employees.

The duty to consult recognises that employee input and participation improves decision-making about health and safety matters. Consultation between employers and employees is vital in effectively managing health and safety at work and should be viewed as a legal requirement and as a valuable means of improving health and safety outcomes.

By consulting, employers can become more aware of hazards and OHS issues of concern to employees who can also provide suggestions about how to solve OHS problems. Participation enables employees to play a role in determining how work can be done safely.

For more information on the duty to consult, please refer to the WorkSafe Guide *Talking Safety Together* and *Consultation – A User's Guide. Information for Employees on Health and Safety* and *Information for Health and Safety Representatives* also contain information for employees and HSRs.

HOW TO USE THIS GUIDE

The red, amber and green or 'traffic light' format will help you to identify high-risk activities and assess your workplace to implement safer work practices. The rationale is simple: to reduce injury rates and compensation claims, high-risk situations must be addressed.

The red, or high-risk, column is split into two sections. One is for actions (postures, movements or forces) that may give rise to the risk of MSD. The other is for potential sources of that risk.

A better understanding of what causes the risk of MSD will result in better risk control. Potential sources of the risk are also listed, although your workplace may discover other reasons why those actions are being undertaken and should control these accordingly.

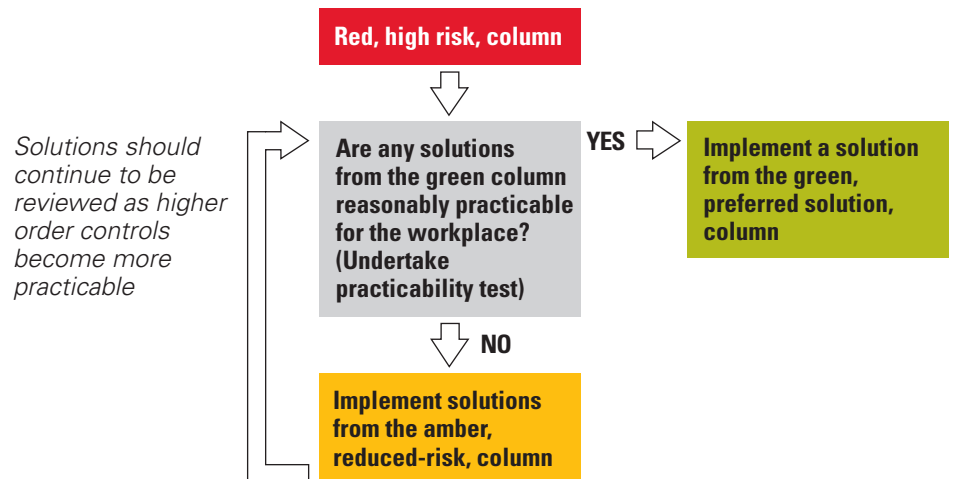
If high-risk practices are followed in your workplace, you should determine if you can use the green solutions. If this isn't practicable, put in place a comparable amber practice as a reduced-risk solution.

In the amber and green columns, the solutions listed first are preferred and will generally be more effective than solutions towards the bottom of the column.

The amber and green manual handling solution sections in this guide provide some different options because the tasks, and the risks, vary according to the specifics at your workplace. It is important to ensure any controls you implement address the risk factors in the task.

RED (HIGH RISK)	AMBER SOLUTION	GREEN SOLUTION
The practices in the red column should not be used in workplaces; an employer who allows these practices to be used is likely to be in breach of OHS legislation.	The solutions in the amber column are less effective in reducing risk than those in the green column, and should be regularly reviewed with the aim to move towards higher order solutions (green).	The solutions in the green column are the most effective at reducing risk and should be regarded as the target for all workplaces.

HOW TO USE THIS GUIDE



Note: If you are able to demonstrate that an appropriate risk assessment process has been undertaken and you are able to verify that the reasonably practicable test has been applied to the controls you implement, then amber control measures may be practicable in some circumstances.

REASONABLY PRACTICABLE CONTROL MEASURES

The *Occupational Health and Safety Act 2004* explains what must be taken into account when determining if something is 'reasonably practicable'. In general terms, these factors are:

- The likelihood of the hazard or risk eventuating.
- The degree of harm that would result if the hazard or risk eventuated.
- What you know, or ought reasonably to know, about the hazard or risk and any ways of eliminating or reducing the hazard or risk.
- The availability and suitability of ways to eliminate or reduce the hazard or risk.
- The cost of eliminating or reducing the hazard or risk.

This guide should assist in identifying what you know or should reasonably know and what you should reasonably do. It is expected that employers, employees and WorkSafe inspectors will use it to form an opinion about suitable health and safety risk controls under the 'reasonably practicable' test.

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1. HEAD REMOVAL



Image supplied by Meat & Livestock Australia

Head removal of beef involves high force, often with the arms outstretched, increasing the horizontal distance to the lower back when trying to catch or hold the heavy load.

The head is then transferred to another rail and this can involve twisting of the back.

HIGH RISK		REDUCED-RISK SOLUTION	LOW RISK
ACTION	POTENTIAL SOURCE OF RISK	Provide mechanical aids to support the weight of the head if there is enough room to safely manoeuvre the aid.  <i>The above height adjustable trolley is used to support the head after it is removed and to transport it to the production area for tongue/cheek removal. The trolley must always be sanitised.</i>  <i>The lifter is positioned close to the carcass, with a hook attached before the head is severed, ensuring the employee doesn't need to catch and support the head.</i>	Implement engineering controls.  <i>Image supplied by Meat & Livestock Australia</i> <i>With the main chain and head chain running parallel, the torso and head are separated and the hook bears the load.</i>  <i>This is another example of a head rail and hook used to support the weight of the head once it has been severed.</i>  <i>The section of the rail shown is automatically raised to allow further processing of the head.</i>
High force Lifting, lowering or carrying heavy loads. Catching, holding or supporting a heavy object. Exerting force with the non-preferred hand. Exerting high force while in an awkward posture.	Standing position means the employee has to reach away from the body, above shoulder height or below mid-thigh height to sever, support and re-hang the head. The position of the head rail is distant to the main rail. The weight and size of the head. Wearing gloves and handling a slippery object.		

1. HEAD REMOVAL CONTINUED

HIGH RISK		REDUCED-RISK SOLUTION	LOW RISK
ACTION	POTENTIAL SOURCE OF RISK		
			 <i>For small stock a mechanical aid can be used to sever the head without any manual handling.</i>

2. PELTING – MUTTON



Image supplied by Meat & Livestock Australia

Pelting mutton is a staged process largely controlled by mechanical hide pullers. Where parts of these tasks are performed manually, this ‘punching’ down involves repetitive awkward postures, high forces, grabbing, pulling and other movements that can result in MSD.

HIGH RISK		REDUCED-RISK SOLUTION	LOW RISK
ACTION	POTENTIAL SOURCE OF RISK	Use rails to present task at heights that reduce the need to bend and reach.  <i>Training in the use of mechanical aids such as pelting arms to assist with the task.</i>	Use mechanical hide pullers.  <i>A mechanical hide puller is used to eliminate the manual handling in this part of the task.</i>
Bending the back forwards more than 20 degrees, twisting the back more than 20 degrees, exerting force while in an awkward posture: • > twice per minute • with long duration (> 30 minutes continuously or > 2 hours over the whole shift). These actions may occur in the situations listed under ‘potential source of risk’ or in combination with other work activities. High force Exerting high force while in an awkward posture.	The nature of the load. The height of the task.		

3. HANDLING TUBS OF PRODUCT SUCH AS OFFAL OR OFF-CUTS



Pushing and pulling tubs of product at ground level requires employees to forward bend their backs and exert force in awkward postures. The force required to push and pull trolleys or bins can be influenced by the floor surface and the size of the trolley wheels, as well as by other variables.

Handling tubs of product over wet floor surfaces introduces the added risks of slipping and falling which can also result in MSD.

HIGH RISK		REDUCED-RISK SOLUTION	LOW RISK
ACTION	POTENTIAL SOURCE OF RISK	Use mechanical aids such as trolleys to keep loads at heights that eliminate or reduce the need to bend.  <i>A purpose built trolley bin in the photo above is used to collect viscera (gut content).</i>  <i>Tipping the heavy offal bin above is made easier with handles on the bin and the receptacle below floor height eliminating the need to lift. Edge protection would be required for a drop greater than two metres.</i>	Where practicable, eliminate hazardous manual handling by using floor chutes and conveyors.  <i>For employees working on an evisceration conveyor, the conveyor transfers the gut contents eliminating the need for handling trolleys or tubs.</i> Use a mechanical aid to raise and tip offal bins.  <i>A trolley bin elevator and tipper handles viscera from the kill floor.</i>

3. HANDLING TUBS OF PRODUCT SUCH AS OFFAL OR OFF-CUTS CONTINUED

HIGH RISK		REDUCED-RISK SOLUTION	LOW RISK
ACTION	POTENTIAL SOURCE OF RISK	Use a system to collect off-cuts from the hanging carcass and a trolley to transfer the off-cuts for further processing.  <i>The trough collects off-cuts and is sloped to help transfer the off-cuts to a transfer trolley.</i>  <i>A well-designed trolley is used to raise the height of the white tub.</i> Reduce the amounts carried in the tub or container to reduce the force required to move the load. Improve trolley design by changing the diameter of the wheels (see table on trolleys over the page).	 <i>Use floor chutes to reduce the carrying distance when disposing of tubs of waste from the kill floor.</i> In one workplace, well-placed floor chutes in the boning area eliminated the double-handling previously needed to place scraps into tubs before being dropped into chutes.

3. HANDLING TUBS OF PRODUCT SUCH AS OFFAL OR OFF-CUTS CONTINUED

Trolley information

	POTENTIAL HAZARD SOURCE	RISK CONTROL
Trolley design.	Poor trolley design results in a high centre of gravity so that pushing it over uneven surfaces may tip the trolley.	A height adjustable spring or scissor trolley will allow loading at a good height and provide a low centre of gravity for stability when pushing. Place heavier items at the base to reduce the centre of gravity.
	No handles or handles placed too low so that force is applied in awkward postures.	Good handles provided, eg. vertical handles will fit a large range of users.
	Insufficient number of trolleys resulting in over stacking those that are available: - stacking too high affects visibility with the user needing to adopt an awkward posture to see around the load - exceeding load rating.	Sufficient number of trolleys also allows for appropriate maintenance to be carried out. Limit height at which trolleys can be stacked. Have load rating marked on trolley.
Castor choice.	Flat tyres or flat spots make trolleys difficult to get moving when being manually pushed or pulled.	Solid tyres or ones with adequate tyre pressure.
	Small diameter castors.	Large diameter castors. Low resistance bearings.
Floor surfaces.	Cracks and uneven or non smooth floors can make trolleys harder to move by increasing the pushing forces.	Inspect and regularly maintain floor surfaces to ensure they are kept clean, smooth and well looked after.
	Steep gradients on ramps increase the force needed to move trolleys.	Ensure trolleys are handled on flat or low gradient surfaces.
	Wet floors create the risk of slipping.	Ensure floor surfaces are suitable for wet areas.
Housekeeping.	Slippery floors due to blood, fats, etc. make it harder to move trolleys.	Regularly clean work areas to keep them clean and free of slip and fall hazards as much as is practicable.
Maintenance.	Damaged trolleys and castors make it harder to move trolleys.	Immediately remove and repair or replace any damaged trolleys. Implement a systematic prevention maintenance system for trolleys and castors.

- *The Ergonomics of Manual Material Handling – pushing and pulling tasks* is a useful reference on pushing trolleys and is known as the Darcor and Ergoweb white paper on trolleys. See http://www.darcor.com/library_wp.htm.

4. CHILLER LOADING AND PUSHING SIDES OF PRODUCT



Pushing carcasses requires high force exertion in awkward postures and usually in environments where temperatures are too cold for prolonged manual handling activity if the employee is not wearing additional layers of clothing.

Often there is also the risk of falls, with blood and ice making the floor slippery. High push forces and the lack of slip resistance increases the likelihood of this risk, even for the strongest employee.

HIGH RISK		REDUCED-RISK SOLUTION	LOW RISK
ACTION	POTENTIAL SOURCE OF RISK	Maintain overhead rail systems and hooks. Establish a set limit on the maximum number of sides in the workplace to be handled by employees at a time. Train employees on this and ensure it is enforced.	Where possible, install gravity rails (at very small gradients). It is important and necessary to assess the risks associated with a moving carcass striking someone. Use low resistance hooks (product dependent) to reduce push forces.
High force Exerting force while in an awkward posture. Pushing and pulling objects that are hard to move or stop.	Weight of carcasses. Condition or maintenance of overhead rails.	 <i>A limit of two sides of one carcass enables a push without excessive force.</i>	 <i>Low resistance plastic hooks used with mutton.</i>

5. BONING



Boning is associated with a high rate of MSD – particularly of the wrist and arms. Though highly skilled work, it is very repetitive and can require the application of high force, particularly if the knife has become blunt or if meat contains hard fat or is at a low temperature.

HIGH RISK		REDUCED-RISK SOLUTION	LOW RISK
ACTION	POTENTIAL SOURCE OF RISK	Install adjustable workstations. Provide height adjustable workstations and train employees in how to use them.  <i>Adjustable stands better match the different heights of individuals.</i>  <i>A simple mechanism to alter heights.</i>	Meat tensioning equipment is one example of a mechanical aid to assist the manual handling involved in boning. Employers should continually review all available technologies to determine if they are reasonably practicable for the workplace. Use boning technology that allows the employee to complete the work in a comfortable and natural (upright) posture as much as possible.  <i>The employee is able to work close to his body, with an upright posture, where the cutting/boning is done mainly between the waist and shoulder height.</i>
Bending the back forwards more than 20 degrees, and exerting force while in an awkward posture: • > twice per minute • > 30 seconds at a time • with long duration (> 30 minutes continuously or > 2 hours over the whole shift). These actions may occur in situations listed under 'potential source of risk' or in combination with other work activities.	Boning tables too high or too low for the individual. Height of the cut on the side chain too high or too low for the individual.		

5. BONING CONTINUED

HIGH RISK		REDUCED-RISK SOLUTION	LOW RISK
ACTION	POTENTIAL SOURCE OF RISK		
		 <i>Platforms are used to raise the height of the employees for the various stages of the cut on this side chain.</i>	 <i>This technology also pulls the meat away from the bone, allowing more natural back and shoulder postures.</i>
Excessive bending of the wrist, exerting force with one hand, twisting and turning actions with the hands and arms and sustained holding of a tool – knife and/or meat hook: • > twice per minute • > 30 seconds at a time • with long duration (> 30 minutes continuously or > 2 hours over the whole shift). These actions may occur in situations listed under 'potential source of risk' or in combination with other work activities.	Using a knife that is not sharp enough. Hard fat. Chilled carcasses. Holding hook to pull meat from bone.	Ensure an effective knife sharpening program is implemented including competency-based training in the selection, use and sharpening of knives, as far as is reasonably practicable. Ensure carcass is at the correct temperature for boning, especially after weekends or extended time periods in chillers.	Together with a sharp knife, use a mechanical aid such as meat tensioning equipment. Use technology that assists in the boning process.  <i>Meat is mechanically pulled away from the bone, reducing awkward wrist postures of the cutting hand.</i>

6. FURTHER PROCESSING SUCH AS WRAPPING AND PACKING



When people work for prolonged periods of time at fixed workstations or next to conveyors, it is vital that each workstation is adjusted for each employee, maximising productivity and reducing the risk of MSD.

When undertaking this activity, hazardous manual handling indicators include awkward postures, such as raised shoulders, and repeated actions such as reaching to pick up cuts of meat or twisting the body while handling loads.

HIGH RISK		REDUCED-RISK SOLUTION	LOW RISK
ACTION	POTENTIAL SOURCE OF RISK	Provide adjustable workstations. Design workstations to be adjustable for tasks and people. Manual tasks should be done below a person's standing elbow height.  <i>Use a system of conveyors to allow the meat cuts to be easily pulled into the box. The box is then pushed onto the exit conveyor with minimum effort.</i> Design tasks and workstations to reduce unneeded movements and awkward postures as far as reasonably practicable. Good design can eliminate hazardous manual handling while also increasing productivity.	Provide engineering solutions. Use equipment that eliminates hazardous manual handling. Mechanised wrapping equipment can eliminate repetitive handling from some tasks.  <i>Cuts of meat are wrapped automatically, eliminating a repetitive handling task.</i>
Exerting force while in an awkward posture: • > twice per minute • > 30 seconds at a time • with long duration (> 30 minutes continuously or > 2 hours over the whole shift). These actions may occur in the situations listed under 'potential source of risk' or in combination with other work activities.	The height of the workstation does not 'fit' the individual. The position of the product forces the employee to reach.		

6. FURTHER PROCESSING SUCH AS WRAPPING AND PACKING CONTINUED

HIGH RISK		REDUCED-RISK SOLUTION	LOW RISK
ACTION	POTENTIAL SOURCE OF RISK	 The design of the task allows the employee to pack boxes with a relaxed posture.  This turntable presents objects to eliminate forward reaching by the employee.	

7. REMOVING PRODUCT FROM LARGE STILLAGES OR CONTAINERS



Large stillages or containers are used to transfer product between processes within a plant. These stillages are normally manufactured to a standard pallet design and stand up to 100cm high.

Forward bending, reaching and twisting to lift out meat product can result in MSD.

HIGH RISK		REDUCED-RISK SOLUTION	LOW RISK
ACTION	POTENTIAL SOURCE OF RISK	Use a purpose-built stillage lifter and tipper.  <i>A stillage lifter and tipper with a tool to reduce the need for reaching and bending.</i> Use stillages with drop down sides in combination with a pallet lifter.  <i>The employee is packing into a raised stillage with side access, minimising forward back bending and reaching.</i>	Use mechanical aids such as vacuum lifters where the product is already bagged.  <i>The employee uses a vacuum lifter to handle the bagged meat from the stillage.</i>
Bending the back forwards or sideways more than 20 degrees, twisting the back more than 20 degrees:	Stillage or container located on the ground.		
• > twice per minute • > 30 seconds at a time • with long duration (> 30 minutes continuously or > 2 hours over the whole shift).			
These actions may occur in the situations listed under 'potential source of risk' or in combination with other work activities.			

8. LOADING AND UNLOADING FREEZER FRAMES



Handling boxed meat up to 33kg in and out of blast freezer frames or racks is a repetitive task which involves high force. Often the task is done in very cold environments.

Hazardous manual handling like this is very likely to result in MSD, yet there is a variety of risk control solutions available to prevent this occurring.

Mechanical aids that can replace forklifts in work areas are available. If forklifts are introduced into areas where employees are working, a traffic management plan needs to be implemented to separate employees from forklifts.

HIGH RISK		REDUCED-RISK SOLUTION	LOW RISK
ACTION	POTENTIAL SOURCE OF RISK	Provide height adjustable lifters that raise the lower apertures of the freezer frames so boxes are handled without the need to forward bend the back. Aim to have this handling done at about waist height to reduce risk.  <i>A blast freezer rack is raised using a portable scissor type lifter.</i>  <i>Handling a box of meat at waist height by raising the freezer frame using a pedestrian operated forklift truck.</i>	Where practicable, consider reducing the weight of boxed product. Install mechanical aids to eliminate the repetitive manual handling of heavy loads. Introduce a box handling system that eliminates manual handling of boxed meat.  <i>Boxed meat can be automatically conveyed to a plate freezer system.</i> Install a pallet inverter using spacers with thermal properties between the layers of boxes to eliminate double handling of frames from freezer to pallets.  <i>An employee with a pallet inverter tilts back the boxes to remove the spacers in preparation for slip-sheeting the pallet.</i>
Bending the back forwards more than 20 degrees, lifting and lowering and exerting high force while in an awkward posture: • > twice per minute • with long duration (> 30 minutes continuously or > 2 hours over the whole shift). These actions may occur in situations listed under ‘potential source of risk’ or in combination with other work activities.	The opening within the freezer frame is located below mid-thigh height. Handling boxed meat that can weigh up to 33kg. Working in or adjacent to areas of low temperature (eg. up to minus 10 degrees Celsius).		

8. LOADING AND UNLOADING FREEZER FRAMES CONTINUED

HIGH RISK		REDUCED-RISK SOLUTION	LOW RISK
ACTION	POTENTIAL SOURCE OF RISK	Use mechanical aids. Use height adjustable equipment in combination with a sunken dock and fall protection.  <i>In the photos above and below, the need to handle boxes above shoulder height has been eliminated. (Please note: the guarding has been temporarily removed in order to illustrate this.)</i>  Reduce the height of freezer frames so the top levels are not above shoulder height. Prevent the use of the top layers of the freezer frames which are above shoulder height. One way to achieve this is by covering up the openings. Raise the employees' working level where there is no sunken dock by using a purpose-built platform.	 <i>The use of layer sheets to allow air flow for freezing may not be practicable for every product. The employer should consider Quality Assurance controls.</i> Box handling systems as above. These systems should eliminate the need to use freezer frames.
Working with one or both hands above shoulder height and exerting high force while in an awkward posture: • > twice per minute • with long duration (> 30 minutes continuously or > 2 hours over the whole shift). These actions may occur in situations listed under 'potential source of risk' or in combination with other work activities.			

9. PALLETISING PRODUCT



Most industries use pallets to pack and store product.

Palletising involves bending, reaching and twisting movements. The risks of MSD to employees are known to increase when awkward movements are combined with handling heavy loads, sometimes up to 33 kg.

If forklifts are introduced to move pallets in areas where people work, a traffic management plan needs to be implemented to ensure pedestrians and forklifts are separated.

HIGH RISK		REDUCED-RISK SOLUTION	LOW RISK
ACTION	POTENTIAL SOURCE OF RISK		
Bending the back forwards or sideways more than 20 degrees, twisting the back more than 20 degrees, lifting and lowering and exerting force while in an awkward posture: > twice per minute - with long duration (> 30 minutes continuously or > 2 hours over the whole shift). These actions may occur in situations listed under 'potential source of risk' or in combination with other work activities. High force Lifting, lowering or carrying heavy loads. Exerting high force while in an awkward posture.	Pallets on the ground.	Use mechanical aids.  <i>Pallet lifters at the end of conveyor lines.</i>  <i>Pallet lifters with turntables alongside a conveyor.</i>	Use engineering controls.  <i>A robot palletises boxes from a conveyor system. Interlocks and guarding ensure this is a pedestrian free area.</i> Use a vacuum lifting device to eliminate the carrying force.  <i>A vacuum lifter to transfer a box from a conveyor to a pallet.</i>

9. PALLETISING PRODUCT

CONTINUED

HIGH RISK		REDUCED-RISK SOLUTION	LOW RISK
ACTION	POTENTIAL SOURCE OF RISK	 <i>The employee uses a pallet lifter with turntable to reduce forward bending and reaching.</i>	

START IMPLEMENTING RISK CONTROLS FOR YOUR HIGHEST VOLUME PRODUCTS FIRST

10. STRETCH-WRAPPING PALLETS



Stretch-wrapping pallets manually, requires poor postures and movements and often high force. Most manufacturers have moved to automatic or semi-automatic units.

HIGH RISK		REDUCED-RISK SOLUTION	LOW RISK
ACTION	POTENTIAL SOURCE OF RISK	Manually apply stretch-wrap while the pallet is on a raised automated scissor lift and turntable to improve postures and movements. Implement an administrative procedure to only manually stretch-wrap at above mid-thigh height. Use an alternative packing product such as tape-wrapping.	Install an automated pallet wrapper.  <i>An automated stretch-wrapper eliminates the manual task.</i> Use a semi-automatic stretch-wrapping machine. Use a vacuum-sealing or shrink-wrapping device to wrap pallets.
Bending the back and/or neck forwards more than 20 degrees and exerting force in an awkward posture: • > twice per minute • > 30 seconds at a time • with long duration (> 30 minutes continuously or > 2 hours over the whole shift). These actions may occur in situations listed under 'potential source of risk' or in combination with other work activities.	Pallets on the ground.		
High force Exerting high force while in an awkward posture.	Wrap requires being stretched using force.		Low risk solutions as above.

11. HANDLING BOXED MEAT INSIDE TRUCKS AND SHIPPING CONTAINERS



Loading shipping containers with boxes of meat that can each weigh up to 33kg is a repetitive task involving high force and awkward postures.

Forward bending and reaching to pick up boxes from pallets at floor height or above shoulder height when stacking to the roof are common causes of MSD.

Loading containers manually is hazardous and involves substantial risk if not appropriately controlled.

HIGH RISK		REDUCED-RISK SOLUTION	LOW RISK
ACTION	POTENTIAL SOURCE OF RISK	Use mechanical aids. Use load shifting equipment eg. pallet jacks wherever possible.  <i>The pallet has been stretch-wrapped for stability.</i> Use conveyor belts to deliver boxes at waist height inside the container. Use pallet lifters with turntables inside the rear of the container to present boxes at waist height and reduce reach distances. As well as using mechanical aids, ensure employees are trained and competent in loading techniques, eg. stacking in a way that minimises above shoulder height handling as much as possible.	Automate the process to eliminate any manual handling. Use forklifts and slip-sheets.  <i>Image supplied by Meat & Livestock Australia</i> <i>A pallet load of product is mechanically pushed into position using a slip-sheet and forklift.</i>
Forward bending the back and/or neck more than 20 degrees and twisting, turning, pushing, pulling or dragging: • > twice per minute • with long duration (> 30 minutes continuously or > 2 hours over the whole shift). These actions may occur in situations listed under ‘potential source of risk’ or in combination with other work activities. High force Exerting high force while in an awkward posture.	The position of the load at pick up and at placement. The weight of the load, eg. 33kg of export beef.		

12. HANDLING EMPTY PALLETS



Wooden pallets are a common method for moving product and material.

Handling empty pallets manually requires high force, poor postures and movements and often results in injury.

Lower limb injuries can occur if a pallet is dropped.

HIGH RISK		REDUCED-RISK SOLUTION	LOW RISK
ACTION	POTENTIAL SOURCE OF RISK	Use hand pallet jacks. Use lighter weight plastic pallets. Use a hook to tilt lighter weight pallets so that they are vertical, reducing forward back bending with the load.	Install a mechanical pallet stacker.  <i>The mechanical pallet stacker eliminates the manual task of handling and stacking empty pallets.</i> Use forklifts or other mechanical aids such as a wide straddle pallet mover and lifter.
High force Exerting high force while in an awkward posture.	Moving pallets from ground level. The size of pallets. The weight of pallets can be up to 35kg.		

13. LOAD OUT AND LUMPING



Loading out into trucks and lumping carcasses into customers' premises involve hazardous manual handling due to the high forces and awkward postures involved in handling heavy loads.

When completing these tasks employees may also slip, trip or fall.

There is a high incidence of MSD to the back, shoulders, neck and arms related to this task, particularly with lumping.

HIGH RISK		REDUCED-RISK SOLUTION	LOW RISK
ACTION	POTENTIAL SOURCE OF RISK	Implement a response system to identify the types of hazards at customer's premises to determine practicable controls. Use mechanical aids such as links between rails and trucks at load out to eliminate unnecessary extra handling.  <i>A link rail between a truck and load out rail.</i> Use diverters within trucks to eliminate the double handling required with cross-rail trucks.  <i>An employee can push carcasses onto different rails inside the truck or chiller without needing to double handle them across rails.</i>	Deliver boxed meat wherever reasonably practicable (dependent on customer demand). Use a combination of measures. Rail systems at customer's premises can be linked to the rail system of the truck to eliminate lumping wherever possible.  <i>The delivery truck (not shown) is connected to the rail system at the customer's premises, reducing most of the hazardous manual handling such as the lifting and carrying of carcasses.</i> Trolleys with powered tugs can be used for some customer premises.

13. LOAD OUT AND LUMPING

CONTINUED

HIGH RISK		REDUCED-RISK SOLUTION	LOW RISK
ACTION	POTENTIAL SOURCE OF RISK	 <i>The customer's rail doesn't link with the truck rail but does eliminate the lumping involved when stepping down from the truck and carrying the carcass into the shop.</i> In some instances it may be possible to break down a carcass in the truck.	 <i>A trolley with rails is linked to the truck to eliminate the need to lift carcasses. The trolley is then pulled with a powered tug to where it reconnects with rails within the customer's premises.</i>

PLANT AND OTHER HAZARDS

It is important to ensure that you do not introduce additional risks to the system of work when introducing controls to reduce the risk of manual handling-caused MSD. For example:

- introducing the use of a forklift to a workplace requires implementation of a traffic management plan to segregate pedestrians from forklifts;
- where mechanical aids or other load shifting equipment is used, such as powered pallet jacks, ensure employees are trained and competent in their use;
- when transferring carcasses, ensure loads are carried within the manufacturer's safe working load (SWL) and implement a program to monitor damage to shackles, drive chains, etc.; and
- changes to equipment require a plant risk assessment be conducted to ensure employees are not injured by newly introduced hazards, such as trapping points or in-running nip points, and that controls are put in place if a risk is present.

INFORMATION FOR EMPLOYERS

The use of contractors, on-hire employees and trainees is common in the red meat processing industry.

Host organisations are deemed to be employers of contractors and their employees in relation to matters over which they have control. Therefore, both on-hire companies and host organisations have a duty to ensure that on-hire employees are provided with safe workplaces.

Before entering into an on-hire employee contract, both the on-hire company and host organisation should consider that:

- training, skills and experience of employees are verified and match the needs of the task;
- identification and assessment of control of all the risks associated with the task must be completed before work commences;
- the employee is inducted into systems of work;
- the employee is adequately supervised;
- the employee has the opportunity to consult with both the on-hire employer and host organisation; and,
- the employee knows what to do when health and safety issues arise in the host organisation's workplace.

Host employers and labour hire agencies are encouraged to refer to specific guidance materials – *Host Employer Guidance Information: Managing the Safety of Labour Hire Workers* and *Labour Hire Agencies: Managing the Safety of On-Hired Workers* – available at www.worksafe.vic.gov.au

OTHER USEFUL GUIDANCE MATERIAL

The red meat industry may also be interested in publications developed for other industries, including:

- *Safe Use of Knives in the Meat and Food Industries*
- *A Guide to Handling Large, Bulky and Awkward Objects*
- *A Guide to Manual Order Picking*
- *A Guide to Preventing Injury from Packing and Unpacking Shipping Containers and Enclosed Trailers*
- *Delivering Large Gas Cylinders – A Guide to Manual Handling*
- *Manual Handling in the Automotive Industry*
- *Manual Handling Solutions in the Sawmilling Industry*
- *Manual Handling Solutions in the Textile Industry*
- *A Guide to Manual Handling Solutions in the Food Industry – Edition 3*

Further information can be found in:

- *National Guidelines for Health and Safety in the Meat Industry (1995)*
- *OHS Reference Guide – Australian Meat Industry (2002)*

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