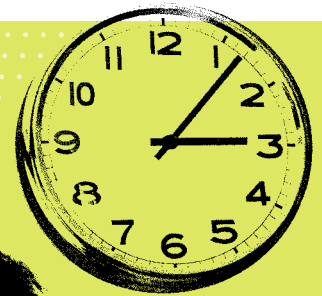


Fatigue

Prevention in the workplace

Edition No. 1
June 2008



VIC | NSW

working
across
borders

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This publication may contain occupational health and safety and workers' compensation information. It may include some of your obligations under the various legislations that WorkCover NSW administers. To ensure you comply with your legal obligations you must refer to the appropriate legislation.

Information on the latest laws can be checked by visiting the NSW legislation website (www.legislation.nsw.gov.au) or by contacting the free hotline service on 02 9321 3333.

This publication does not represent a comprehensive statement of the law as it applies to particular problems or to individuals or as a substitute for legal advice. You should seek independent legal advice if you need assistance on the application of the law to your situation.



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1.

Introduction

Fatigue affects a person's health, increases the chance of workplace injuries occurring, and reduces performance and productivity within the workplace.

This publication, *Fatigue – Prevention in the workplace*, will assist people with duties under occupational health and safety laws (OHS laws) comply with those laws in relation to fatigue in the workplace. This guide provides advice that is generally applicable to any workplace within NSW and Victoria where fatigue is a health and safety issue.

This guide contains general information for employers and employees (including volunteers) in any job or industry. The guide can also be used by suppliers, importers, manufacturers and independent contractors. It complements other fatigue-related publications that apply to particular industries (see references on page 24).

The factors contributing to fatigue outlined in this guide are:

- the mental and physical demands of work
- work scheduling and planning
- working time
- environmental conditions, and
- individual factors.

This guide explains how these factors and the way work is designed can be improved to address and reduce the risk of fatigue in the workplace.

Definitions

Body clock

People are day oriented. We are designed to work in the daytime and sleep at night. The internal body clock (circadian clock) is responsible for this. It causes a regular variation through 24 hours in different body and mental functions (such as: the sleep/wake cycle, alertness, performance and body temperature). Body clock rhythms do not generally adjust easily to shiftwork.

Safety critical work

Work where there is a potentially increased risk of incident, injury or harm if workers are impaired by fatigue. For example, operating certain plant that involves making critical decisions where there may be significant consequences if errors occur.

Forward shift rotation

A forward rotation means the direction of shifts is day-to-evening-to-night shift. A backward rotation is from day-to-night-to-evening shift. A forward (clockwise) rotation, rather than a backward rotation, is generally considered to suit people better.

Shiftwork

Shiftwork involves working outside normal daylight hours (7am to 6pm); the period in which many people work a seven-to-eight-hour shift.

Worker

In this document, the term worker is intended to cover the definition of 'employee' in the OHS laws of NSW and Victoria.

2.

What is fatigue?

It is normal to feel tired or drowsy after prolonged mental or physical effort at work. Fatigue, however, is more than feeling tired or drowsy. It is an acute and/or ongoing state of tiredness that leads to mental or physical exhaustion and prevents people from functioning within normal boundaries. Working long hours, with intense mental or physical effort, or during some or all of the natural time for sleep, can cause fatigue. All of these have obvious implications for workplace and public safety. Fatigue can also have long-term effects on health.

Causes of fatigue

Fatigue can be caused by work-related factors, factors outside work and/or a combination of both, and may accumulate over time.

Work-related factors	Factors outside work
<ul style="list-style-type: none">• roster patterns• length of shifts• poor work scheduling and planning• length of time worked• timing of shifts (e.g. night shift) proportionally increases the impact of fatigue• insufficient recovery time between shifts• long periods of time awake• harsh environmental conditions• type of work being undertaken (e.g. under-demand/over-demand)• mentally or physically demanding work• inadequate rest breaks	<ul style="list-style-type: none">• poor quality of sleep• sleep loss• social life• family needs• other employment• travel time¹• sleep disorders

¹ In some industries, travel time is included as working time.

Fatigue compared with blood alcohol content

- Being awake for 17 hours impairs performance to the same level as having a 0.05 blood alcohol content.
- Being awake for 20 hours impairs performance to the same level as having a 0.1 blood alcohol content.

Effects of fatigue

The effects of fatigue on health and work performance can be short term and long term. Short-term effects on an individual include impaired work performance, such as the reduced ability to:

- concentrate and avoid distraction
- think laterally and analytically
- make decisions
- remember and recall events and their sequences
- maintain vigilance
- control emotions
- appreciate complex situations
- recognise risks
- coordinate hand-eye movements, and
- communicate effectively.

Fatigue can also:

- increase error rates
- slow reaction times
- increase the likelihood of accidents and injuries, and
- cause micro-sleeps.

Long-term effects on health that are associated with shiftwork and chronic sleep loss may include:

- heart disease
- diabetes
- high blood pressure
- gastrointestinal disorders
- depression, and
- anxiety.

The factors that contribute to fatigue also disrupt a person's body clock. Body clock disruptions can have a significant impact on the effectiveness of certain medications, such as those used for asthma and diabetes. Quality of sleep is reduced as people get older, which means they are less able to cope with night shift and are at a greater risk of fatigue. Lack of sleep can also worsen depression and increase the chance of people with epilepsy having a fit.

Although fatigue can accumulate over a long period of time, fatigue due to sleep loss is usually reversible after several nights of good quality sleep.

Preventing fatigue in the workplace

Preventing and reducing fatigue may lead to:

- better health and safety outcomes
- fewer workplace incidents and injuries
- reductions in absenteeism and staff turnover, and
- better performance and productivity.

OHS laws and preventing fatigue

OHS laws are designed to ensure the health and safety of everyone at the workplace. Employers have a duty to provide so far as is reasonably practicable a working environment that is safe and without risks to the health of workers. Workers have a duty to take reasonable care for their own health and safety and the health and safety of others in the workplace. Workers also have a duty to follow procedures and cooperate with actions their employer takes to comply with OHS laws.

3.

Risk management approach to fatigue

This guide recommends ways to help employers and workers meet their obligations under OHS laws using a risk management approach. Risk management is a way of recognising that each situation has its own characteristics, and these circumstances should be assessed to decide the best way of improving health and safety. This is achieved through a staged process that includes identifying potential hazards; assessing the severity, consequence and likelihood of those hazards causing injury or illness; and selecting and implementing risk control measures.

A risk management approach is the best way for employers to prevent work-related fatigue and other OHS hazards.

Consultation and preventing fatigue

Successful prevention of fatigue involves consultation² between employers and workers and health and safety representatives and committees. The points at which consultation must³ occur include:

- when the organisation identifies fatigue is a hazard in the workplace
- when the organisation checks how fatigue is currently managed
- when changes are proposed to work schedules and working procedures
- prior to new work schedules and working procedures being introduced
- each step of the risk management approach
- when there are indications of fatigue affecting the health and safety of workers, and
- after an incident (or 'near miss') occurs.

2 There are specific OHS requirements relating to consultation in NSW and Victoria. See references (page 24) for information on each state's requirements.

3 In Victoria, consultation must occur so far as is reasonably practicable.

Identifying if fatigue is a hazard

This guide categorises the factors that contribute to fatigue as the mental and physical demands of work, work scheduling and planning, working time, environmental conditions, individual factors and factors outside work. Use the fatigue hazards identification checklist in Appendix 1 (page 18) to help identify whether fatigue is a hazard at your workplace.

Fatigue can arise from a number of interrelated factors. All factors present at your workplace should be considered.

Mental and physical demands of work

The mental and physical demands of work can contribute to a worker becoming impaired by fatigue in a number of ways. Concentrating for extended periods of time, performing repetitious or monotonous work and performing work that requires continued physical effort can, by producing mental and/or physical tiredness, increase the risk of fatigue. Mental fatigue and physical fatigue are different and a worker can experience them at the same time.

Work scheduling and planning

The way work is planned and scheduled (e.g. when workers are next required to work night work and extended shifts) can increase the risk of fatigue. Scheduling work in a way that fails to allow workers enough time for travel to and from work and/or physically recover and socialise can produce fatigue.

Working time

The time work is performed and the amount of time worked can impact on the risk of fatigue. Working at times when workers are biologically programmed to sleep (which can disrupt a worker's body clock) and working for long periods of time can produce fatigue.

Environmental conditions

Working in harsh and/or uncomfortable environmental conditions can contribute to the risk of fatigue in a number of ways. Heat, cold and vibration are some of the environmental conditions that can make workers tire quicker and impair performance.

Individual factors and factors outside work

In addition to the work-related factors that contribute to fatigue, it is important to identify factors that cause fatigue due to sleep deprivation. These include:

- lifestyle – for example, having caring or child care responsibilities, voluntary work, having more than one job, level of fitness, social life or diet
- home environment – for example, noisy neighbours or a bedroom that is too hot or not dark enough for day-time sleep, and
- health conditions – for example, insomnia, sleep apnoea, or alcohol or drug dependence.

Interaction with other hazards

When taking a risk management approach to fatigue, it is very important to look at how fatigue can interact with other workplace hazards. Some hazards that can be increased when working extended hours are manual tasks and exposure to hazardous chemicals, dust and noise.

Manual tasks³

The risk of a musculoskeletal injury increases during an extended shift due to the cumulative effects of muscle fatigue, strains and sprains, i.e. the risk of injury is significantly higher during a 12-hour shift than during a normal eight-hour shift. Workers who perform repetitive manual tasks should have regular rest breaks. Injuries usually occur towards the end of a shift.

Exposure levels

Exposure to hazards, such as noise, heat and chemicals, may also increase during extended working hours. Exposure should be carefully monitored and exposure levels adjusted. National and international exposure standards are usually based on five eight-hour days per week.

Seek expert advice when adjusting exposure levels. Exposure during a 10-hour work day, for example, may not equate to 1.25 times the exposure experienced during an eight-hour shift. The reduced recovery time after being exposed to a hazard during an extended shift also needs to be accounted for. Aim for best practice, keep all exposures significantly below the specified standards and allow for daily variations in exposure levels.

³ There are specific OHS requirements relating to manual tasks in NSW and Victoria. See references (page 24) for information on each state's requirements.

Assessing fatigue risks

Risk assessment is a way of deciding which hazards need to be addressed and in what order. Risk assessment should reveal:

- where, which and how many workers are likely to be at risk of becoming impaired by fatigue, and
- how often this is likely to occur and the degree of harm that would result.

When assessing fatigue risk, it is important to recognise factors can be interrelated and therefore should not be considered in isolation. The risk assessment should place the fatigue risk factors in order of priority, and areas with the highest risk should be addressed first.

Risk-assessment methods include:

- consulting workers on workloads and schedules – ask if they are having or have experienced work-related fatigue
- analysing an audit of working hours and ensure this includes comparing planned working hours with hours actually worked. Where appropriate, related issues to consider in the audit may include work-related travel and work completed outside of normal hours (e.g. when people take work home)
- using the risk-assessment chart in Appendix 2 (page 19)
- reviewing workplace incident data in regard to the fatigue hazard factors. Ask:
 - What is the likelihood that fatigue is contributing to the incidents?
 - What time of day do incidents occur?
 - When incidents occurred, how long had the workers involved been working?
 - Do the incidents often happen when a worker's body clock is low and concentration poor?
- consulting industry or employee associations who may be able to assist with risk assessments for type of work and workplace, and
- checking whether workers have had accidents (including transport) travelling home or on work-related journeys.

Controlling fatigue risks

The next step is to control any fatigue risks assessed as requiring risk controls. When deciding on risk controls, check whether any measures currently being used to address the problem are effective.

Find out what others in your industry are doing to prevent fatigue and incorporate any appropriate risk control measures into your fatigue prevention program.

Fatigue can arise from a combination of factors and therefore the most effective way to reduce the risk is to implement a combination of risk control measures.

When selecting which risk control measures to implement, make sure the most effective measures are used. The best way to control fatigue risks is to eliminate the factors that cause it at the source. If that's not reasonably practicable, use measures that reduce the risk. Better planning and work scheduling (e.g. having a flexible work schedule to allow for both production targets and likely delays) are the best ways to reduce fatigue risks.

The risk control measures outlined in the next sections are listed in order of the measures that address the source of the risk (top of each section), down to measures that rely on work procedures for effectiveness (bottom of each section).

Mental and physical demands of work

Measures that can be used to address the risks associated with the mental and physical demands of work include:

- use plant, machinery and equipment (e.g. ergonomic furniture, lifting equipment and anti-fatigue matting for repetitive tasks performed while standing) to eliminate or reduce the excessive physical demands of the job
- eliminate excessive mental and physical demands from the job
- redesign the job to include a variety of mental and physical tasks
- introduce job rotation to limit a build-up of mental and physical fatigue, and
- use rest periods (in addition to scheduled meal breaks).

3. Risk management approach to fatigue

Work scheduling and planning

Measures that can be used to address the risks associated with work scheduling and planning include:

- reduce the amount of time workers need to spend performing physically and mentally demanding work
- schedule safety critical work outside low body clock periods (i.e. not between 2am and 6am and, to a lesser degree, between 2pm and 4pm)
- manage workload and work-pace change caused by machinery breakdowns and planned and unplanned absences
- avoid working arrangements that provide incentives to work excessive hours
- include adequate rest periods in the work schedule and accommodate for napping and sleeping if necessary
- provide adequate breaks between shifts to allow workers enough recovery time (e.g. time needed for travelling, eating, sleeping and socialising)
- ensure there are adequate workers and other resources to do the job without placing excessive demands on staff, and
- ensure work demands gradually increase towards the middle of the shift and decrease towards the end.

Working at night

Measures that can be used to address the risks associated with working at night include:

- consider whether night work is necessary and rearrange schedules so non-essential work is not carried out at night
- allow a 24-hour rest period between each set of shifts for night-shift workers
- keep sequential night shifts to a minimum (no more than four nights in a row)
- provide an adequate period of non-work following a sequence of night shifts
- allow regular night workers periods of normal night's sleep to catch up on their sleep debts
- ensure that rosters allow for at least two full nights' sleep after the last night shift
- arrange shifts so that day sleep is not restricted, and
- except for emergencies, give at least 24 hours notice before night work. Consider providing a longer period of notice so that workers have time to adjust their activities.

3. Risk management approach to fatigue

Working time

Measures that can be used to address the risks associated with working time include:

- develop a working-hours policy on daily work hours, maximum average weekly hours, total hours over a three-month period and work-related travel
- eliminate or reduce the need to work extended hours or overtime
- design working hours to allow for good quality sleep and enough recovery time between work days or shifts for travelling, eating, washing and sleeping
- eliminate or reduce the need to work long shifts for more than three consecutive days, and
- schedule work for hours when the risks may be lower – for example, complex and safety-critical tasks are best undertaken during normal day shifts when workers are less likely to be fatigued.

Shift work

Measures that can be used to address the risks associated with shift work include:

- avoid quick shift changeovers, such as finishing at 11pm and starting again at 7am
- control overtime, shift swapping and on-call duties
- use a forward-rotation shift system (i.e. morning to afternoon, afternoon to night)
- allocate shift workers consecutive days off, including some weekends, depending upon their fatigue risk level
- try to fit shift times in with the availability of public transport
- provide alternative transport at end of overtime/long shift
- limit shifts to 12 hours including overtime
- set shift rosters ahead of time and avoid sudden changes of shifts to allow workers to plan leisure time
- where split shifts are used, arrange timing so sleep of workers is not disrupted due to the times they are required to work
- set standards and allow time for communication at shift handovers, and
- offer alternatives to workers who may have difficulties adjusting to working hours.

Environmental conditions

Measures that can be used to address the risks associated with environmental conditions include:

- avoid working during periods of extreme temperature
- install heating devices in cold work environments
- install cooling devices and/or provide access to cooled areas in hot work environments
- provide shelter in hot work environments
- install ventilation and mechanical cooling devices in hot, confined work environments such as truck cabins
- provide adequate facilities for rest, sleep, meal breaks, onsite accommodation (if appropriate) and other essential requirements, such as bathroom facilities
- install adjustable, vibration-free seats in appropriate machinery and vehicles, and
- ensure the workplace and surroundings are well lit, safe and secure.

Individual factors and factors outside work

Ways to address individual factors and factors outside work include:

- provide training and information on fatigue management (see below), and
- use the tips on avoiding fatigue in Appendix 2 (page 19).

Emergencies and unexpected events

Where applicable, planning for emergencies and unexpected events (e.g. staff shortages, plant breakdowns and situations where staff are called back to work) should address control measures to prevent fatigue and other risks outlined in this document.

Training and information

Preventing work-related fatigue should include training and information on:

- the OHS responsibilities of everyone in the workplace
- the body clock and how fatigue can affect it
- risk factors for fatigue
- symptoms of fatigue
- effective control measures for fatigue such as work scheduling
- procedures for preventing fatigue such as incident reporting
- effects of medication, drugs and alcohol
- nutrition, fitness and health issues relating to fatigue
- balancing work and life demands, and
- specific training and education for managers and supervisors.

Note – training should be arranged so it is available to all workers on all shifts. If workers must attend training outside normal shifts, it should be considered work time and rosters adjusted accordingly.

Monitoring and review of control measures

To best prevent work-related fatigue, procedures must be monitored, evaluated and reviewed. Have control measures been implemented as planned? Are they working? Are there any new problems?

In determining the frequency of the monitoring and review processes, consider:

- the level of risk – high-risk hazards need more frequent assessments
- the type of work practice, schedule or plant involved
- a regular review of the process for hazard identification, risk assessment and risk control to ensure the risks are effectively managed
- review incidents, near misses, injuries and other data, such as absenteeism and staff turnover rates to establish if they could be attributable to fatigue, and
- further review of control measures when methods, tasks, equipment, hazards, operations, procedures, rosters or schedules are introduced or the environment changes or there is any indication risks are not being controlled.

4.

Case studies

Following is a range of case studies that show how a number of fatigue risk factors can be present in a work situation. The case studies show the hazards and the most effective risk controls measures.

Health

After a medication administration error, a large city hospital conducted an investigation. During the investigation, they discovered the nurse who made the error had worked more than 240 hours that month. She worked many long shifts, some were for 10 hours at night and some were 12 hours in the day. The nurse had been required to work a number of night shifts at short notice to fill in for absent staff. Her unit manager had not been able to call on agency staff or casuals because of budget constraints. For the entire month, the nurse did not get two days off in a row. The shifts she worked over the month were often on a backward rotation. Following the investigation, the hospital organised for a risk assessment to be conducted to ensure the situation would not happen again.

The risk assessment revealed there were no effective risk controls for work-related fatigue, for example:

- there was no monitoring of the rosters staff actually worked
- many shifts were scheduled in a backward rotation
- often the rosters didn't provide sufficient recovery time between shifts
- some rosters meant staff did not get two consecutive days off a week, and
- shifts were often varied at short notice.

The work-related fatigue risk control measures the hospital implemented included:

- a safe hours policy that included clear guidelines on how to develop schedules that reduced the risk of work-related fatigue (including maximum number of night shifts that could be worked in a roster cycle, minimum numbers of days off in a roster cycle and minimum hours break between shifts)
- a forward-rotating rostering system
- a roster-monitoring system that included checking rosters actually worked against the planned rosters every month
- budget allocation for agency staff to cover unplanned absences, and
- supervisor and staff training on the new rostering system.

Manufacturing

A manufacturing company runs its operations 24 hours a day, with three shifts, morning, afternoon and night. All shifts are permanently allocated to three sets of workers. The night shift is undertaken by staff provided through a labour hire company. There is no limit placed on the number of consecutive nights contractors could work and there is less staff rostered to work at night than in the day. The night shift also has minimal maintenance staff working. The company did not think it had risk of fatigue until it undertook a health and safety review of workplace injuries, near misses and incidents. The review revealed that a number of injured workers were the night shift contractors. These injured workers had all worked more than 10 continuous nights prior to their injuries.

The review of injuries, near misses and incidents revealed there were no effective work-related fatigue risk controls during the night shift, for example:

- no limit was placed on the number of hours that could be worked
- there was no monitoring of rosters actually worked
- the continuous night shift roster provided insufficient recovery time to the people that worked it, and
- consistent night shift meant the night workers rarely got good quality sleep.

The review recommended the following work-related risk control measures be implemented:

- only operate the lower-risk production lines at night
- give the night supervisor and night maintenance staff permission to shut down the production line when necessary
- implement an organisation-wide fatigue-management system to manage and monitor the number of weekly hours worked by each employee
- place a limit of 10 on the number of continuous days that can be worked in a fortnight
- agreement with labour hire company to set limit on work hours of contractors, and
- workers must have a minimum of six days off every month.

Emergency services

At the peak of the bushfire season, a four-person crew from one region where there are no fires is sent to assist another region fighting a fire front that is 50km wide. The area that needs the additional crew members is a four-hour drive from the region's base. The crew are based at the fire ground for either five-day shifts or three-night shifts. The shifts are 12 hours long, including travel to and from a staging area at a community hall that is also used for meals and sleep. The community hall is used as a staging area for other emergency and support services and is therefore quite noisy and busy. A number of strike teams are in the same situation.

The safety co-ordinator becomes concerned the strike teams are not getting the amount of quality rest and sleep time they need to avoid work-related fatigue. The co-ordinator conducts a risk assessment with the health and safety representative to establish the main risk factors and put in place control measures that address the work-related fatigue risk factors.

Key work-related fatigue risk factors identified:

- harsh environment caused by extreme heat, smoke and fire
- travel time was not adequately accounted for in shift arrangements
- the common rest area is noisy
- fire fighting is very physically demanding work and requires a high level of vigilance to be maintained, and
- insufficient recovery time provided.

The risk assessment leads to the following work-related fatigue risk control measures being implemented:

- once the fire ground is contained, the number of teams working at night is reduced
- shift lengths are shortened to 10 hours
- supervisors on the fire ground monitor the teams for fatigue
- teams alternate between active fire fighting and asset protection tasks
- more suitable accommodation for sleeping is provided; and where there is no motel accommodation, a base camp is set up away from the main staging area, and
- buses are provided for transport to and from fire ground and the meals and accommodation locations.

Appendices

Appendix 1 – Fatigue hazards identification checklist

Appendix 2 – Risk assessment chart

Appendix 3 – Tips on avoiding fatigue

Appendix 1 – Fatigue hazards identification checklist

Photocopy for easy use.

This checklist can be completed by a range of parties: employers, supervisors, OHS managers and officers, and health and safety representatives and committees.

Work-related factors that can contribute to fatigue

If you answer yes to any of the questions in the shaded areas, go to assessing fatigue risks (page 9). If yes is ticked three times or more for questions in the non-shaded areas, go to assessing fatigue risks.

Mental and physical work demands

Does anyone undertake work that is physically demanding?
For example, tasks that are especially tiring and/or repetitive such as: bricklaying, typing, process work, moving bags of cement, felling trees. YES

Does anyone undertake work that is mentally demanding?
For example, work that requires long periods of vigilance, work that requires continuous concentration and minimal stimulation, work performed under pressure, work to tight deadlines, emergency callouts, interacting/dealing with the public. YES

Work scheduling and planning

Does anyone consistently work or travel between midnight and 6am? YES

Does the work schedule prevent full-time workers having at least one day off per week? YES

Does the work schedule make it difficult for workers to consistently have at least two consecutive nights sleep per week? YES

Do work practices include on-call work, call-backs and/or sleepovers? YES

Do planned work schedules vary from those actually worked? YES

Does the work schedule involve rotating shifts? YES

Does anyone travel more than one hour to their job? YES

Working time

Does anyone regularly work in excess of 12 hours a day including overtime? YES

Is the break between shifts less than 10 hours?
For example, split shifts, quick shift changeovers. YES

Is work performed at low body clock times (between 2am and 6am)? YES

Environmental conditions

Does anyone perform work in harsh or uncomfortable conditions (e.g. hot, humid or cold)? YES

Does anyone work with plant or machinery that vibrates? YES

Is anyone exposed to hazardous substances? YES

Is anyone consistently exposed to loud noise? YES

Appendix 2 – Risk assessment chart

Photocopy for easy use.

The *Risk assessment chart* can be used to consider potential hazard factors and risks of fatigue. The chart highlights areas where implementation of risk control measures should be considered. A holistic approach should be taken in assessing risks and implementing control measures.

Risk assessment chart – to consider hazards and risks at your workplace/industry, follow the three steps:

<p>Step 1. Hazard identification Identify potential hazard factors at the workplace/industry, such as those listed in the column below. Consider hazard factors in the context of specific workplace/industry circumstances.</p>	<p>Step 2. Risk assessment To assist risk assessment, a general level of risk for each hazard factor is indicated along arrow guides. In assessing risk: consider interaction between hazard factors that could influence level of risk; and as level of risk for each hazard factor is only indicative, take into account specific workplace/industry circumstances that may influence it.</p>	<p>Step 3. Risk control Where a hazard factor is assessed as medium/higher risk, consider implementing control measures, such as those outlined in 'controlling fatigue risks' in this guide.</p>
<p>Hazard factors</p>		<p>General risk indicator for hazard factors</p>
<p>Hazard factors</p>		<p>Control measures</p>
<p>Mental and physical work demands</p> <p>Repetition (physical and/or mental)</p> <p>Physical</p> <p>Mental</p>	<p style="text-align: center;">Higher risk</p> <p>Highly repetitive work and/or high concentration work, with high demands over an extended period of time</p> <p>Highly physically demanding work that results in muscle fatigue</p> <p>Long periods of high concentration and/or mentally demanding work</p>	<p>Consider control measures – mental and physical demands of work</p> <p>See page 10</p>
<p>Work scheduling and planning</p> <p>Hours</p> <p>Average weekly hours</p> <p>Total hours over a three-month period</p> <p>Daily work hours</p> <p>Daily work hours and work-related travel</p> <p>Scheduling of work</p>	<p style="text-align: center;">Lower risk</p> <p>Varying task demands</p> <p>Minimal physically demanding work</p> <p>Minimal periods of high concentration and/or mentally demanding work</p> <p>35-40 hours (working week)</p> <p>48 hours (working week)</p> <p>56 hours (working week)</p> <p>624 working hours</p> <p>9 working hours</p> <p>12 working hours</p> <p>10 working hours</p> <p>13 working hours</p> <p>Regular and predictable hours</p> <p>Irregular and unpredictable hours, short notice of schedule, extended overtime, on call across shift cycle</p>	<p>Consider control measures – working time</p> <p>See page 12</p>

Appendix 2 – Risk assessment chart continued

Photocopy for easy use.

Risk assessment chart – to consider hazards and risks at your workplace/industry, follow the three steps:

Step 1. Hazard identification Where risk falls into the area of medium/higher risk, undertake Step 3 in the next column.	Step 2. Risk assessment Where risk falls into the area of medium/higher risk, undertake Step 3 in the next column.	Step 3. Risk control
Hazard factors Lower risk		Control measures
General risk indicator for hazard factors Higher risk		
Shiftwork Length of shift Time of shift Speed and direction of shift Split shifts/variable shifts	10 hours 13 hours Night shifts Afternoon shifts Forward rotation (night/evening/morning) Slower rotation (e.g. weekly rotation/ 3-4 weekly rotation) Backward rotation (night/evening/morning) Forward rotation (morning/afternoon/night) 13 hour period	Consider control measures – shift work See page 11
Working time Night work Shift end (for those working eight hours or more between 10.00pm and 6.00am) Length of shift Sequential night shifts Period of non-work following a sequence of night shifts Breaks during work – frequency Breaks between work periods – recovery time Seasonal work arrangements – hours worked	After 10.00am Before 6.00am 12 hours 8 hours 10 hours 6 or more 8 hour shifts 5 or more 10 hour shifts 4 or more 12 hour shifts Less than 48 hours 48 hours Inrequent or no breaks Adequate and regular breaks Adequate time for sleep, travel and meals, etc Long hours during peak season Regular hours over 12 months	Consider control measures – night work See page 11 Consider control measures – work scheduling and planning See page 11

Appendix 2 – Risk assessment chart continued

Photocopy for easy use.

Risk assessment chart – to consider hazards and risks at your workplace/industry, follow the three steps:

Step 1. Hazard identification	Step 2. Risk assessment Where risk falls into the area of medium/higher risk, undertake Step 3 in the next column.	Step 3. Risk control			
Hazard factors		General risk indicator for hazard factors	Control measures		
		Lower risk	Higher risk		
Environmental conditions Exposure to hazardous substances and atmospheric contaminants Exposure to noise Exposure to extreme temperatures Exposure to vibration	For hazardous substances, low risk calculated using national exposure standard ¹ Low risk calculated according to formulae in AS/NZS 1269.1 ² Minimal exposure Minimal exposure Long period of exposure Long period of exposure	Consider control measures See page 10	Training and information Lack of information on fatigue management and health and lifestyle factors Lack of training on fatigue management and health and lifestyle factors Lack of job skills training	No information is provided No training provided Inadequate training for job demands	Consider control measures – see training and information section of guide See page 13

1 To access exposure standards, see the internet database, Hazardous Substances Information System, available at www.asccc.gov.au

2 Risk should be calculated according to formulae in Australian/New Zealand Standard AS/NZS 1269.1 *Occupational noise management – measure and assessment*, published by Standards Australia (www.sai-global.com) adapted from *Risk management guidelines* from *Code of Practice on Working Time*, WorkSafe Western Australia.

Appendix 2 – Risk assessment chart continued

Photocopy for easy use.

Risk assessment chart – to consider hazards and risks at your workplace/industry, follow the three steps:

Step 1. Hazard identification

Step 2. Risk assessment

Where risk falls into the area of medium/higher risk, undertake Step 3 in the next column.

Step 3. Risk control

Hazard factors

General risk indicator for hazard factors

Control measures

Lower risk

Higher risk

Individual and factors outside work

Sleep (amount and quality)

Health

Fitness for work

Lifestyle factors

Night sleep
8 hours night sleep (in 24 hours)

Day sleep
6 hours night sleep (in 24 hours)

Poor diet
Recent illness/injury
Sleep disorders

Influence of
alcohol, drugs or
amount of sleep

Activities/responsibilities that limit
amount of sleep, e.g. second job or
long commuting distance

Consider control measures –
individual and factors outside work
See page 13

Appendix 3 – Tips on avoiding fatigue

Photocopy for easy use.

Sleep

- The best sleep is night sleep.
- If sleeping during the day, darken the room and allow more time than normal to fall asleep.
- Choose a quiet, peaceful place to sleep and adhere to a routine.
- Seven to eight hours uninterrupted sleep is adequate.
- Seek medical advice for excessive snoring, irregular breathing and insomnia.

Drugs and alcohol

- Avoid excessive consumption of alcohol – it affects quality of sleep.
- Avoid stimulants – they delay the need for sleep.
- Do not consume coffee or tea before going to bed.

Medical conditions

- If you have a medical condition, you should seek advice from your doctor if you are in a job that involves shiftwork or long working hours.
- Tell your employer about any medical conditions that may limit your ability to work or make you susceptible to fatigue.
- Ask your doctor for an alternative medication if it causes you drowsiness when you need to be awake.

Fitness

- Maintain a basic level of fitness.
- Exercise regularly.
- Keep your weight in check – obesity contributes to sleeping disorders.

References

State OHS legislation and related documents

NSW

Occupational Health and Safety Act 2000 (NSW)

Occupational Health and Safety Regulation 2001

OHS Consultation Code of Practice, WorkCover NSW (2001)

Risk Assessment Code of Practice, WorkCover NSW (2001)

Risk management at work guide, WorkCover NSW (2001)

Minimising fatigue in the health, aged care and allied industries, WorkCover NSW

Transport and storage industry fatigue resource, guide and fact sheets WorkCover NSW (2007)

Victoria

Occupational Health and Safety Act 2004 (VIC)

Occupational Health and Safety Regulations 2007

Code of Practice for Manual Handling, WorkSafe Victoria (2000)

Your health and safety guide to manual handling, WorkSafe Victoria (2007)

Controlling OHS hazards and risks – a handbook for workplaces, WorkSafe Victoria (2007)

Consultation on health and safety – a handbook for workplaces, WorkSafe Victoria (2007)

Fatigue management guidelines for the forestry industry, WorkSafe Victoria (2004)

WorkSafe Position: How WorkSafe applies the law in relation to reasonably practicable, WorkSafe Victoria (2007)

Fatigue-risk calculator

A fatigue-risk calculator can be used to assess work schedules and rosters. It is software that can help identify where the most serious fatigue risks are likely to be. A fatigue-risk calculator weighs up a range of data (e.g. number of hours worked, task undertaken, time of day worked) to gauge the risk of actual and proposed work schedules. Fatigue-risk calculators are most effective when used with other methods for managing the risks of fatigue.

Free fatigue and risk calculator software is available via the Health and Safety Executive website (United Kingdom): www.hse.gov.uk/research/rrhtm/rr446.htm

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