

Fatigue

Prevention in the NZ Workplace



CANTERBURY REBUILD SAFETY FORUM

Contents

	PAGE
Introduction	3
What is Fatigue?	3
Risk Management Approach to Fatigue	4
Appendices	10
Tips: Heat Exposure	13
Toolbox talk: Heat Exposure	14
Tips: Fatigue	15
Toolbox talk: Fatigue	16
Fatigue Management Safety Essentials	17
References	19

The Fatigue Prevention Guide content has been kindly supplied by:



This document provides practical guidance for persons conducting a business or undertaking and other duty holders on how to manage fatigue to ensure it does not contribute to health and safety risks in the workplace.

The information in this guide is not exhaustive. It is simply a starting point which can be applied generally to all types of work and workplaces. It is not designed to provide information for managing fatigue in specific industries and does not replace requirements related to fatigue under other laws, for example heavy vehicle driver fatigue laws or rail safety requirements.

This document was first published in January 2015. It will be reviewed/updated in October 2015.

Introduction

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

This guide is intended to assist people with duties under New Zealand health and safety laws to recognise and manage the risks associated with fatigue in the workplace. It is intended to be generally applicable to any workplace within New Zealand.

This guide contains general information for employers, duty holders, persons conducting a business or undertaking, employees, workers and 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 in Appendix).

The factors contributing to fatigue include:

- » The mental and physical demands of work
- » Work scheduling and planning
- » Working time
- » Environmental conditions, and
- » Individual factors, such as sleeping disorders

This guide explains how to address and reduce the risk of fatigue in the workplace.

What is fatigue?

Fatigue fa 'ti:g/: Extreme tiredness resulting from mental or physical exertion or illness.

Fatigue is more than feeling tired and drowsy. In a work context, fatigue is a state of impairment that can include mental and/or physical exhaustion which reduces a person's ability to perform work safely and effectively.

Fatigue is not only caused by work-related activities – it is affected by all activities carried out when a person is awake.

Fatigue can result from features of the work and the workplace and from features of an

employee/worker's life outside of work. Levels of work-related fatigue may be similar for different individuals performing the same tasks.

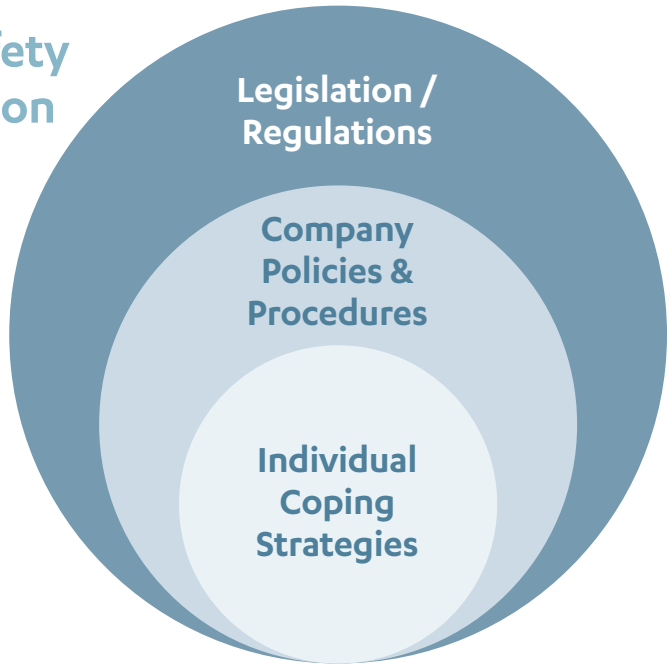
Work related fatigue can and should be assessed and managed at an organisational level. The contribution of non-work-related fatigue is best managed at an individual level.

Toolbox Topic B - "How can you tell if someone is fatigued?" provides guidance on signs and symptoms of fatigue.

Risk Management approach to fatigue

Health and safety duties in relation to managing the risk of fatigue

Everyone in the workplace has health and safety duties to prevent and manage the risk of fatigue.



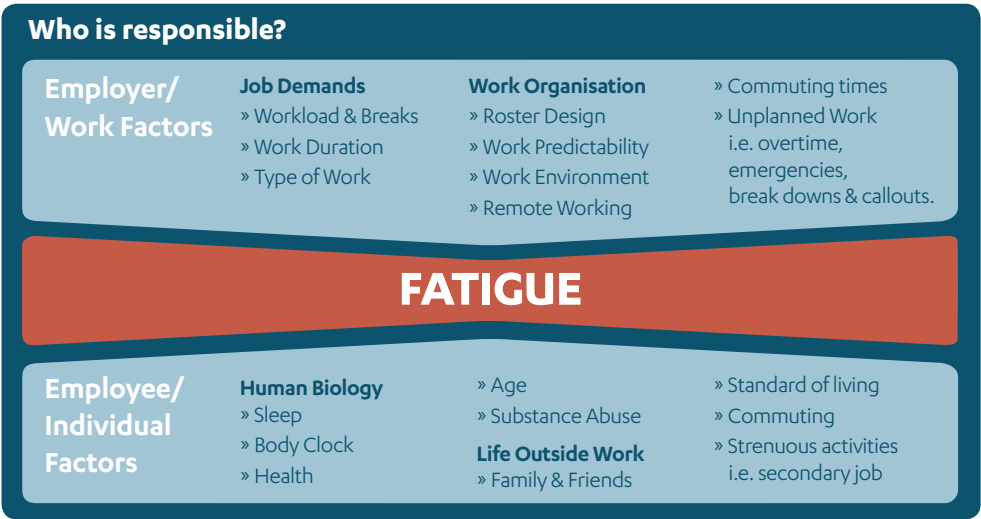
Employers, duty holders, and those conducting a business or undertaking – have a general duty to:

- » Ensure as far as reasonably practicable the health and safety of their workers
- » Provide and maintain a working environment that is without risk to health and safety
- » Provide and maintain facilities for the safety and health of employees at work
- » Ensure that machinery and equipment is safe for employees
- » Ensure as far as reasonably practicable that working arrangements are not hazardous to employees
- » Ensure adequate training to complete tasks
- » Engage so far as reasonably practicable, with workers with respect to health and safety matters.

Employers do not have the sole responsibility to manage workplace fatigue.

Employee/ Workers – should know their responsibilities to:

- » Take reasonable care for their own safety, plus the safety of others who might be affected, for example by poor judgement as a result of fatigue
- » This responsibility extends to taking reasonable care for your own health and wellbeing – for example an employee in charge of dangerous machinery who arrives at work in a state of fatigue is a risk to themselves and others around them
- » Turn up in a state fit for work, having done everything possible to get good sleep and rest
- » Comply with reasonable instructions of their employer, duty holder and/or the person conducting the business or undertaking where they work
- » Co-operate with any health and safety policy that has been notified to them
- » Ensure they are adequately trained to complete the tasks and to identify risks associated with their work; this includes identifying the signs and symptoms of fatigue.



Work Schedules and Planning

The way work is planned and scheduled, the time work is performed and the amount of time worked can increase the risk of fatigue.

Scheduling work in a way that fails to allow employees/workers enough time for travel to and from work and/or to physically recover and socialise can produce fatigue.

Working at times when employees/workers are biologically programmed to sleep (which can disrupt an employee/worker’s body clock) and working for long periods of time

can also produce fatigue.

- » Long hours of work in a single shift, or across a shift cycle or because of on-call duties. This includes travel time, especially for remote sites.
- » Short breaks between or within work shifts
- » Shift start/finish times (e.g. a start time between 10pm and 6am)
- » Changes to rosters
- » Unplanned work, overtime, emergencies, break downs and call outs.

Make sure your employees take regular, quality, rest breaks in their working day. Employers must allow a minimum of two paid 10 minute rest breaks and one unpaid 30 minute meal break if the work period is six to eight hours long (Employment Relations Act 2000, s 69ZD.) Consider extra rest breaks if the work is demanding.

Work Environment Conditions

Working in harsh and /or uncomfortable environmental conditions can contribute to the risk of fatigue in a number of ways. Heat, cold, noise, vibration and hazardous substances are some of the environmental conditions that can make employees/workers tire more quickly and impair their performance. Provide adequate facilities for rest breaks.

Mental and Physical Demands of Work

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

Excessive Commuting

Is significant travel to and from work necessary each day so that time for adequate sleep is reduced must be taken into account when determining risk of fatigue.

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

Effect of exposure for longer periods

When taking a risk management approach to fatigue, it is very important to look at how fatigue, and long work hours in general, can interact with other workplace hazards. Exposure to some hazards can be increased when working extended hours – e.g. manual tasks and exposure to hazardous chemicals, dust, noise and vibration.

Overlapping duties

More than one person or entity may have overlapping duties to manage the risks caused by fatigue in the workplace. In these situations, there should be communication between the duty holders to identify and assess health and safety risks associated with fatigue. They will work together in a co-operative and co-ordinated way so these risks are eliminated or minimised so far as is reasonably practicable.

Assessing the risks

There may not be obvious signs of fatigue the workplace but this does not mean it is not occurring or that factors which may increase the risk of fatigue are not present.

Fatigue is often caused by a number of inter-related factors which can be cumulative. When assessing risks, contributors to fatigue should not be considered in isolation.

The **first step** in the risk management/assessment process is to identify all reasonably foreseeable hazards that could contribute to fatigue. Factors that can contribute to fatigue include:

- » The mental and physical demands of work

- » Work scheduling and planning, taking into account shift patterns
- » Working time, including travel times to and from the workplace
- » Environmental conditions; individual and non-work factors

Toolbox Topic – C – “Fatigue Hazard Identification Checklist” provides guidance on identifying and assessing the risk of fatigue.

The **second step** in the process is to assess the risk of injury from fatigue. This includes an assessment of:

- » Where, which and how many workers (including contractors and subcontractors) are likely to be at risk of becoming fatigued?

- » How often fatigue is likely to occur?
- » The degree of harm which may result from fatigue
- » Whether there are existing control measures and whether they are effective
- » What action should be taken to control the risk of fatigue
- » How urgently action to control the risk needs to be taken.

Effective risk assessment and management of fatigue can help an organisation's productivity and increase performance by reducing workplace incidents and injuries, with reductions in absenteeism and staff turnover.

Preventing Fatigue

Once fatigue is identified as a risk, the next step is to take measures to control, prevent and manage that risk.

The key aim of any fatigue management is to ensure that hazards that pose an important risk to the health of the employee/worker or to others who may come into contact with occupational hazards are being properly controlled. An important concept in the development of the controls is referring to the "hierarchy of control". Administrative approaches can be used as control methods but, wherever possible, approaches higher up the hierarchy should be incorporated:

For Example:

Elimination:	eliminating night shifts in some areas or for high risk tasks.
Substitute:	increasing the length of breaks in a shift
Engineering:	improving ventilation and heating to improve alertness and ensure exposure to hazardous substances is reduced during extended shifts.
Administrative:	using a checklist to help foremen/supervisors identify and assess fatigue impairment.
PPE:	ensuring appropriate equipment is used. For example standard hearing protection devices may not provide sufficient attenuation over a 12-hour shift as opposed to a 7 hour shift.

What is reasonably practicable to do to manage the risk of fatigue will vary depending on the type of industry, the structure of an organisation as well as the person carrying out the work. Some of the control measures that can be implemented might include:

- » **Mental and physical demands of work**
 - » Using machinery to assist with tasks
 - » Limiting periods of excessive physical/mental demands
 - » Job rotations
 - » Appropriate rest breaks
- » **Work scheduling and planning**
 - » Reducing the need to work excessive hours/overtime
 - » Ensuring there are appropriate resources to carry out the work
 - » Leaving appropriate rest periods between shifts
- » **Environmental conditions**
 - » Avoiding working during periods of extreme temperature
 - » Providing shelter and adequate facilities for rest, sleep, meal breaks and other requirements where appropriate
- » **Organisational factors**
 - » Training and encouraging workers/managers/supervisors to recognise signs of fatigue
 - » Encouraging the reporting of issues and concerns

Develop a Policy

A fatigue policy for all workers, managers and supervisors should be integrated as part of your overall health and safety management system or plan. The policy should be:

- » Specific to your organisation
- » Developed through consultation
- » Available to employees/workers and visitors (e.g. on display)
- » Communicated regularly and appropriately (e.g. at inductions), and
- » Reviewed to take account of changes in the organisation (including business needs and knowledge about risks)

This policy should include information about:

- » Maximum shift length, average weekly hours, planned breaks during a shift
- » Work related travel
- » Roles and responsibilities for all levels of the organisation
- » Procedures for reporting fatigue risks
- » Procedures for managing fatigued workers
- » Training programmes for employees/workers
- » Monitoring and reviewing the policy

Make sure that anyone can report fatigue related issues to supervisors and managers, and consider fatigue as a factor when investigating accidents.

Training and information

Providing information and training to employees/workers about the factors that can contribute to fatigue and the associated risks will help them to not only do their job but also implement control measures to minimise the risks of fatigue in the workplace. Training should be arranged so it is available to all workers and include:

- » The work health and safety responsibilities of everyone in the workplace
- » The factors that can contribute to fatigue and risks that may be associated with it
- » Symptoms of fatigue
- » The body clock and how fatigue can affect it
- » Effective control measures for fatigue, for example work scheduling
- » Procedures for reporting fatigue
- » Effects of impairment due to medication, drugs and alcohol
- » Nutrition, fitness and health issues relating to fatigue
- » Balancing work and personal demands.

Managers and Supervisors

Should be trained to:

- » Recognise fatigue
- » Understand how fatigue can be managed and how to implement control measures, including how to design suitable rosters and work schedules in consultation with workers.
- » Take appropriate action when a worker is displaying fatigue related impairment.

Personal Fatigue Tools and Modelling

There are a number of on-line tools available to help employers and workers understand their exposure to fatigue.

The example below is one used by SCIRT and their contractors. It is available here: <http://strongerchristchurch.govt.nz/jobs/companies>

SCIRT FATIGUE SCORECARD

Questions for a 7 day cycle

	Data entry	Fatigue rating	Score	Overall Rating
Total normal hours worked in a 7 day period	45	L	2	4
Consecutive hours worked in any one shift	11	M	5	10
Number of short breaks taken in a shift	3	L	2	4
Average overtime per 7 day cycle	22.5	M	5	10
Number of days on call in 7 days	7	V	12	24
Number of night shifts	0	L	2	4
How many hours break between shifts	14	M	5	10
Number of free days in 7 day period	0	V	12	24
Number of changes to the work schedule	0	L	2	4
Total breaks that allow sleep at night	7	L	2	4

Low fatigue score up to 40
Medium Fatigue score greater than 40 less than 80
High Fatigue Greater than 80 less than 100
Very High over 100

Fatigue Score
Action Required = **96**
Action Required

Enter data in light blue cells only

Monitoring

An appropriate level of supervision should be provided (for example a higher level of supervision for safety critical tasks), which may include monitoring work to ensure safe work practices are followed.

Once control measures are implemented, monitoring and reviewing is required to ensure they continue to effectively manage fatigue. Consider implementing trial periods for any new work schedules and encouraging workers to provide feedback on their effectiveness. To determine the frequency of monitoring and review consider the level of risk – high-risk hazards need more frequent assessments.

Control measures should also be reviewed when:

- » There is any indication risks are not being controlled
- » New tasks, equipment, procedures, rosters or schedules are introduced
- » Changes are proposed to the work environment, working hours, schedules and rosters
- » There is an incident due to fatigue at the workplace
- » New information regarding fatigue becomes available, and

The results of consultation, including a request from a health and safety representative, indicate that a review is necessary.

Appendices

Toolbox Topic - A

Why is fatigue a problem?

Fatigue can adversely affect safety in the workplace. Fatigue reduces alertness and concentration which may lead to errors and an increase in incidents and injuries, particularly when:

- » operating fixed or mobile plant, including driving vehicles
- » undertaking critical tasks that require a high level of concentration
- » undertaking night or shift work when a person would ordinarily be sleeping

The effects of fatigue can be short or long term. In the short term a person may show the signs or report the symptoms of fatigue outlined in Toolbox Topic - B.

The longer term health effects of fatigue can include:

- » heart disease
- » lower fertility
- » diabetes
- » anxiety
- » high blood pressure
- » depression
- » gastrointestinal disorders

Consequences of fatigue

**Lack of
Attention**

**Reduced
Coordination**

**Underestimation
of Risk**

**Memory
Lapses**

**Ability to
Process
Information**

**Slower
Reactions**

**Absent
Mindedness**

**Decreased
Awareness**

Toolbox Topic - B

How can you tell if someone is fatigued?

Signs & symptoms of fatigue:

Mood	<ul style="list-style-type: none"> » More irritable than usual » Uncommunicative » Easily frustrated by tasks » Doesn't care – disengaged » Repeatedly arriving late for work » Increased absenteeism
Alertness / Sleepiness	<ul style="list-style-type: none"> » Looks tired » Yawns a lot » Has micro sleeps » Behaves “automatically” » Slurs speech » Rubs eyes
Task Performance	<ul style="list-style-type: none"> » Takes unusual risks » Cuts corners to get the job done » Shows poor judgement of distance, time or speed » Is clumsy » Does things in the wrong order » Doesn't complete tasks » Forgets recent information or discussions » Moves slowly – lacks energy » Reverts to old habits » Responds slowly to situations » Does not think logically » Makes mistakes » Short term memory problems & an inability to concentrate » Poor decision making & judgment
Focus	<ul style="list-style-type: none"> » Preoccupied with parts of a problem » Loses the big picture » Misses warning signs » Unable to stay focused on a task » Has a fixed gaze » Reports blurred vision » Fails to interpret a situation correctly

A fatigued worker may also experience symptoms not obvious to others including:

- » feeling drowsy
- » difficulty concentrating
- » headaches
- » blurred vision or impaired visual perception
- » dizziness
- » a need for extended sleep during days off work

Toolbox Topic - C

Fatigue Hazard Identification Checklist

If the answer is yes to any of the questions, fatigue risks may need to be further assessed and control measures put in place.

Mental and physical work demands	
Does anyone undertake work for long periods that is physically demanding? (for example, tasks that are especially tiring and/or repetitive such as bricklaying, typing, process work, haul-truck driving, moving bags of cement, felling trees)	Yes/No
Does anyone undertake work for long periods that is mentally demanding? (for example, work that requires vigilance, work that requires continuous concentration and minimal stimulation, work performed under pressure, work to tight deadlines, emergency call outs, interactive/dealing with the public)	Yes/No
Work scheduling and planning	
Does anyone consistently work or travel between midnight and 6am?	Yes/No
Does the work scheduled prevent full time workers having at least one day off per week?	Yes/No
Does the schedule make it difficult for workers to consistently have at least two consecutive nights sleep per week?	Yes/No
Do work practices include on-call work, overtime, emergencies, call-backs and/or sleepovers?	Yes/No
Does the schedule differ from the hours actually worked?	Yes/No
Does the work schedule include rotating shifts?	Yes/No
Does anyone have to travel more than one hour to get to their job?	Yes/No
Does anyone work in excess of 12 hours regularly? This would include any overtime worked.	Yes/No
Does anyone have less than 10 hours between each shift? (for example, split shifts, quick shift changeovers)	Yes/No
Is work performed at low body clock times (between 2am and 6am)	Yes/No
Excessive commuting times necessary	
Is significant travel to and from work necessary each day so that time for adequate sleep is reduced?	Yes/No
Are long-distance commutes necessary at the beginning of a work cycle?	Yes/No
Environmental conditions	
Is work carried out in harsh uncomfortable conditions? (for example, hot , humid, cold temperatures)	Yes/No
Does anyone work with plant or machinery that vibrates?	Yes/No
Is anyone exposed to hazardous chemicals?	Yes/No
Is anyone consistently exposed to loud noise?	Yes/No
Is anyone exposed to Dust?	Yes/No
Individual and non-work factors	
To what extent is there evidence of problems as a result of: <ul style="list-style-type: none"> » Family commitments? » Insufficient quality sleep? » Sleeping disorders? » Psychological issues? » Alcohol and drug use? » Second job/non-paid work? » Medication 	Yes/No
Effect of exposure during extended shifts	
Is there significant exposure to hazardous chemical, dust, noise and vibration? (note that exposure standards may need to be adjusted.)	Yes/No

Tips Heat Exposure

*Protect yourself from the effects of heat.
Wear sunscreen, drink plenty of water,
take breaks and seek shade*



Heat Exposure

Working in hot temperatures for extended periods of time can lead to dehydration, heat exhaustion and heat stress. Your body can overheat because it is unable to cool itself through sweating.

Once you overheat, you'll notice symptoms like:

- Clammy or sweaty skin
- Feeling weak or dizzy
- Headaches
- Dark coloured pee
- Pounding or rapid pulse
- Loss of balance, fainting.

You can limit your heat exposure by:

- Drinking plenty of water throughout the day
- Taking breaks or undertake tasks in the shade whenever possible
- Wearing sun-protective clothing – hat, sunglasses, breathable fabrics.

You are more susceptible to the effects of heat exhaustion and stress if you are:

- working in closed areas with limited air flow
- in confined spaces
- under floor, ceiling or roof work
- in cabs of mobile plant.

Age, build and any medical issues can also increase the impact of heat.

If heat stress or exhaustion is not dealt with, it can progress to heat stroke. This is severe and can result in death.

Find out more at www.safetycharter.org.nz

Getting 8 hours sleep a night will make your day safer.



Fatigue

Fatigue is extreme tiredness and comes about after long periods of mental or physical exertion and lack of good, uninterrupted sleep.

The signs of fatigue include:

- constantly feeling tired
- excessive yawning
- lacking energy
- bad moods or headaches.

Fatigue reduces your ability to perform work safely and effectively. Under the Health & Safety in Employment Act, we all have a responsibility to manage fatigue.

How you can minimise fatigue:

- Sleep! 8 hours is ideal – every night
- Drink plenty of water throughout the day
- Don't skip your breaks
- Get a life! Have things you look forward to outside of work – family, friends, sports, gigs - whatever it takes to switch off from work.

If you're buggered, don't bugger it up for everyone else. If you feel tired or exhausted - tell someone. We need to manage all risks on this site; we're not going to judge or punish you for being honest.

Some questions:

- What are some of the signs of fatigue?
- Who's responsible for preventing and managing the risk of Fatigue?
- What can you do to combat fatigue?

Find out more at www.safetycharter.org.nz

Fatigue Management Safety Essentials

Stay alert - the detail



Shift work, extended hours, and on-call arrangements

can contribute to fatigue if they are not managed appropriately.



Non-work related factors

can also contribute to fatigue, these include: family responsibilities, social activities, health issues, study, and sporting commitments.



Sleep

- » Sleep at the right time for you, this may be as soon as you get home, or some time later
- » Come up with a pre-sleep routine, like having a bath or shower, drinking warm milk, listening to relaxing music, or doing a non-stimulating activity to assist in getting to sleep
- » Use an air-conditioner or fan to lower your body's core temperature, as normally occurs at night. This will also provide 'white noise' to mask other daytime noise
- » Minimise interruptions by advising family, friends, and neighbours of sleep times, and asking family to do noisy activities like vacuuming and mowing outside these times
- » Turn down the phone volume or use an answering machine; ask family members to take their shoes off inside the house; install sound absorbing carpet; have children play at the other end of the house; and use ear plugs
- » Use blackout curtains to create a dark sleep environment. Most normal curtains do not block out enough light.



Eating and drinking

Digestion slows down at night, and becomes active during the day, when shift workers sleep

- » Try to eat at normal times. Have your main meal between 5pm and 7pm, when the body is able to digest heavier food
- » Eat easily digested food, like cereals and fruit, between midnight and 8am
- » Avoid a heavy meal before a day sleep. This can increase your body temperature, making it harder to sleep
- » Avoid caffeinated food and drinks such as coffee, tea, cola and chocolate for at least four hours before sleep
- » Avoid using alcohol to get to sleep. It affects the quality of your sleep and causes your bladder to fill quickly.
- » Keep hydrated/drink plenty of water

Fatigue Management Safety Essentials

Stay alert - the detail



Health and well-being

- » Exercise regularly to improve sleep quality. You don't have to play sport or go to the gym, exercise can be as simple as walking for 30 minutes, 3 to 4 times per week. If you have a pre-existing medical condition, seek advice before starting to exercise
- » Organise family activities around your work schedule, if you can. This will help maintain family connections and reduce feelings of being excluded and isolated
- » Use your time off for rest, family time, socialising, and enjoying personal interests
- » See a doctor for medical issues that could affect your ability to sleep, for example: diabetes, depression, sleep apnoea, and insomnia
- » Use sleep medication only as a last resort and only under medical supervision. Drug-induced sleep is often not as good for you, and the medication can be addictive in the long term
- » If you are on prescription medication that could affect your alertness, tell your Manager
- » Avoid smoking before sleep; nicotine is a stimulant that keeps you awake.



Commute safely

Fatigue slows reaction times and affects scanning ability and information processing skills. Be careful when commuting, especially at the end of a night shift or a long shift.

- » Avoid driving when tired; consider taking public transport, or share the driving with other people – particularly during the hours when sleep normally occurs (midnight to 6am)
- » The car heater can cause drowsiness. Instead open the window to let cool air in. Keep your mind active by listening to the radio
- » Take a 15-20 minute power nap before driving. However, sleeping longer than this can make it less safe to drive.



Shift work

Adapting to shift work can be easy for some people, and hard for others. The strategies outlined above will assist in minimising not just fatigue, but also the impact of shift work on your family, social life, and your overall health and well-being.

References

Legislation and related document links



WorkSafe New Zealand

<http://www.business.govt.nz/worksafe/information-guidance/guidance-by-hazard-type/stress-fatigue>



safe work australia

WorkSafe Australia

<http://www.safeworkaustralia.gov.au/sites/SWA/about/Publications/Documents/826/Fatigue-Management-A-Workers-Guide.pdf>



ACC

<http://www.acc.co.nz/preventing-injuries/at-work/workplace-health-issues/PI00083>



Parliamentary Counsel Office

<http://www.legislation.govt.nz/act/public/1992/0096/latest/DLM278829.html>



Fatigue-risk calculator

Health and Safety Executive

<http://www.hse.gov.uk/research/rrhtm/rr446.htm>



SCIRT's scorecard calculator

<http://strongerchristchurch.govt.nz/jobs/companies>



App Store

There are a number of free fatigue apps available online

Search key work 'Fatigue' on an App store compatible with your device



CANTERBURY REBUILD SAFETY FORUM