

Preventing fatigue in the commercial road transport industry: A good practice guide

© NZ Transport Agency

www.nzta.govt.nz

July 2010

ISBN 978-0-478-36470-5 (online)

Copyright information

This publication is copyright © NZ Transport Agency. Material in it may be reproduced for personal or in-house use without formal permission or charge, provided suitable acknowledgement is made to this publication and the NZ Transport Agency as the source. Requests and enquiries about the reproduction of material in this publication for any other purpose should be made to:

Manager, Information
NZ Transport Agency
Private Bag 6995
Wellington 6141

The permission to reproduce material in this publication does not extend to any material for which the copyright is identified as being held by a third party. Authorisation to reproduce material belonging to a third party must be obtained from the copyright holder(s) concerned.

Disclaimer

This publication is intended to provide general information about preventing driver fatigue. It is not the law or the source of the law. Every effort has been made to ensure the quality and accuracy of this information. However, readers are advised that the information provided does not replace or alter the laws of New Zealand and other official guidelines or requirements or replace any legal requirement. You should also be aware that any such legal requirement may be replaced or amended subsequent to this publication.

Readers should, therefore, take specific advice from qualified professionals before undertaking any action based on information contained in this publication. The authors of this publication do not accept any responsibility or liability whatsoever, whether on contract, tort, equity or otherwise for any action taken, or reliance placed, as a result of reading any part of this publication or for any error, inadequacy, deficiency, flaw or omission from the information provided in this publication.

More information ...

NZ Transport Agency
July 2010

ISBN 978-0-478-36470-5 (online)

If you have further queries, call our contact centre on 0800 699 000 or write to us:

NZ Transport Agency
Private Bag 6995
Wellington 6141

This document is available on the NZ Transport Agency's website at www.nzta.govt.nz.

Contents

Introduction	5
Research into driver fatigue	5
This guide	5
Why use this guide?	6
Application of this guide	6
The legislation	6
Health and Safety in Employment Act 1992	6
Land Transport Act 1998	6
Chain of responsibility	7
What is fatigue and what can cause it?	8
What is fatigue?	8
Symptoms of fatigue	8
Fatigue factors	8
The circadian clock	8
Working at night: the risks	9
Time spent working	10
Daylight saving	10
Combinations of risks	11
Risk analysis	12
Fatigue risk analysis	12
What is a fatigue hazard?	12
Review your current operations	12
Identify fatigue hazards	13
Consider the risk factors	13
Preventing fatigue	15
Temporary fatigue management	15
Good quality sleep	15
Fatigue prevention plan	16
Management practices	16
Scheduling	16
Rostering	17
Consultation with employees and contract drivers	17

Consult with customers	18
Induction process	18
Assessing the fitness for duty of drivers	18
Monitoring driver health	19
Work environment and amenities	19
Training and information	20
Record keeping	21
Ongoing reinforcement (refresher training)	21
Vehicles	21
Preventative maintenance	21
Maintenance records	22
Systems for reporting hazards and incidents	22
Developing policies and procedures	22
Fatigue incidents	24
Assessing fatigue incidents	24
Fatigue as a factor in the incident	24
Incident management system	25
Investigation of incidents	25
Investigating breaches of your fatigue prevention plan	25
What you can learn from a breach	26
Further information	27
Who can assist?	27

Introduction

Research into driver fatigue

Driver fatigue is a recognised risk factor for commercial road transport industry drivers. This may be the result, in part, of drivers working as many hours as possible in a highly competitive industry.

A major survey on truck driver fatigue and fitness for duty confirmed that there are significant levels of fatigue in the New Zealand transport industry.¹ One in four of the drivers surveyed rated themselves as 'tired', even though many of them were surveyed at the beginning of their shift.

It is difficult to determine how much fatigue contributes to vehicle crashes causing fatal or serious injuries because there is no simple way for investigators to determine whether fatigue was a factor in a crash. However, since 2003 the Commercial Vehicle Investigation Unit, (CVIU) of the NZ Police has been including fatigue related questions in their crash investigations and reporting. Between 2003 and 2006, the CVIU completed 1869 crash reports related to heavy motor vehicles. These reports show:

- 197 crashes were directly related to fatigue
- 5 crashes involved fatigue plus alcohol impairment
- 34 crashes involved fatigue and other at least one other cause.

These reports indicate that driver fatigue was a contributing factor in approximately 13% of heavy vehicle crashes attended by the CVIU.

A major survey of heavy truck crashes in Australia during 2005 identified that driver fatigue was a contributing cause in 27% of the crashes recorded.²

A survey of 100 New Zealand truck drivers³ identified that 24% of drivers reported starting work fatigued, 39% reported becoming fatigued while driving.

Preventing driver fatigue is therefore significant in reducing the number and cost of crashes involving heavy motor vehicles and improving the economic efficiency and sustainability of the road transport system.

Prevention of driver fatigue should not be done in isolation of other existing work practices instead it should be integrated as much as possible with existing business systems and processes.

This guide

This guide provides practical advice to the commercial road transport industry on the risks and prevention of fatigue in the workplace and how to comply with the legislation⁴. It helps define driver fatigue, identifies the risk factors and suggests the best ways to manage fatigue.

It provides a basis for operators wanting to develop alternative fatigue management schemes (AFMS).

¹Survey of New Zealand truck driver fatigue and fitness for duty, Transport Engineering Research New Zealand Ltd, 2000.

² Analysis of serious Australian truck accidents recorded in 2005, National Technical Insurance 2007.

³ Baseline survey of companies participating in the LTNZ fatigue management systems trial: final report March 2008, Massey University, Sleep/Wake Research Centre.

⁴ The Land Transport Act 1998 and Land Transport Rule: Work Time and Logbooks 2007.

Why use this guide?

Prevention of driver fatigue makes good business sense and can result in improved productivity and driver retention.

This guide can also assist in developing systems and processes for complying with legislative requirements.

Application of this guide

This guide applies to operators and drivers of commercial vehicles in New Zealand. In this guide:

- **Commercial vehicle:** is any vehicle used under a transport service licence and includes a vehicle that is used to carry goods for hire or reward.
- **Driver:** means a driver of a commercial vehicle, whether or not that person is licensed or required to hold a licence to drive such a vehicle.
- **Operator:** means the person driving or using the commercial vehicle on the road, or the person causing or permitting the vehicle to be on the road or to be driven on the road, whether or not the person is present with the vehicle.

The legislation

Health and Safety in Employment Act 1992

The Health and Safety in Employment Act 1992 requires employers to manage hazards in the workplace. Under the act, employers are required to identify, eliminate, isolate or minimise hazards.

Fatigue is one of the workplace hazards that employers are required to manage.

Commercial vehicles come under the definition of a 'workplace'.

Although the primary responsibility for maintaining a safe and healthy workplace belongs to the employer, employees and contract drivers also have a responsibility to manage hazards. In the case of drivers this means taking responsibility for being fit for duty and managing their sleep and rest in such a way that they are safe to drive.

Operators and drivers with general questions about the Health and Safety in Employment Act and its application should visit the Occupational Safety and Health (OSH) Service website at www.osh.dol.govt.nz or call 0800 209 020.

Land Transport Act 1998

The Land Transport Act 1998:

- sets limits for hours worked by drivers in the commercial road transport industry
- defines work time hours
- extends responsibility for a driver exceeding those hours to the employer or anyone else who causes this to happen (known as the 'chain of responsibility')
- prescribes how work time hours must be recorded
- sets out the offences and penalties for breaching these requirements
- provides for the NZ Transport Agency (NZTA) to approve alternative fatigue management schemes (AFMS).

The detail of these requirements is contained within the Land Transport Rule: Work Time and Logbooks 2007 (Work Time and Logbooks Rule).

In short:

- most drivers subject to work time requirements are required to take at least a 30 minute break after 5½ hours work time – no matter what type of work is undertaken in that period including driving
- in any cumulative work day, a driver may not exceed 13 hours of work time and must have at least 10 hours of continuous rest time between cumulative work days
- in any cumulative work period no driver may exceed 70 hours of work time and they must have a minimum rest of 24 hours between cumulative work periods.

Chain of responsibility

Traditionally drivers and operators have been the focus of compliance enforcement authorities, but breaches are often caused or influenced by the actions of others. Chain of responsibility recognises that all the people who influence driver behaviour and compliance must be held accountable. This includes directors of companies.

Under chain of responsibility, responsibility is shared – it is not transferred.

The links in the chain of responsibility for each trip can potentially include the:

- consignor
- operator
- packer
- loader
- scheduler
- dispatcher
- driver
- receiver.

Under chain of responsibility anyone who causes or influences a driver to do any of the following, could be held responsible and on conviction fined up to \$25,000:

- Exceed speed limits.
- Work outside work time limits.
- Exceed maximum gross weight limits.
- Skip or cut short rest times or fail to complete accurate logbook entries.

What is fatigue and what can cause it?

What is fatigue?

Fatigue is described as feelings of tiredness or lack of energy resulting in a desire to rest and/or sleep. Fatigue causes lethargy, loss of strength, yawning, a lessened capacity for work and reduced efficiency, all of which have the potential to compromise road safety.

It is difficult to calculate or quantify driver fatigue. People often think that driver fatigue means falling asleep at the wheel. When a driver falls asleep at the wheel, this is a sign of extreme fatigue. Long before they reach the stage of 'nodding off' at the wheel, fatigue will impair a driver's performance.

Symptoms of fatigue

Fatigue symptoms vary between drivers, but a fatigued driver may display:

- yawning
- tired or sore eyes, heavy eyelids
- being fixated, (eyes and mind)
- restlessness
- drowsiness
- irritability
- nodding off
- loss of attentiveness including:
 - forgetfulness
 - poor concentration
 - reduced vigilance
 - slow reaction times
 - boredom
 - making fewer and larger steering corrections
 - missing road signs
 - having difficulty staying in their lane
 - poor judgement.

Prevention of fatigue is more beneficial than trying to manage fatigue once it has set in.

Fatigue factors

The factors that contribute to driver fatigue are:

The circadian clock

We are programmed to sleep at night and be active during the day by the circadian clock in the brain - this is otherwise known as circadian rhythms.

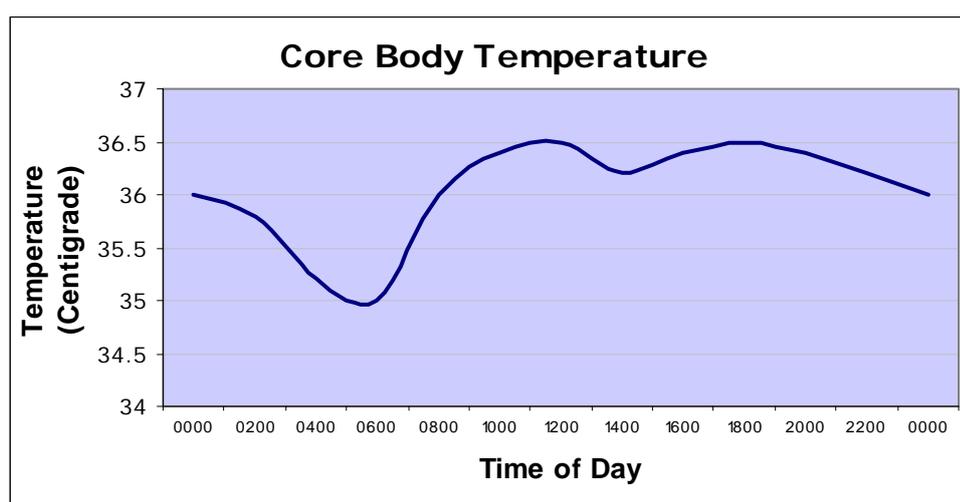
The circadian rhythms

Our bodies are designed to sleep at night and be active during the day. The 24-hour cycle of sleeping and waking is known as a circadian rhythm and is controlled by the biological clock in the brain. Our circadian rhythm is disrupted when we work at night and sleep during the day. Sleep during daylight hours is generally shorter and of poorer quality than sleep during the night.

The daily low point in alertness occurs around midnight to 6am. This is when the physiological drive for sleep is the greatest. Night work is worst for producing fatigue as there is disruption to the circadian rhythms.

We can use strategies to help us cope better with this disruption but our body clock never fully adapts to sleeping during the day. It is constantly being reset by daylight to a pattern of night time sleep and day time waking, making it difficult to recover from fatigue and get good quality sleep.

A person's circadian rhythm can be tracked by measuring their daily body temperature patterns. Typically a person's body temperature will be at its lowest during the early morning, 3-5am period, and peak about the middle of the day. This pattern coincides with rises and falls in alertness and ability to concentrate. The following graph shows a typical body temperature pattern for a 24-hour period.



Working at night: the risks

Working at night (between midnight and 6am) combines two elements of risk:

1. Low alertness when the body and brain are set to be asleep.
2. Poorer fatigue recovery-sleep taken during the day because we are designed to be awake at this time.

Shift changeovers that do not allow drivers sufficient time to recover from earlier sleep loss also pose an increased risk. For example, a short turn around between an early morning shift and a night shift would pose an increased risk.

Time spent working

The amount of time spent working, including driving, either in a continuous period or over a day affects physical and mental fatigue. This will be compounded by insufficient sleep the night or in the days before, the amount of time since the last sleep and the level of job monotony.

Daylight saving

The change to daylight saving, when the clocks are moved forward one hour, reduces the period for sleep and a person must adjust to this. A person who is required to work immediately after this adjustment may well find they are still sleepy when they commence work or become fatigued more quickly.

Lack of rest

Lack of rest while working or driving and sustained mental or physical effort, eg difficult driving conditions, are all fatigue risk factors.

Rest and rest opportunities

The best rest is unbroken sleep taken at night. The average amount of sleep needed for an adult is about 7-8 hours in each 24-hour period. However, sleep opportunities need to be longer than 8 hours to take into account time to relax, take meals, family and social time as well as any interruptions of sleep. The number of hours since the last sleep and inadequate or poor quality sleep before work become risk factors.

Short rest breaks allow for short-term recovery from fatigue, and break the monotony of some trips, but are never a substitute for plenty of quality sleep.

Rest breaks must be taken in places which are conducive to rest, free from excessive noise and interruptions.

Health issues

Health issues including sleep disorders, sleep apnoea, medical condition, diabetes, poor nutrition and feeling off-colour can all impact on a person's ability to manage or control fatigue. The impact can be amplified if more than one issue is present at the same time.

Environmental stresses

Environmental stresses such as heat, noise and vibration and lack of nutritious food and drink add to fatigue risks. Tight timeframes and stress caused by traffic congestion or prolonged waiting times at loading or unloading sites also contribute to driver fatigue.

Cumulative fatigue: sleep debt

Fatigue not only affects us in the short-term it also builds up over time. The effect of several inadequate or low-quality sleeps results in an increasing sleep debt. As sleep debt builds, performance declines and sleepiness increases. Recovery from sleep debt requires plenty of good quality sleep ideally over at least two consecutive nights.

Alcohol

Alcohol remains in a person's system for up to 12 hours after consumption. In extreme cases it may last longer. Alcohol can affect a driver's ability to drive safely even though they may be below the legal alcohol limit.

Drugs

Drugs, legal or otherwise, can contribute to the onset of fatigue.

If a driver is required to take medication prescribed by a medical practitioner then the effects these drugs may have on the driver's working effectiveness and safety must be identified. Appropriate steps must be in place to ensure that the person does not pose an unacceptable risk to themselves or other persons.

Illegal and social drugs must be avoided at all times.

Combinations of risks

While a single fatigue risk factor can be a problem, a combination of factors pushes fatigue to higher levels. For example, long shifts that end after midnight are a high-risk combination. Road and climatic conditions that increase the mental and physical workload may combine with other factors to increase fatigue.

Risk analysis

Fatigue risk analysis

All operators need to carry out a fatigue risk analysis at regular intervals to identify fatigue hazards associated with the work they undertake. This includes identifying any rosters, trips and schedules that may be fatigue inducing.

What is a fatigue hazard?

A fatigue hazard is a condition or situation that has the potential to result in death, serious injury or vehicle damage. For example, working a long shift without breaks would be a fatigue hazard.

The Health and Safety in Employment Act 1992 requires employers and employees to systematically identify hazards, assess which are significant, and then control these hazards by a process of eliminating, isolating, or minimising the hazard.

Review your current operations

Look at your typical work processes, schedules/rosters and trip records for the patterns of work and rest and consider:

- What length of shift is usually worked in a day?
- How often is night work which includes driving undertaken?
- What is the normal length of a rest break to get sleep:
 - on a day shift?
 - on a night shift?
- How many hours are normally worked in a week?
- How long is a normal continuous work period without a rest break?
- How many days off in a week are there?
- How frequently do staff including drivers get two consecutive nights off?
- Ask drivers if there are particular trips or schedules they find more tiring and whether times to complete work tasks are realistic.
- Monitor speeding fines and look into the reasons given for incurring these.
- Look at any instances of working hours or logbook breaches.
- Look at insurance claim data.
- Identify drivers who are required to travel long distances to get to or from the place they start work.
- Finally, are there any incident reports for your company in the last year that are or could be fatigue related?

Identify fatigue hazards

Review the fatigue risk factors described above and with these in mind, identify those situations that are likely to increase the risk of a fatigue hazard in your operation. Some of the hazards may not be a high risk because they rarely occur. For each 'Yes' response decide whether this is a regular occurrence or whether it only happens occasionally.

Typical trips/schedules	Yes/No	Regularly or occasionally	On which shift/trip?
1. Schedules or rosters that start and finish at night or early in the morning (midnight to 6 am).			
2. Schedules and rosters that are unpredictable and any work undertaken at short notice.			
3. Physically or mentally demanding driving requirements (eg loading and unloading, driving in congested traffic).			
4. Trips use routes with limited provision for rest areas and amenities for drivers.			
5. Nature of business presents hazards (eg transporting dangerous goods).			

Consider the risk factors

The best method for controlling or reducing fatigue risk is to **eliminate** the source of the risk as suggested in the 'lower risk' column in the table that follows. For example, eliminating a risk would be to replace a fatigued driver with a relief driver.

If this is not possible, your next best options are to **isolate/minimise** the risk for most drivers for most of the time. Planning trips to allow plenty of opportunity for sleep is one way of minimising fatigue risk.

Compliance with regulated work time hours does not mean that a driver is not exposed to a fatigue risk, nor does it mitigate the requirement to prevent driver fatigue.

A combination of risk factors can increase fatigue risk significantly.

Fatigue risk factor	Lower risk - preferred	Higher risk - avoid
Time of day and night work	Shifts (work time) rarely start before 5.30am or finish after 11pm which allows drivers to get night sleep.	Shifts often start at 6am or earlier and finish at midnight or later cutting into night sleep.
	Night shifts are rare.	Drivers do several night shifts in a week.
Time spent working	Shifts are rarely longer than 12 hours.	Shifts are often longer than 12 hours.
	Short breaks taken early in shift and regularly throughout shift.	Short breaks not taken, taken irregularly or only when driver is feeling tired.
	Schedules take account of likely road and traffic conditions, time is built into schedules for possible delays.	Schedules are tight, there is no time built in for any delays encouraging drivers to ignore fatigue.
Sleep quality	Breaks between shifts are usually longer than 10 hours to allow for the average amount of sleep required and the requirements of daily living.	Breaks between shifts are no more than 10 hours and not fully allowing for the average amount of sleep required and the requirements of daily living.
	Drivers are able to get 8 hours sleep - incorporating the hours between midnight to 6am - most nights of the week.	Drivers frequently get less than 8 hours sleep and/or have to try to sleep during day time hours.
Cumulative fatigue	Drivers have consecutive night time sleeps every week.	Drivers rarely get consecutive night time sleeps.
	Drivers have more than a day off each week and often have consecutive days off.	Driver have only the minimum time off each week.
	Schedules/rosters are regular; drivers have at least a week's advance notice of trips and can take action to prevent fatigue inducing situations developing.	Schedules/rosters are often irregular; drivers have very little advance notice and have little opportunity to prevent fatigue inducing situations developing.

Preventing fatigue

Temporary fatigue management

The least reliable methods of reducing fatigue risk are temporary measures to stay awake. Temporary fatigue measures are just that; temporary. They must never be relied on as a long term fix. The benefits of using temporary fatigue measures have been shown to last for not much more than an hour and then the fatigue symptoms and effects kick back in. Temporary fatigue measures are more likely to be self-initiated by drivers and could include:

- drinking stimulants such as coffee and sports drinks
- mental alertness techniques, eg singing
- getting out of the vehicle for a quick walk
- taking a short nap.

Poor planning can mean drivers constantly rely on temporary fatigue measures. This is ultimately the responsibility of their employer or transport operator.

Good quality sleep

To have good quality sleep you need to understand the following:

- Sleep is essential for maintaining and restoring human body function.
- Our bodies are designed to sleep at night and be active during the day to match our circadian rhythms.
- The best sleep is undisturbed, continuous night time sleep.
- A typical person needs on average 7-8 hours continuous sleep in every 24-hour period to maintain alertness and avoid sleep debt.
- Inadequate sleep on a regular basis builds up sleep debt - repaying a sleep debt requires a minimum of two nights of interrupted sleep.
- Rest breaks, short naps and stimulants such as caffeine may offer short-term relief from the effects of fatigue, but these are never a substitute for sleep.
- Sleep is the only way to combat fatigue in the medium/long-term.

Fatigue cannot be overcome by willpower, experience or motivation. It can only be overcome by getting enough sleep.

Detailed countermeasures can be found in a report prepared by a joint New Zealand and Australian fatigue expert group, *Options for regulatory approach to fatigue in drivers of heavy vehicles in Australia and New Zealand*. This report is available at <http://www.ntc.gov.au/filemedia/Reports/FatigueExpertGroupRepFeb2001.pdf>.

Fatigue prevention plan

You will be more able to prevent driver fatigue if you develop a fatigue prevention plan.

A fatigue prevention plan details how an operator proposes to prevent the fatigue risks inherent in any road transport operation. Such a plan may incorporate policies and procedures that have been prepared for other situations, for example, health and safety, driver induction, fitness for work, alcohol and drugs.

Key elements of a driver fatigue prevention plan are:

- Management practices.
- Scheduling.
- Rostering.
- Consultation with drivers.
- Consultation with customers.
- Driver induction.
- Assessing fitness for duty.
- Driver health.
- Work environment and amenities.
- Training and information.
- Ongoing reinforcement.
- Vehicles.
- Systems for reporting hazards and incidents.

Management practices

Management practices are critical in the development of a successful fatigue prevention plan. But to have any degree of success the plan must have support from the highest management level in the organisation. This support must originate when the plan is first being developed and then be ongoing. Recognition of fatigue in your health and safety policy is a good starting point.

It is important to consult with those in the transport supply chain to identify risks and manage these risks appropriately. This is especially important for trip scheduling to allow demands to be met while complying with the prescribed work time rules.

It is also important to lead by example – just because you are not driving a truck doesn't mean that you can't suffer the effects of fatigue.

Scheduling

Scheduling is the best way to build in a margin for safety and to manage fatigue. A driver must not be required to drive an unreasonable distance in insufficient time with inadequate provision for rest breaks.

Consider the following suggestions when planning schedules and rosters:

- Schedule for optimum sleep:
 - schedule with best sleep and rest opportunities in mind
 - minimise early departures enabling drivers to have good sleep before commencing the trip
 - schedule more rest after longer shifts
 - if possible negotiate pick-up and delivery times which allow better sleep opportunity.
- Schedule to be realistic and within regulated limits:

- schedule to allow time for short relief stops and delays
- ensure schedules recognise the requirements of daily living and commuting
- assess any new or irregular schedules to ensure they can be undertaken within regulated limits
- keep the roster as regular and predictable as possible.
- Prepare for upcoming schedules:
 - ensure drivers returning from a 24 hour break are prepared for upcoming schedules
 - if possible give drivers 24 hours notice of any schedule change.

Rostering

- Roster to accommodate individual driver needs where possible.
- Remember that there is no such thing as a perfect roster. (Shift working arrangements are a compromise, and compromises that are acceptable to the greatest number of people require employee involvement and participation).
- Involve drivers in the roster design as the schedules may impact on individuals in different ways (eg family commitments).
- Some drivers may adapt better to certain schedules and consultation with them may improve fatigue management.
- Where rotating rosters are used move the roster forward at each change, not backwards.

Fatigue risks that cannot be eliminated, isolated or minimised must be excluded from your planning.

Consultation with employees and contract drivers

The aim of consultation is to use staff involvement to improve decision-making about health and safety matters.

Consultation can help to identify fatigue issues and educate everyone involved.

Establishing realistic trip times should involve the input of drivers and others involved in the scheduling and rostering of trips.

The key times to consult are:

- when you first check whether risks associated with fatigue exist in the workplace
- when you first check how fatigue is currently being managed
- when you change or introduce new schedules, operations or equipment
- when there are indications of fatigue affecting the health and safety of drivers and other road users
- after an incident (or 'near miss') occurs.

Employees should be encouraged to:

- ask questions about fatigue
- raise any concerns about fatigue
- identify and notify fatigue hazards and risks
- make fatigue management recommendations
- give regular feedback on how well their fatigue management programme works

- help solve fatigue management problems
- discuss issues amongst themselves to find better alternatives.

Consult with customers

Consult with your customers about ways to minimise driver fatigue. Pick up and delivery times should be negotiated to minimise shifts in the midnight to 6am period when alertness is at a natural low level.

Remind customers about their part in the chain of responsibility.

Induction process

An induction process gives employees the opportunity to:

- understand the organisation and the section in which they work
- become fully effective in their role in the shortest possible time
- establish effective working relationships with their customers, colleagues and their line manager.

The benefits of an induction process are wide ranging and include:

- **For the person:** less stress and greater motivation from the outset. Arriving for a new job with no or a bad induction can leave a new starter worried, anxious and unable to perform their duties.
- **For the team:** less work as their new colleague quickly becomes an effective team member.
- **For the manager:** reduced workload, managing the business with a full strength team and not having to constantly provide support the new starter.
- **Financial:** less likelihood of the new member of staff leaving. (Having to replace a staff member typically costs about 25% of their salary/wage.)
- **For service quality:** customers will notice an improvement in service standards, and a reduction in errors etc, resulting in increasing levels of satisfaction and/or less complaints.
- **For the organisation:** a sense of belonging given to the new starter and to customers without damaging long-term implications.

All new staff need to go through an induction process so that they are aware of how your company operates. The induction process should include information on your health and safety policy and procedures along with information on fatigue and how it should be managed.

Assessing the fitness for duty of drivers

Drivers need to be in a fit state for work when arriving for duty. Factors that can affect their wellbeing and capacity to work effectively include:

- a second job
- recreational and sporting activities
- insufficient sleep
- stressful situations
- the consumption of alcohol/other drugs or medication
- the demands of family and relationships
- changes to normal routine

- personal health.

A written company policy needs to be developed, in consultation with drivers, outlining:

- the importance of being fit for duty
- expectations with regard to consumption of alcohol and drugs

Procedures for checking drivers prior to starting work need to be included in the policy and be well understood by all staff. Drivers need to understand the possible outcomes of presenting themselves unfit for duty.

Management practices must include contingencies for these situations. These must be clearly documented and communicated to employees.

Monitoring driver health

Driver health and fitness is a critical issue when considering how to manage the risk of fatigue. Health and fitness directly affects a driver's ability to deal with stress and the demands of the job.

Common health problems experienced in the road transport industry include:

- obesity and heart disease
- diabetes - uncontrolled diabetes can lead to feelings of fatigue and even blackouts
- sleep disorders i.e. sleep apnoea.

A health management system should be developed and implemented to assist drivers with health problems and promote better health management. The system should consider medical history, sleep disorders, diet, alcohol or substance abuse and lifestyle. Drivers also need to have their fitness to drive tested at regular intervals or when there is a suspicion that a driver's health is starting to affect their safety performance.

Employees also have a responsibility for their own health and safety by ensuring that they support and follow procedures.

Work environment and amenities

The provision of appropriate work environment and amenities are key factors in limiting the risks associated with driver fatigue. Vehicle cabins need to be designed in accordance with ergonomic standards for safe operation. In particular ensure:

- vehicle cabins are well ventilated
- safety belts are fitted and worn at all times
- seating suspension is adjustable to the driver's height and weight
- frequently used controls and equipment are close to hand and easy to use
- access into and out of the vehicle cabin is easy and avoids unnecessary stretching
- the noise level inside the vehicle cabin is kept as low as possible at all times.

Allowances need to be made for sleep and breaks to be taken where there is access to amenities such as toilets, showers and facilities for meals. Taking sleep breaks in a vehicle should be considered as a last resort, motel accommodation being the preferred option. If there is no alternative but for a driver to sleep in their vehicle then a sleeper cab that, at a minimum, meets the requirements of section 17 (Sleeper berths) of the Australian Design Rule, (ADR) 42/04, should be considered.

Where accommodation is provided away from the truck it needs to be assessed to ensure the driver can have adequate sleep. The accommodation should be away from:

- noise

- intrusions
- locations that are too hot or light
- traffic noise and vibrations that may disturb sleep.

The time of day and the sleep environment should be considered, particularly in summer when the very warm temperatures can be an issue during daylight hours.

Fatigue management plans must identify appropriate rest stops and ensure trip schedules allow drivers to stop at appropriate locations. Drivers, however, must be able to retain the flexibility to stop for breaks if they are experiencing symptoms of fatigue.

Training and information

A fatigue prevention plan must include training and information about fatigue, its causes and how to identify and prevent fatigue. Information should include:

- the causes and symptoms of fatigue
- the effects of fatigue on driving performance
- life management skills that can be used to prevent the onset of fatigue
- work related measures that can be used to prevent the onset of fatigue
- how drivers are responsible for making appropriate use of their rest days and ensuring they are fit for duty.

Consideration needs to be given to the appropriateness of information, training and supervision to be provided to all members of the supply chain. This includes supervisors, schedulers and any other person whose actions may affect road safety. Provision must be made for drivers to attend training courses so that they don't impact on their ability to meet roster and/or schedule requirements.

Training is vital to ensure correct procedures are understood and followed by all employees. A fatigue prevention plan can be prepared, but unless employees understand and follow these procedures, incidents due to driver fatigue may still occur.

Training on the fatigue prevention plan needs to include:

- shift work schedules
- incident and hazard reporting
- prevention of driver fatigue
- company policies and procedures.

This training needs to be part of company induction so employees gain an awareness of the company's general OSH and fatigue prevention systems.

If any changes to procedures occur - as a result of accident investigation, driver feedback, or monitoring of control measures - training needs to occur on the revised procedures without delay.

Training needs to combine written theory with practical application. There should also be an assessment component to the training to ensure those being trained have acquired the necessary skills. A supervisor may do this by observing the person following correct procedures, or through the revision of trip records to ensure that correct applications of the driver fatigue management plan procedures have been undertaken.

Fatigue: the hidden killer is a useful training resource. It is available from the NZ Transport Agency website at: <http://www.nzta.govt.nz/resources/commercial-toolkit/fatigue.html>.

Record keeping

Records of all training undertaken should be kept. These should be individual records kept for each employee/driver.

Ongoing reinforcement (refresher training)

Any training can soon lose its effectiveness if there is no provision for ongoing reinforcement of the key messages delivered during the training sessions.

Ongoing reinforcement can be achieved by:

- use of in-house staff newsletters
- messages on staff notice boards and payslips
- use of targeted posters
- including the operation of the fatigue management plan on the agenda for meetings.

Whatever the medium chosen, the message it delivers must be consistent but refreshed regularly so that it does not become stale.

Vehicles

Vehicles used in any road transport operation must be maintained in a roadworthy and legal condition at all times.

Vehicles that are not maintained properly are likely to break down more frequently causing frustration and stress on all parties in the supply chain. This includes drivers, supervisors and customers.

Preventative maintenance

Companies must have adequate preventative maintenance procedures in place to ensure vehicles do not, at any time, compromise the safety of the driver, the load, the environment or other road users. It is not satisfactory just to rely on six-monthly certificate-of-fitness checks or pre certificate-of-fitness checks to determine if a vehicle is safe to operate.

As a minimum, companies must have in place a procedure that requires the driver to undertake a pre-use safety inspection or walk-around check. This procedure must be supported by a robust system whereby drivers can report any faults they find. All reported faults must be reviewed by a competent person with feedback to the driver of the outcome of the review and/or the action that was taken.

Maintenance records

Each vehicle should have its own maintenance record that notes:

- faults reported
- faults repaired
- routine maintenance required and completed
- all repairs undertaken
- the name of the person or organisation who completed the repairs.

These records should be reviewed regularly to identify any recurring faults as these could indicate inappropriate use of the vehicle, gaps in maintenance programmes or lapses in preventive maintenance.

Systems for reporting hazards and incidents

It is important that all hazards that contribute to fatigue are acted on, therefore systems must be in place so identified hazards and incidents can be easily reported.

Employers must establish processes for drivers to report the following types of events:

- they failed to obtain sufficient sleep
- they experience a level of fatigue they believe is incompatible with operating in a safe and reasonable manner
- they believe fatigue may have played a contributing role in an actual or near miss incident
- vehicle or equipment defects.

Drivers must know how to report a hazard and must be encouraged to do so. The hazard reporting process provides information for causal and trend analysis and allows for continuous improvement. As drivers are exposed to the hazards associated with fatigue, their input is crucial in identifying hazards that arise from their work.

Reporting and reviewing potential fatigue hazards must be part of an organisation's normal hazard reporting procedures. Evaluation and resulting actions should be managed as for any other workplace hazards.

Developing policies and procedures

Factors to consider when developing policies and procedures for drivers to follow include:

- methods that generate a culture of understanding of fatigue management ie. communication and consultation
- the type of work to be performed and body clock patterns which can contribute to fatigue
- driver scheduling and rostering - including length of shift, allowances for rest and recovery during and between shifts
- availability of rest areas and amenities for drivers
- consultation on fatigue risks with drivers and other parties in the chain of responsibility
- reviewing loading and unloading times and delays at pickup and delivery points
- establishing driver capacity and fitness for work assessment process
- contingency planning including provision for commonly expected delays
- training and education in fatigue management

- reporting and managing incidents and near misses
- establishing and maintaining appropriate workplace conditions
- investigating any breaches of work time and health and safety rules
- audit procedures.

Fatigue incidents

Assessing fatigue incidents

To make sure your fatigue management measures are working it is necessary to assess all incidents such as:

- crashes
- near misses
- speeding offences
- other driving offences, eg work time or logbook.

Near misses are very valuable because they can reveal as much as a crash without the downside of deaths, injuries and property damage. They are more frequent than crashes and they are 'free lessons'.

Fatigue as a factor in the incident

The possibility of a fatigue factor in any incident should be considered. If two or more of the factors in the following questionnaire were present, it is likely that fatigue was a contributing cause in the incident.

Fatigue factor questions	Fatigue indicators to watch for
At what time did the incident occur?	Incident between midnight and 6am.
How much sleep did the driver have in total, in the 24 hours before the incident?	Six or less hours sleep in the last 24 hours before the incident.
How long had the driver been awake continuously at the time of the incident? (Or, at what time did they last wake up before the incident?)	Awake for 12 or more hours at the time of the incident.
At the time of the incident, how long was it since the driver had two good nights of sleep in a row?	One week or more since two nights of good sleep in a row.
At the time of the incident was the driver suffering from any sleep disorder or health issue?	Sleep disorder present.
When did the trip begin and end?	Trip began and ended in the midnight to 6am period.
Have there been any changes to the driver roster or home situation?	Insufficient time allowed to adjust to the new situation.

Incident management system

Setting up an incident management system is quite straightforward but can tell you a lot about the effectiveness of the fatigue management plan.

An incident management system must include:

- a process to investigate incidents (see below)
- an incident report form that makes clear what should be reported, to whom and by when
- planned regular checks of trip records to ensure reporting is accurate – the trip debrief sessions and examination of trip records and schedules may indicate that a driver is displaying a range of fatigue symptoms or feeling increased fatigue. Any fatigue incidents or issues where there was not sufficient time to complete the trip safely should be discussed with drivers and the schedules adjusted accordingly
- any regulatory requirements for reporting and recording incidents.

Investigation of incidents

Whether an incident involves injury or not, the following steps are recommended:

1. Establish what happened and why.
1. Consider whether the driver's previous pattern of work and rest could have contributed to the incident.
1. Consider whether delays and problems arising from customers and consignors (or other parties) were involved (chain of responsibility).

Determine:

2. What possible actions by others could have contributed to the incident.
3. What action can be taken to prevent a recurrence of the event.

Finally:

4. Provide feedback to all drivers and to workplace OSH committees including an explanation of any recommended actions thereby ensuring that the desired outcome is understood by all parties.

Investigating breaches of your fatigue prevention plan

It is a management responsibility to follow up any non-compliance with your fatigue prevention plan and breaches of procedures with appropriate decisive action.

Breaches and relevant follow up actions must be recorded and reviewed at regular intervals as part of your Health and Safety in Employment Act obligations. Examples of breaches include:

- drivers not taking rests as required
- schedulers/dispatchers not accounting for fatigue risk factors
- fatigue countermeasures not being implemented
- drivers reporting for duty in a fatigued or unfit condition
- incidents not being reported
- drivers exceeding work time limits.

What you can learn from a breach

It is important to understand where and why there has been a breakdown in your system in order to take effective corrective action. For example, a fatigue prevention procedure that is not well understood is likely to be ignored.

If you do not take any action when a breach is identified then all parties involved will believe that nobody really cares whether the procedure is followed or not. Corrective action could include the following:

- Information and training to increase understanding.
- Open consultation around scheduling and rostering practices to counter perceptions of bias or unfairness.
- Imposing penalties for serious breaches as a means to illustrate that compliance is not optional.

Non-compliance may not be the fault of an employee. Inappropriate allocation of blame may lead to non-cooperation and reluctance to report incidents. For example, a driver may become fatigued even when following the fatigue management procedures and the response to this should be quite different from a deliberate breach or risk-taking.

Further information

Further information on best practice fatigue prevention is available from:

- <http://www.transport.govt.nz/assets/NewPDFs/DriverStrategicFrameworkamend3.pdf>.
- <http://www.acc.co.nz/injury-prevention/road-safety/driver-fatigue/index.htm>.
- <http://www.safeas.govt.nz/smf/index.php?board=26>.
- http://www.workcover.nsw.gov.au/Publications/Industry/TransportandStorage/driver_fatigue_management_guide.htm.
- <http://www.safetyline.wa.gov.au/pagebin/mechhazd0039.htm>.
- http://www.workcover.nsw.gov.au/Publications/Industry/TransportandStorage/factsheet_driver_fatigue_management_plans_long_distance_trucking.htm.
- <http://www.ntc.gov.au/ViewPage.aspx?page=A02313404400250020>.

In addition it is recommended that the following NZ Transport Agency publications are read in conjunction with this best practice guide:

- *Fatigue: the hidden killer.*
- *Managing driver fatigue: A guide for supervisors and dispatchers.*

Who can assist?

There are a number of places that you can go and seek assistance in setting up systems for fatigue:

- NZ Transport Agency website <http://www.nzta.govt.nz/commercial/assistance/safe-efficient/fatigue.html>.
- ACC - Injury Prevention Consultants (IPC).
- Industry representative groups.

Remember: Prevention is better than cure.
Preventing fatigue in the workplace will have benefits to all those involved with your organisation.