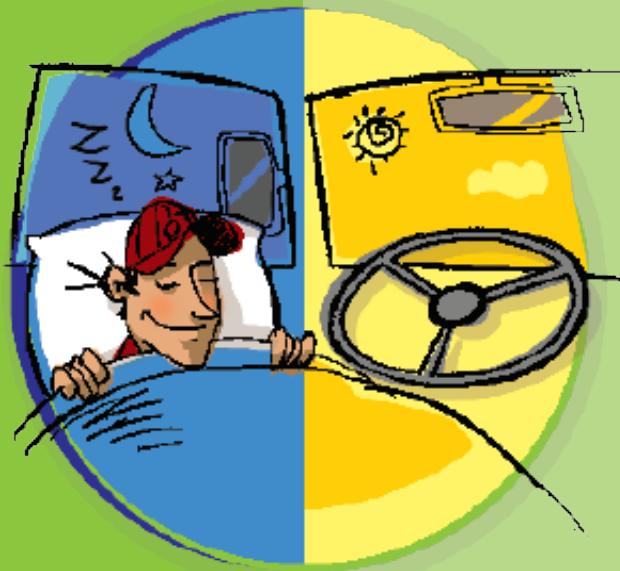


Driver Fatigue



**FATIGUE
MANAGEMENT GUIDE**

FOR USE BY THE CARRIER
TRANSPORTATION INDUSTRY

Available at www.saaq.gouv.qc.ca

Québec 

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Introduction

PURPOSE OF THE GUIDE

This guide addresses the direct causes of fatigue, including sleep deprivation, long work hours, night work, work during circadian low points, etc. The aim of the guide is to improve the health and quality of life of heavy vehicle drivers, the safety of road users and business productivity, by proposing practices within the carrier industry that can reduce hazards related to fatigue-impaired driving.

Recent Québec statistics¹ reveal that 22.7% of fatal accidents and 20.5% of accidents involving bodily injury are attributable to fatigue on Québec roads.

This guide proposes practices businesses can introduce to effectively manage driver fatigue.

FATIGUE AND THE CARRIER INDUSTRY

When it comes to the carrier industry in particular, fatigue continues to be the most commonly cited cause (31%²) of accidents involving heavy vehicles.

Although heavy vehicles represent only 3% of all road vehicles registered in Québec, they account for 12% of accidents and their drivers are at fault in an estimated 40% of cases.

Since 2000, 149 people on average (including 18 truck drivers) have been killed each year in Québec in accidents involving heavy vehicles.

A survey³ among professional drivers revealed the following:

- ▶ Seventy-six percent of drivers consider **fatigue to be a major highway safety issue;**
- ▶ Fifty-three percent of drivers believe **fatigue is an issue that the industry does not manage well;**
- ▶ Twenty-one percent of drivers have experienced at least one fatigue-related incident, such as drowsiness, involuntary lane changes, steering problems, etc.;
- ▶ Twelve percent of drivers have had an accident within the last twelve months; 20% of whom believe fatigue was a deciding factor;
- ▶ Fatigue is generally experienced after **10 hours of driving.**



¹ Société de l'assurance automobile du Québec, Canada, 2010.

² NTSB (National Transportation Safety Board), U.S.A., 1998.

³ A. WILLIAMSON, A. FEYER, R. FRISWELL and S. SADURAL, *Driver Fatigue: A survey of professional long distance heavy vehicle drivers in Australia*, prepared for the Australian Transport Safety Bureau and the National Road Transport Commission (NRTC), July 2001.



RECOMMENDED PRACTICES

The aim of the practices recommended in this guide is to acknowledge and manage the most common fatigue-related risks in the carrier industry. They apply mainly to owners, operators, dispatchers and drivers. Everyone reacts to fatigue differently and no one driver is exposed to the same risk factors. Shippers, consignees and industry customers are also responsible for managing driver fatigue; they all play a role in the “chain of responsibility”.

LEGISLATION

Work Environment

The *Regulation respecting the hours of driving and rest of heavy vehicle drivers* helps to reduce driver fatigue. Standards enacted under this legislation help define the framework within which Quebec’s carrier transportation industry must operate, and promote better safety for all road users as well as effective management of industry activities. The regulation guidelines ensure that heavy vehicle drivers have a minimum number of rest hours before they get behind the wheel and define the maximum number of driving and service hours after which a driver must stop operating a vehicle.

Occupational Health and Safety

Under occupational health and safety legislation (Commission de la santé et de la sécurité du travail du Québec [CSST]), an employer must provide a safe and healthy work environment. This environment includes vehicles. The responsibility lies first with the employer, although employees and self-employed workers must also assume certain responsibilities.

Terms Used

Chain of responsibility

Responsibilities shared by all parties involved in carrier transportation, since fatigue can be caused by the decisions and actions of each party.

CAUTION

It is important to clearly distinguish between rest periods that are long enough to allow 7 to 8 hours of uninterrupted sleep, and off-duty rest periods of 7 to 8 hours during which a driver could only sleep 5 to 6 hours.

Risk control

A process which aims to take preventive action to eliminate or minimize risks.

Short rest period

Off-duty period lasting 30 minutes or more, but less than one hour. Time devoted to rest or meals after a continuous driving and service period.

Circadian low point

A period during which an individual's alertness or concentration, judgment and reflexes decline. The first low point is between 1:00 p.m. and 3:00 p.m., another low point, which is considerably more pronounced, occurs during the night between midnight and 6:00 a.m.

Circadian cycle (internal clock, biological clock)

The cycle of our internal clock, lasting approximately **24 hours**.

Work cycle

Cycle during which work hours are accumulated: 70 hours over a 7-day period for cycle 1, and 120 hours over a 14-day period for cycle 2.

Risk determination

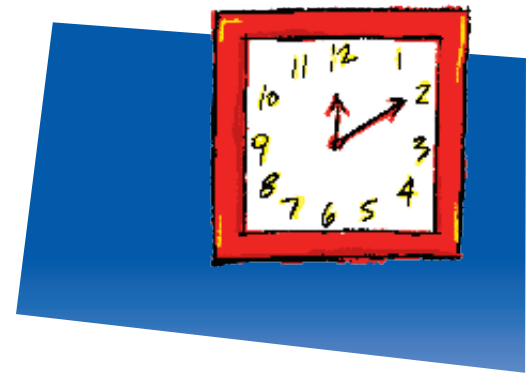
The process of recognizing risks.

Sleep deficit

Sleep deprivation, over a **24-hour period**, that accumulates day after day.

Risk assessment

A process by which the seriousness and degree of risk and factor(s) involved are determined.



Fatigue

A gradual decline of physical and mental alertness that can lead to sleep. This state jeopardizes a driver's ability to perform tasks that require attention, judgment and good reflexes.

Work schedule

The driving, service and rest sequence that covers one or more trips.

Work shift

The driving and service period that must be between two periods of at least 8 straight hours of rest.

Program

A series of procedures and techniques designed to reduce fatigue and drowsiness while driving.

Risk

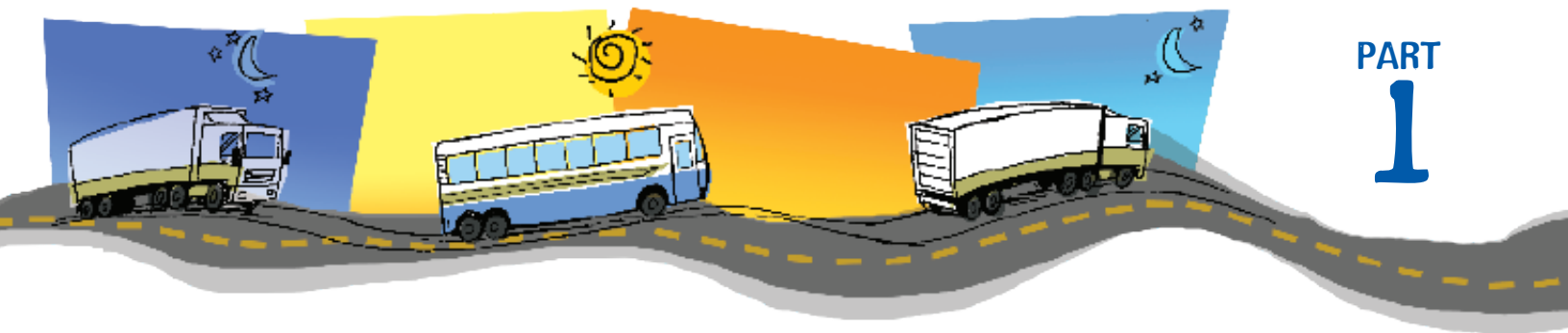
A possible hazard that is relatively predictable, inherent to a situation or an activity; in this case, fatigue-impaired driving.

Sleep disorder

A disturbance that affects the amount and quality of sleep; the most common include insomnia and sleep apnea.

Alertness

State of responsiveness of the driver's body varying from wide awake to asleep.



Understanding Fatigue-Impaired Driving

Fatigue can be described as a gradual decline of physical and mental alertness that leads to drowsiness or sleepiness. Fatigue becomes a problem when it jeopardizes a driver's ability to perform tasks that require alertness, judgment and good reflexes.

PRINCIPAL KNOWN CAUSES

- ▶ **Driver-related:** circadian cycles (biological clock), health condition (physical and mental), amount and quality of sleep, number of waking hours, diet, fitness, home life, age, etc.
- ▶ **Work-related:** corporate culture, time of day, length of work shift, lack of enough rest periods, rotating schedules, night work, volume of physical or mental workload, etc.
- ▶ **Environment-related:** vehicle ergonomics, type of trip, road and weather conditions, availability of rest areas, monotony of the road, environmental stress (heat, noise and vibrations), etc.

AGGRAVATING FACTORS

Fatigue is a biological condition that commitment, experience or motivation cannot overcome or offset. The degree of fatigue can be affected by the following aggravating factors:

- ▶ Sleep deprivation and an accumulated sleep deficit;
- ▶ The existence of an untreated sleep disorder (apnea, insomnia, etc.);
- ▶ Time of day, circadian low points;
- ▶ Number of waking hours (after 17 waking hours, physical and mental performance declines considerably);
- ▶ Use of alcohol, medication or other drugs.

EFFECTS OF FATIGUE ON OPERATING A VEHICLE

Fatigue adversely affects driving performance. There is a very strong connection between fatigue and errors leading up to an accident. Drivers do not have to be falling asleep at the wheel for fatigue to impair their ability to operate a vehicle. Recognizing and controlling the effects of fatigue can prevent highway crashes and save lives.

- Fatigue:
- ▶ increases reaction time;
 - ▶ decreases alertness;
 - ▶ distorts judgment;
 - ▶ impairs memory;
 - ▶ reduces a driver's field of vision;
 - ▶ increases the risk of drowsiness and sleepiness.

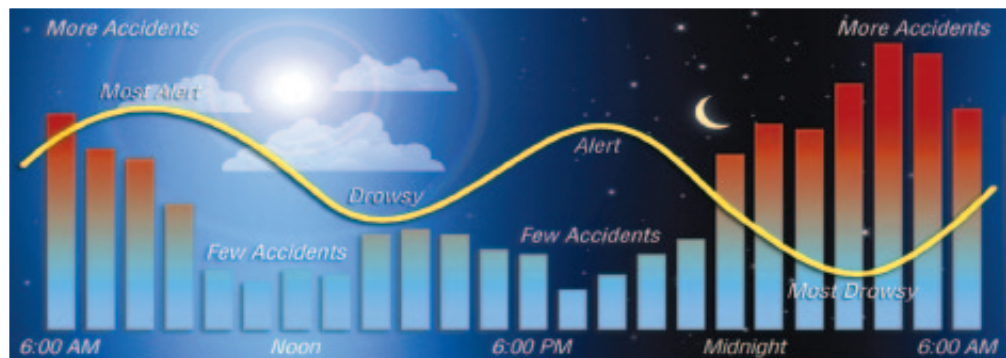


Recognizing and controlling the effects of fatigue can prevent highway crashes and save lives.

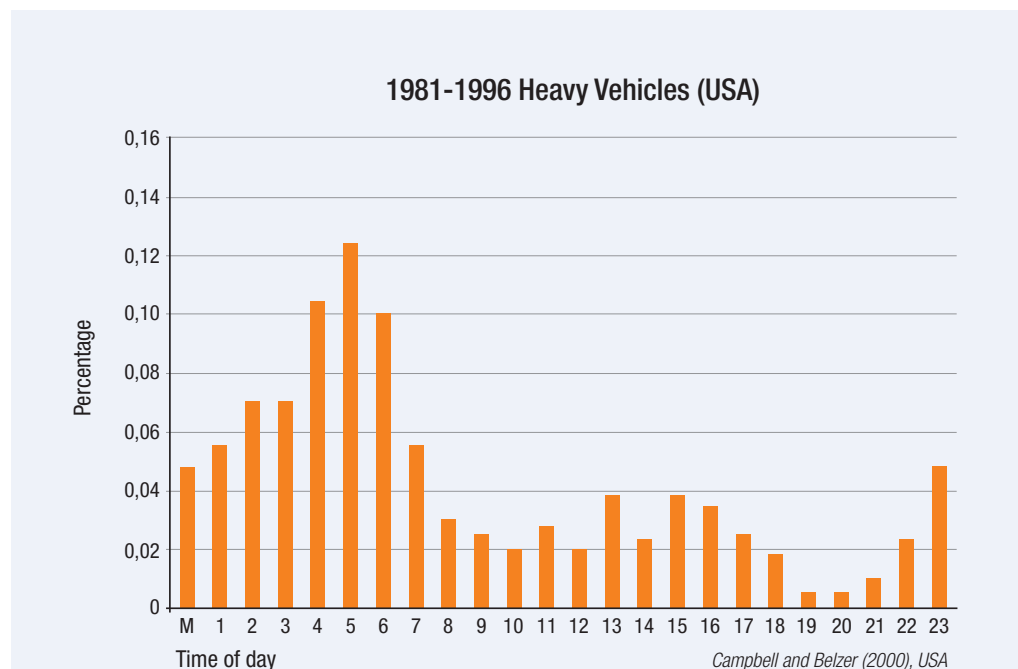
OUR BIOLOGICAL CLOCK

The human body is programmed to sleep at night and stay awake during the day, regardless of our activities. This phenomenon is known as the circadian cycle, internal clock or biological clock. This clock controls body temperature, secretion of hormones, heart rate, blood pressure, digestion and sleep cycles. It is regulated by exposure to light and dark and recurs every 24 hours. The low points in the circadian cycle are between midnight and 6 a.m. and to a lesser degree, between 1:00 p.m. and 3:00 p.m. During these periods, our metabolism slows down, we are less alert and fatigues sets in.

Fatigue-related fatal accidents according to time of day Effect of the biological clock



Heavy vehicles involved in fatigue-related fatal accidents according to time of day



SLEEP

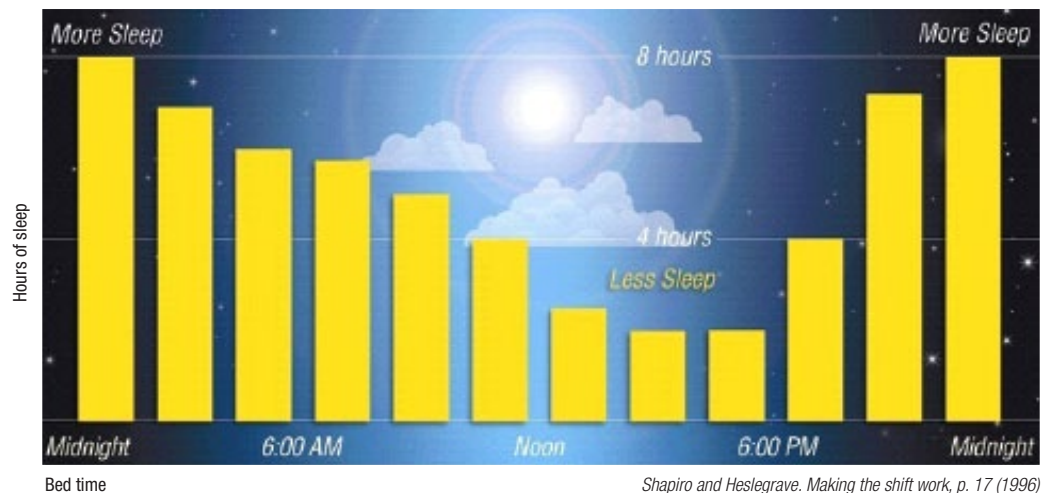
Most people require between 7 to 8 uninterrupted hours of sleep every 24 hours on a regular basis. Meeting this need depends on the amount of time drivers have off duty between work shifts, schedules or timetables, and what time of the day a worker is off duty. Quality or restorative sleep is achieved in a calm environment, continuously, and preferably at night between 10:00 p.m. and 7:00 a.m.

Sleep Deficit

For most people, getting fewer than 7 to 8 hours of sleep on a regular basis will result in a sleep deficit. The deficit must be compensated by an equivalent amount of sleep. **Sleep is the only way to recover from sleep deprivation.**

The average duration of sleep strongly depends on the time at which you go to bed.

Average number of hours of sleep according to bed time



After 17 waking hours, our physical and mental faculties decline significantly.

Rest and nap periods temporarily help recover from fatigue. They are, however, never a substitute for a *main* sleep period.

Microsleep

Microsleep is a brief (a few seconds or a few minutes) and involuntary lapse in attention, causing a loss of consciousness: the head falls and eyes close briefly. These episodes can occur if an individual is tired and trying to stay awake to perform a monotonous task, such as driving a vehicle along a highway or staring at a computer screen.

PERIOD OF WAKEFULNESS

After 17 waking hours, our physical and mental faculties decline significantly. The longer a driver is awake, the greater the decline in faculties, reaching levels that are usually associated with alcohol abuse. Reaction time can therefore double and actions are not as precise.

Sleep apnea affects mainly overweight men age 45 and over. Within the general population, 3% of women and 5% of men have this sleep disorder and 15% of professional drivers are affected.

SLEEP DISORDERS

The most common sleep disorders are insomnia and sleep apnea. If you believe you have a sleep disorder, discuss it with your physician.

Sleep apnea affects mainly overweight men age 45 and over. Within the general population, 3% of women and 5% of men have this sleep disorder and 15% of professional drivers are affected.⁴

Sleep apnea can be described as loud or irregular snoring and repeated episodes when breathing stops during the night. Consult your physician to discuss the options available to treat this sleep disorder.

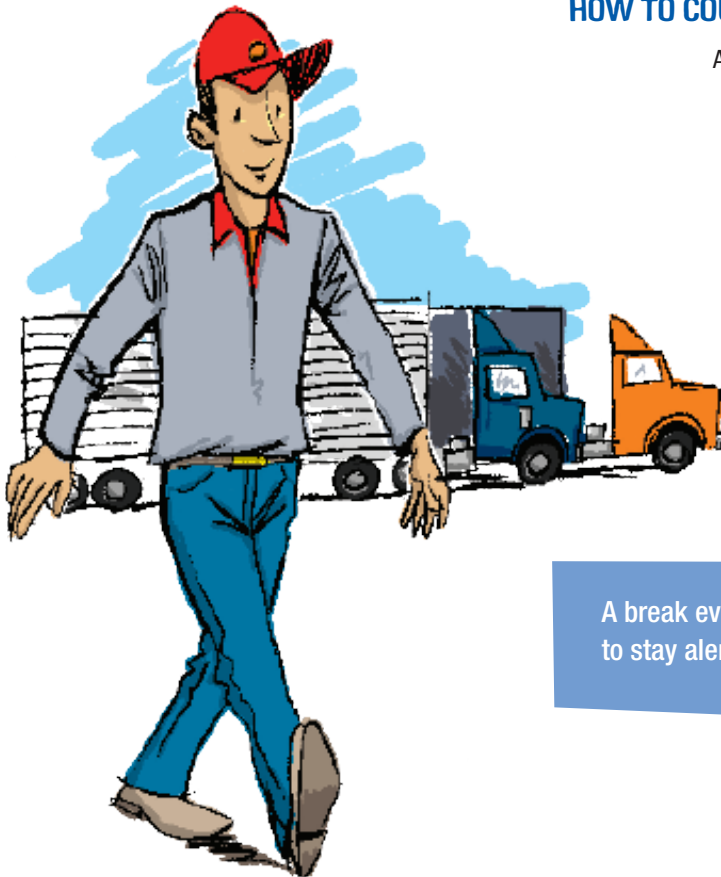
WARNING SIGNS OF FATIGUE BEHIND THE WHEEL

- ▶ Frequent yawning, nodding off.
- ▶ Trouble finding a comfortable position.
- ▶ Involuntary lane changes.
- ▶ Delayed braking.
- ▶ No memory of the last few kilometres travelled.
- ▶ Difficulty maintaining a constant speed.
- ▶ Failure to check mirrors.
- ▶ Missing an exit.
- ▶ Hallucinations.

HOW TO COUNTERACT FATIGUE WHILE DRIVING

At the first sign of fatigue or drowsiness:

- ▶ **Pull your vehicle over into a safe location.**
- ▶ **Take a short nap.** Studies show that even a 20- to 30-minute nap will help restore alertness for a period of two to three hours.
- ▶ **Take a rest break** to stretch your legs. Perform stretching exercises. Jump on the spot... anything to get oxygen to the brain!



A break every two hours is an effective way to stay alert.

⁴ North American Fatigue Management Program, Canada, United States, 2009.

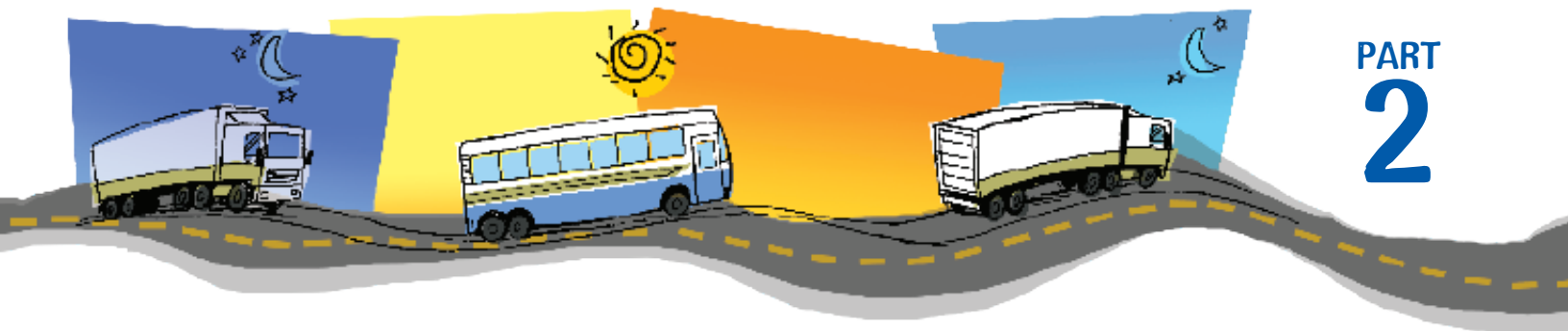
HOW TO PREVENT FATIGUE AND DROWSINESS

Before getting behind the wheel for a long trip, make sure you get a good night of 7 to 8 hours of sleep.

- ▶ Respect your fatigue and sleep limits.
- ▶ Before getting behind the wheel for a long trip, make sure you get a good night of 7 to 8 hours of sleep.
- ▶ Plan your itinerary by factoring in circadian “low points”.
For example, avoid driving through heavy traffic areas early in the afternoon.
- ▶ Eat light meals and do not drink alcohol before you drive.
- ▶ Train yourself to detect the warning signs of fatigue.
As soon as they appear, stop to rest.
- ▶ Do not drive for more than four hours straight and ideally, not more than two hours at a time.
Get out of your vehicle to relax and stretch your muscles.
- ▶ To prevent visual fatigue:
 - at night, reduce the intensity of dashboard lights: light contrasts increase visual fatigue;
 - do not place items on the dashboard: they reflect in the windshield and increase visual fatigue;
 - clean the windshield and rearview mirrors regularly: better visibility reduces visual fatigue.



Remember: rest is the only remedy for fatigue!



Managing Fatigue

“CHAIN OF RESPONSIBILITY”

Fatigue can be caused by the decisions or actions of various parties within the carrier industry, hence the concept of a chain of responsibility. These parties include: shippers, heavy vehicle operators, drivers and consignees. Each must be familiar with and fulfill their legal responsibilities to minimize fatigue-related accident risks. They also have to ensure that they do not make unreasonable or unrealistic demands on drivers.

Drivers must comply with fatigue management methods and practices designed to help reduce fatigue-related accident risks.

EXAMPLES OF WEAKNESSES IN THE CHAIN OF RESPONSIBILITY

Shippers

- ▶ Lack of flexibility for pick up hours.
- ▶ Financial pressures that often take priority over a driver’s fatigue and accident risk for the driver and other road users.
- ▶ No rest lounge for drivers who are waiting.

Heavy vehicle operators

- ▶ Poor planning of schedules and routes.
- ▶ Inadequate training.
- ▶ Non-ergonomic vehicles or vehicles that are ill-suited for the type of transportation required.
- ▶ No rest lounge for drivers who are waiting.

Drivers

- ▶ Poor planning of schedules and routes.
- ▶ Non-existent or inadequate fatigue management practices.
- ▶ Heavy evening meals. Use of alcohol, medication or other drugs.
- ▶ Second job, which limits the number of hours of sleep.
- ▶ Existence of a sleep disorder.

Consignees

- ▶ A lack of flexibility and short deadlines for unloading.
- ▶ Unreasonable delivery demands.
- ▶ No rest lounge for drivers who are waiting.

Fatigue can be caused by the decisions or actions of various parties within the carrier industry.



When checking each element along the supply chain, it is important to understand the risks that one activity can create for another. **All parties within the carrier industry must work together to reduce accident risks.** The responsibility of each is proportional to the degree of control or influence they have within the commercial transport industry.

At the first signs of fatigue, a driver should pull over into a safe location to rest.

You cannot rely solely on legislation to control the number of driving and rest hours to prevent fatigue, drowsiness and falling asleep.

FATIGUE MANAGEMENT

You cannot rely solely on legislation to control the number of driving and rest hours to prevent fatigue, drowsiness and falling asleep at the wheel. Legislation establishes maximum limits that must not be exceeded, not limits that should be reached. Regularly approaching these limits means moving away from healthy sleep management. It is wrong to believe that you risk having an accident only after 13 hours of driving or 14 hours of work. It is important for individuals to evaluate their activities and contribute by developing practices to prevent heavy vehicle driver fatigue.

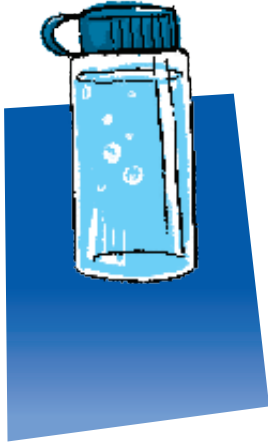
The success of a fatigue management program depends on a joint effort between managers and drivers on the following points:

- ▶ informing employees, shippers and customers who do business with the company about new policies that are in effect;
- ▶ evaluation of existing fatigue-related risks;
- ▶ evaluation of the effectiveness of current fatigue management practices;
- ▶ changes to work schedules, activities and introducing new equipment;
- ▶ new information about how fatigue affects health and jeopardizes the safety of drivers and other road users;
- ▶ reference to an incident or accident.

To successfully implement a fatigue management program, it is important for drivers to participate in the process and that they have an opportunity to voice their opinion, whether they are employees or contract workers.

RISK MANAGEMENT

When managing health and safety issues, the most common approach is a risk management procedure. The same approach can be used to deal with fatigue-related issues. Each link in the chain of responsibility is called upon to minimize and control the fatigue of heavy vehicle drivers. To accurately assess your situation, discuss these issues with your drivers. The following questions have been provided to help carry out this exercise.



To accurately assess your situation, discuss these issues with your drivers.

ACCIDENT RISK MANAGEMENT CHECKLIST	YES	NO
Do work shifts reduce the opportunity to sleep at night?		
Do work shifts often begin and end at night or early in the morning?		
To achieve operating objectives, do drivers have to work more than 10 hours over a 24-hour period?		
Are schedules predictable?		
Do drivers have to accept delivery contracts at the last minute?		
Do work schedules or shifts often limit the opportunity for a driver to sleep at least 7 to 8 hours straight within a 24-hour period?		
Do you hire contract workers who may have put in long hours at another job?		
Do drivers need more flexibility to manage fatigue and to accommodate unexpected situations they may encounter during runs (i.e. deadlines, waiting in line to load or unload, the weather)?		
Do the demands of shippers and customers contribute to driver fatigue?		
Aside from driving, are there mental or physical factors that contribute to driver fatigue?		
Are there environmental factors, such as heat, noise, vibrations, road conditions, that contribute to driver fatigue?		
Are there factors that make it difficult to rest (sleep) in the vehicle?		

RISK RECOGNITION

Sources of Information

Step one consists of **determining accident risks**, or risks of an incident due to fatigue, in the exercise of your activities, driver activities or the activities of each link in the chain of responsibility. To determine which hazards are related to fatigue, use information that is available to you, in particular:

- ▶ work shifts;
- ▶ schedules;
- ▶ itineraries;
- ▶ health condition of drivers;
- ▶ condition of vehicles;
- ▶ workload;
- ▶ accident and incident reports;
- ▶ traffic tickets;
- ▶ any other source of information, such as comments and observations.

Data Analysis

Collecting data and examining work shifts may help **find and understand common situations** that can lead to fatigue, such as:

- ▶ work shifts that require more than 10 hours of service and driving within a 24-hour period;
- ▶ work shifts that do not allow at least two consecutive 24-hour rest periods at the end of each work cycle;
- ▶ work shifts that involve service or driving at night and therefore limit the opportunity to sleep at night.

This also applies to schedules, assignments, delays and other incidents. Do not hesitate to consider any situation that may contribute to fatigue, such as:

- ▶ schedules that do not allow drivers **7 to 8 hours of uninterrupted sleep** within a **24-hour period**;
- ▶ assignments that do not factor in travel time before and after a work shift, delays, interruptions, sick leaves or other absences;
- ▶ unpredictable schedules that give drivers little time to prepare or adjust to schedule changes;
- ▶ poor planning of itineraries, with the result that few amenities are available to drivers (rest areas, restaurants, etc.);
- ▶ the workload aside from driving (pre-trip inspection, loading, unloading), which can have a bearing on physical fatigue during the entire trip;
- ▶ delays due to waiting time (loading and unloading, border crossing, etc.), which increase the initial time allotted;
- ▶ drivers who have not received fatigue management training;
- ▶ vehicles that do not have a sleeping berth or adequate ventilation system;
- ▶ poorly maintained vehicles (necessary maintenance to minimize vibrations and noise).

Do not hesitate to consider any situation that may contribute to fatigue.

RISK ASSESSMENT

By examining each of the hazardous situations recognized, you can ascertain the degree of danger to a driver and other road users. Determine the potential consequences of these situations and ask yourself if the danger could affect a driver or someone else, and if so, how. Some situations represent a relatively small accident risk because of their rare occurrence. Others, however, are significantly more serious because they exacerbate fatigue. You can determine the extent of a problem by asking drivers to indicate if the difficulties observed apply to their activities.

Use the following evaluation chart to assess the degree of fatigue-related risks your operations represent.

The input of everyone is important during the risk assessment process: consult drivers.

Determine the potential consequences of these situations.

EVALUATION CHART FOR THE DEGREE OF FATIGUE-RELATED ACCIDENT RISKS CARRIER INDUSTRY OPERATIONS REPRESENT

SMALL RISK	MODERATE RISK	HIGH RISK
40 to 60 work hours/week	50 to 70 work hours/week	Over 70 work hours/week
Steady schedules with work shifts of 10 or fewer hours	Steady schedules with work shifts ranging between 10 and 14 hours	Unpredictable schedules and 14-hour work shifts per day
Schedules that make allowances for delays and road conditions	Schedules that sometimes make allowances for delays	Schedules that do not make allowances for delays or that push drivers to continue to operate their vehicles despite the fact their level of fatigue is critical in regard to safety
Night-time driving reduced to a minimum	Night-time driving two to three times a week	Night-time driving more than three times a week
Schedule available at least one week in advance	Schedule available a few days in advance	Schedule available only 24 or fewer hours in advance
Short breaks throughout the work shift	Short breaks near the end of the work shift	Breaks sacrificed to increase number of driving hours

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EVALUATION CHART FOR THE DEGREE OF FATIGUE-RELATED ACCIDENT RISKS CARRIER INDUSTRY OPERATIONS REPRESENT

You can determine the extent of a problem by asking drivers to indicate if the difficulties observed apply to their activities.

SMALL RISK	MODERATE RISK	HIGH RISK
Fewer than 10 hours of overtime each week	Over 10 hours of overtime each week	Over 20 hours of overtime each week
Driver almost always at rest between 11:00 p.m. and 6:00 a.m. (circadian low points)	Driver at rest between 11:00 p.m. and 6:00 a.m. (two to three times a week)	No rest for the driver between 11:00 p.m. and 6:00 a.m., two days straight each week
Opportunity for a driver to sleep 7 to 8 hours straight, almost every day	Opportunity for a driver to sleep 7 to 8 hours straight, three to four times each week	Opportunity for a driver to sleep 7 to 8 hours straight, fewer than three times each week
Fewer than 17 hours of wakefulness	Over 17 but fewer than 19 hours of wakefulness	Over 19 hours of wakefulness
No sleep disorder	Existence of a “mild” sleep disorder (i.e. occasional insomnia)	Existence of a moderate to severe (untreated) sleep disorder
Fewer than 8 hours of driving	Between 8 and 12 hours of driving	Over 12 hours of driving
Two (or fewer) night work shifts in a row lasting more than 8 consecutive hours	Three night shifts in a row lasting more than 8 consecutive hours	More than three night shifts in a row lasting more than 8 consecutive hours

A combination of risk factors has a higher incidence than an isolated factor on the relative risk of being involved in an accident.

INTRODUCTION OF MEASURES TO REDUCE FATIGUE AND ACCIDENT RISKS

The best way to effectively monitor and control an accident risk is to find the source of the problem and introduce strategies to eliminate or minimize the risk. When trips are carefully planned, a driver's rest time is scheduled at the "right moment" of the day, ideally every two hours and during circadian low points (early in the afternoon and at night). The schedule should also be flexible enough to allow a driver to take action in response to unexpected delays. This is one way to minimize risks.

Long-term measures, such as schedule planning, coupled with short-term strategies such as naps and short breaks, are the most effective means of reducing accident risks. Long-term planning is the responsibility of schedule managers and dispatchers. Short-term strategies are the responsibility of drivers. They must, however, be given the opportunity to incorporate them into their schedule.



Drinking coffee, lowering the cab temperature or turning up the music volume are temporary coping mechanisms, and are the least effective in preventing fatigue.

Driving in extreme weather requires taking short breaks in a location with the best conditions.

Short-Term Strategies

Drivers are responsible for taking short-term action. **They should be familiar with these strategies and should have the opportunity to include them in their schedule.** At the first signs of fatigue, they should stop and rest. Driving in extreme weather requires taking short breaks in a location with the best conditions. During such breaks, drivers should take advantage of the opportunity to take a nap, stretch their legs and perform a few simple physical exercises.

DRIVER'S CHECKLIST

Suggest that drivers:

- perform a few physical exercises when the vehicle is stopped;
- air out the vehicle cab; stale air and cigarette smoke contribute to a buildup of fatigue;
- keep temperature at a comfortable level; heat contributes to drowsiness;
- stay mentally alert: listen to music on the radio, mentally calculate distances;
- drink water as often as possible;
- eat healthy meals at regular hours, avoid fatty foods, especially in the evening;
- keep a regular meal cycle whenever possible.

Remind drivers that caffeine provides only temporary heightened alertness and that if consumed in excess, it can have adverse health effects.

Naps are an effective short-term solution, but should not replace continuous sleep.



Medium-Term Strategies

The best way to effectively manage fatigue is to carefully plan work shifts and itineraries.

This strategy also provides flexibility. When planning driver schedules, recent and future work and rest periods must be considered. Drivers should have input when schedules are organized because work shifts may affect each driver differently (family responsibilities and other factors). Fatigue training and information also significantly help reduce driver fatigue.



When planning driver schedules, recent and future work and rest periods must be considered.

MANAGER'S CHECKLIST

Work shifts should be scheduled around the best opportunities for sleep and rest.

Allow for loading and unloading time.

Replace a driver who has accumulated fatigue with a rested driver.

Keep schedules as regular and as predictable as possible.

Provide adequate training for your drivers. Training and information should focus on:

- the circadian cycle (body clock);
 - sleep and sleep disorders;
 - symptoms of fatigue and fatigue-related risk assessment;
 - fatigue prevention strategies, such as properly adapted work shifts;
 - fatigue management techniques (i.e. declaration of incidents);
 - use and effects of drugs and alcohol;
 - benefits of a healthy lifestyle (healthy diet, physical exercise) on sleep;
 - planning trips (itineraries that incorporate rest areas);
 - the law and responsibilities regarding fatigue management.
-

Long-Term Strategies

Fitness to Drive

Fatigue management requires that drivers are well rested and fit to operate a vehicle. Driving fitness requires a driver and carrier to behave in a manner that minimizes the risk of fatigue-related accidents. Operators must therefore introduce policies, procedures and practices to ensure that drivers are properly rested and ready to drive safely.

Equipment

Sleeping berths, ventilation systems and other equipment must comply with legal requirements. A maintenance program should be introduced to ensure that the right type of equipment is used for the work that is carried out.

Services

The services that are provided may vary according to the type of company and should include adequate lounge rooms, showers and washroom facilities on the premises of the company's home terminal. When planning an itinerary, the location of rest areas should be considered.



Driving fitness requires a driver and carrier to behave in a manner that minimizes the risk of fatigue-related accidents.

MANAGER'S CHECKLIST

Evaluate the recent cycles (service, driving and rest) of drivers.

Inform workers about the company's alcohol and drug use policy.

Notify drivers of their next departure at least 24 hours in advance.

Inform drivers about the need to take regular rest breaks to prevent fatigue or to recover.

Prevent a driver who is not fit to drive from getting behind the wheel.

Maintain equipment in good operating condition:

- equip vehicles with an appropriate sleeping berth;
- ensure that air-conditioning and heating systems are operating properly;
- provide adjustable seats for all drivers.

Track down and repair components that contribute to excessive noise and vibration.

STRATEGY EVALUATION AND UPDATING

Just as equipment and trucks require maintenance, procedures to draft work schedules must be reviewed and updated from time to time. The effectiveness of policies and procedures to prevent driver fatigue should also be reviewed regularly. Corrections should be made to adjust to current situations, where necessary.

Review of Operations and Risks

In addition to changes or improvements that should be made in response to incidents that might occur, activities should be periodically evaluated and drivers should be asked if there are situations that cause fatigue to accumulate. Information that is listed as part of a fatigue management program can be used to periodically evaluate improvements that have been made.

MANAGER'S CHECKLIST

Reassess risks, depending on the answers you receive to the following questions	YES	NO
During the work shift that was just completed, were drivers given the time necessary to prepare for a long trip, to return rested and available for work or to be able to cope with schedule changes (making the transition from day work to night work)?		
During work shifts, are allowances made for waiting times or other problems that can cause delays on the road?		
During this period, did drivers have the opportunity to get enough rest and sleep at night?		
Have the actions of customers or consignees caused drivers to experience problems due to accumulated fatigue?		
Are there ways customers and consignees can change their operations to improve the work-rest cycle? (For example: Load vehicles in the morning to allow drivers to get to bed earlier.)		

Just as equipment and trucks require maintenance, procedures to draft work schedules must be reviewed and updated from time to time.

Updating Procedures

It is important to update basic procedures. If you have to make trips or runs that differ from your usual activities, the risks they represent in terms of fatigue management must be assessed (risk assessment and risk management process = recommended procedures). For example, if your activities are usually carried out during the day and if you have agreed to drive during the night, you will have to change your fatigue management strategies.

To ensure the effectiveness of fatigue prevention strategies, all fatigue-related incidents should be examined.

Fatigue-Related Incidents

Incidents related to fatigue should be reported. Disclosing this information encourages discussion between managers and drivers and helps determine which trips, itineraries or procedures cause fatigue. Schedules and work procedures can be improved based on this information.

To ensure the effectiveness of fatigue prevention strategies, all fatigue-related incidents should be examined. It is difficult to determine if an accident or incident is related to fatigue.

All incidents should be discussed with the driver. For example, an unexpected delay may have eliminated the extra time that was allotted to complete a run safely, forcing the driver to skip breaks and naps. This should have resulted in changes in the work shift. The following factors should also be considered.

MANAGER'S CHECKLIST

All fatigue-related accidents or incidents should be recorded.

- Accident or incident where the driver acknowledges signs of fatigue

 - Accident or incident involving the vehicle, but no skidmarks or evasive action

 - Accident or incident in an express lane, monotonous haul

 - Accident or incident during a circadian low point

 - Involvement of another factor that can cause fatigue (vehicle failure, delivery wait time, traffic)

 - Speeding ticket due to a delay

 - Note of an accident or incident in the trip sheet

 - Other
-

All incidents should be discussed with the driver.

In the case of any incident, regardless if anyone was injured, we recommend following these steps:

- Determine what occurred during the incident and specify the cause.
- Consider whether the driver's work-rest cycle may have contributed to the incident.
- Determine if wait times, delays or problems attributable to customers or consignees (or another party involved) may have contributed to the incident.
- Develop a procedure to ensure that this type of incident does not occur again:
 - Notify customers or consignees (or another party) if you believe they contributed to the incident and inform them of the change(s) you would like them to make to their operations (i.e. change delivery schedules).
 - Provide feedback to all drivers regarding your initiative.
 - Ensure that you comply with legal obligations.
 - Report and keep a record of each incident.

If an investigation reveals that one or more internal procedures were not followed, find out why.

- Make sure drivers understand instructions.
- Update training.
- Based on input from drivers, draw up schedules that provide enough rest time.
- Go over the terms of employment with which drivers who failed to follow procedures must comply.
- Notify shippers or consignees who have unrealistic requests and expectations of your obligations and change work contracts accordingly.

In many cases, a driver has to make decisions. Proper training, procedures and practices are also helpful.

MANAGEMENT OF DELAYS AND UNFORESEEN EVENTS

Despite efforts to manage fatigue effectively, the unexpected can occur. Schedules can become disrupted and interfere with a driver's ability to rest at the right time. A management strategy should enable drivers and operators (or dispatchers) to make allowances for unexpected incidents and, where necessary, change the amount of time allotted to carry out work for an entire trip. In many cases, a driver has to make decisions. Proper training, procedures and practices are also helpful.

Situations may include the following:

- ▶ breakdown of a vehicle;
- ▶ traffic;
- ▶ road conditions;
- ▶ weather conditions;
- ▶ loading and unloading delays;
- ▶ wait times (at the border, harbour entry, etc.).

EXAMPLE

A road accident prevents a driver from making it to the shipper on time (one hour delay). The driver therefore has to make up for lost time to comply with the predetermined schedule.

Assess the risk

It is important to consider the work and rest hours that have accumulated over the last 24 hours and evaluate the opportunities to rest over the next 24 hours. If you have taken short breaks regularly and a rest period of at least 8 hours over the last 24 hours, increasing the driving and service time may be an option (in compliance with regulations), but an extended rest period must compensate for this action.

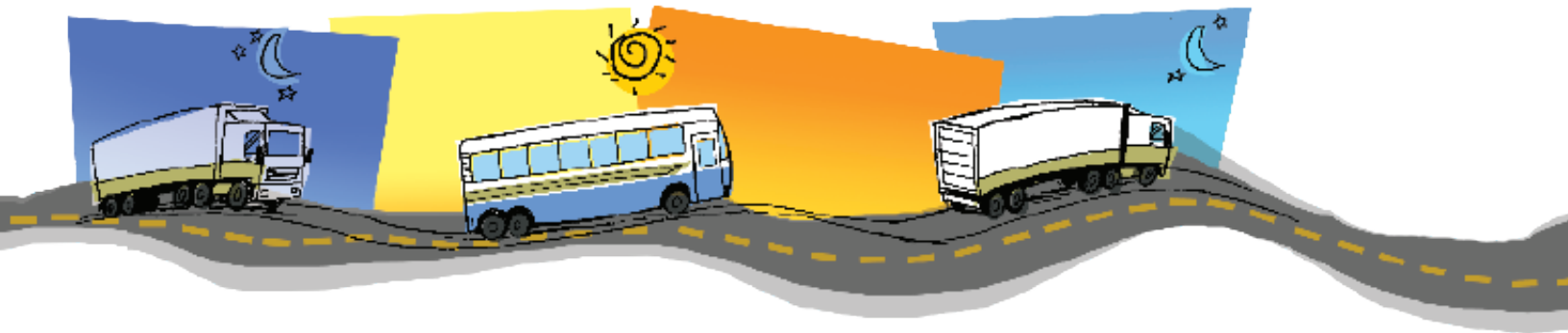
Possible solution

To compensate for a longer work period, allow for a longer rest period over the next 24 hours.

General principle

More rest and less work during the next work shift should compensate for a longer continuous work period.

It is important for drivers to recognize risk situations where temporary strategies may be used to cope with fatigue. What is more important, however, is understanding that in some circumstances the only solution is to stop and sleep.



Other Fatigue Management Considerations

EXAMPLE OF A FATIGUE MANAGEMENT APPROACH



Work schedules that end between midnight and 6:00 a.m. often result in long periods of wakefulness, accumulation of a sleep deficit and driving at the highest risk period of the day.

Risk Determination

- ▶ Work shifts longer than **12 hours**. Long work shifts that start or end between midnight and 6:00 a.m.
- ▶ Delays due to waiting time.
- ▶ Unpredictable schedules.

Risk Assessment

- ▶ Work schedules that end between midnight and 6:00 a.m. often result in long periods of wakefulness, accumulation of a sleep deficit and driving at the highest risk period of the day.
- ▶ Delays may have an impact if they are offset by reduced rest periods and breaks or by speeding. They therefore increase risks.
- ▶ Allowing drivers fewer than **24 hours** to make the transition from a day schedule to a night schedule can affect their alertness when they come in for work.

Strategy Evaluation and Updating

- ▶ Discuss problem situations (actual incidents) with drivers.
- ▶ Remember that you are required to keep logs of driving and service hours for a period of six months.
- ▶ Follow up on incidents that occurred during previous months.

Introduction of Strategies

- ▶ Change work shifts to allow drivers to sleep between 10:00 p.m. and 7:00 a.m. as often as possible.
- ▶ A driver can take naps and breaks to rest temporarily.
- ▶ Make sure drivers sleep at night as often as possible, preferably between 10:00 p.m. and 7:00 a.m., and that each week (work cycle) they have at least two consecutive nights of sleep.
- ▶ Make sure customers know about their driver fatigue management responsibilities (delays).
- ▶ Manage schedule changes effectively to ensure that drivers are well rested when they start a new work shift.



REVIEW OF EFFECTIVE FATIGUE MANAGEMENT PRACTICES

Encourage drivers to take breaks and naps, eat healthy meals and exercise as short-term solutions.

1	Plan schedules to maximize opportunities to sleep and rest at the right time of the day (at night, particularly between 10:00 p.m. and 7:00 a.m.).
2	Plan schedules to accommodate routine delays.
3	Limit the sleep deficit a driver accumulates by planning at least two consecutive 24-hour rest periods each week.
4	Plan a longer rest period between work cycles to allow drivers to benefit from two consecutive 10-hour rest periods (preferably at night between 10:00 p.m. and 7:00 a.m.), to compensate for a lack of regular sleep.
5	After a short rest period, plan a longer rest period.
6	After a long work shift, plan a shorter shift the following day (this will allow a driver to get more sleep and rest).
7	Introduce work schedules that are as regular as possible.
8	Encourage drivers to take breaks and naps, eat healthy meals and exercise as short-term solutions.
9	Acknowledge that there are limits to the human body's ability to compensate and that 7 to 8 hours of uninterrupted sleep is essential.
10	When drawing up work schedules, make allowances for the amount of time that daily living activities require (meals, sleep, hygiene, time traveling to and from work, family life, emotional well-being, work around the house, etc.).
11	Ask drivers to pull into a safe location to rest at the first signs of fatigue.

FATIGUE MANAGEMENT WORKSHEET

The best way to effectively monitor and control an accident risk is to find the source of the problem and introduce strategies to eliminate or minimize the risk.

List fatigue-related risk factors	Do the factors that are listed represent actual risks?	List short-term strategies that are USED or PROPOSED to prevent fatigue	List long-term strategies that are USED or PROPOSED to prevent fatigue	Date strategies were last reviewed

