

FATIGUE MANAGEMENT GUIDE

**FOR USE
BY DRIVERS OF THE CARRIER
TRANSPORTATION INDUSTRY**

**DRIVER
FATIGUE**

DRIVE
WELL RESTED

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INTRODUCTION

PURPOSE OF THE GUIDE

The most recent Québec statistics¹ show that fatigue is a factor in 21% of fatal accidents and 23% of accidents resulting in bodily injury on Québec roads.

This guide is intended mainly for heavy vehicle drivers and aims to improve their knowledge and make them better aware of the risk posed by 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 (13%²) of accidents involving heavy vehicles. From 2007 to 2011, on average, the proportion of fatal accidents in Québec involving a heavy vehicle in which fatigue was a contributing factor is also 13%³.

Although heavy vehicles represent less than 4% of all road vehicles registered in Québec, they account for 9% of accidents resulting in victims. Heavy vehicle drivers are at fault in 34% of fatal accidents involving a heavy vehicle.

In Québec, between 2014 and 2018, an average of 80 people (including 6 truck drivers) were killed each year in an accident involving a heavy vehicle⁴.

1 Société de l'assurance automobile du Québec, Canada, 2018.

2 FMCSA (Federal Motor Carrier Safety Administration), É.-U., 2007. <https://www.fmcsa.dot.gov/safety/research-and-analysis/large-truck-crash-causation-study-analysis-brief> (accidents resulting in a fatality or injury).

3 Analysis of fatal accidents involving at least one heavy vehicle (2007-2011) – Report on progress of work, multisectoral working group associated with the government-industry round table on heavy vehicle safety.

4 Société de l'assurance automobile du Québec, Canada, 2019.

RECOMMENDED PRACTICES

The aim of the practices recommended in this guide is to determine and manage the most common fatigue-related risks in the carrier industry. Everyone reacts to fatigue differently, and drivers are not all exposed to the same risks. Shippers, consignees and industry customers also have a responsibility in 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 limit heavy vehicle driver fatigue. Standards enacted under this legislation help define the framework within which Québec’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 established by the Commission des normes, de l’équité, de la santé et de la sécurité du travail (CNESST), employers must provide a safe and healthy work environment. This environment includes vehicles. Although the responsibility lies first with the employer, employees and self-employed workers must also assume certain responsibilities.

TERMS USED

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.

Sleep deficit

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

Work schedule

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

Work shift

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

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.



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 CAN ONLY SLEEP 5 OR 6 HOURS.

UNDERSTANDING DRIVER FATIGUE

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 the ability to make good decisions quickly.

RECOGNIZING AND CONTROLLING THE EFFECTS OF FATIGUE CAN PREVENT HIGHWAY CRASHES AND SAVE LIVES.



MAIN 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 and personal life, age, working more than one job, 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, long trips, wait times, etc.
- > **Environment-related:** vehicle ergonomics, type of trip, road and weather conditions, availability of rest areas, monotony of the road, environmental stress (heat, noise, vibrations), etc.

AGGRAVATING FACTORS

Fatigue is a biological state that neither willpower, experience or motivation can overcome or compensate. 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 (sleep apnea, insomnia, etc.);
- > time of day, circadian low points;
- > number of hours without sleep (after 17 waking hours, our physical and mental faculties decline significantly);
- > use of alcohol, medication or other drugs.

EFFECTS OF FATIGUE ON OPERATING 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.

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. The low points in the circadian cycle are between midnight and 6 a.m. and, to a lesser degree, between 1 p.m. and 3 p.m. During these periods, our metabolism slows, we are less alert and fatigue sets in.

Sleep deficit

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

REST PERIODS AND SHORT NAPS TEMPORARILY HELP RECOVER FROM A LACK OF SLEEP. THEY ARE, HOWEVER, NEVER A SUBSTITUTE FOR A MAIN SLEEP PERIOD.

Microsleep

Microsleep is a brief (from a few seconds to a few minutes) and involuntary lapse in attention, causing a loss of consciousness: the head falls and eyes close briefly. These episodes can occur when 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 excessive alcohol consumption. For example, after 17 to 19 hours of wakefulness, a driver's physical and mental capacities are comparable to those of a person with a blood alcohol level of 0.05, which is the legal limit for operating a heavy vehicle in Québec.



AFTER 17 WAKING HOURS, OUR PHYSICAL AND MENTAL FACULTIES DECLINE SIGNIFICANTLY.

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. It is important to note that drivers who have a health condition that could affect their ability to drive must notify the SAAQ.

Sleep apnea can be described as loud and irregular snoring and repeated episodes when breathing stops during the night. It often results in excessive fatigue during the daytime and is not always easy to detect. If you think you may have sleep apnea, consult your physician to discuss available treatment options.

Sleep apnea affects mainly men age 45 and over. Being overweight constitutes an additional risk factor. Within the general population, 5% of people have this sleep disorder⁵ and 15% of professional drivers are affected⁶.

FIRST SIGNS OF DRIVER FATIGUE

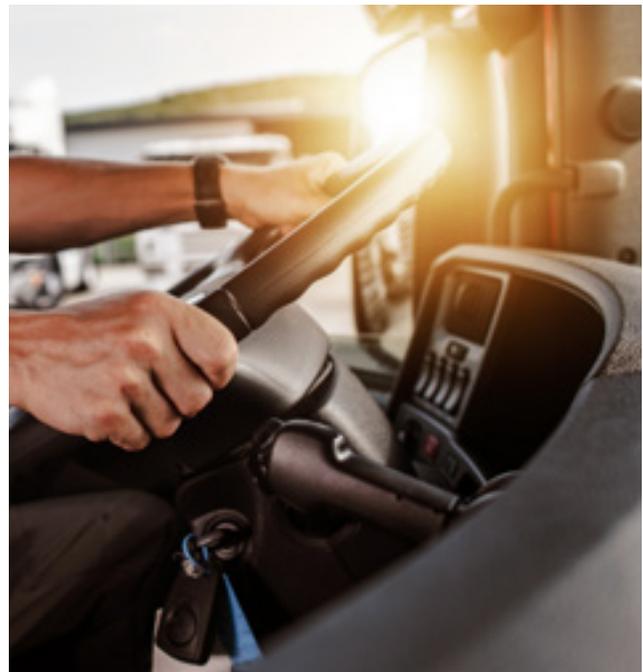
- > Frequent yawning, continuous blinking
- > Nodding off
- > Trouble finding a comfortable position
- > Involuntary lane changes
- > Delayed braking
- > No memory of the last few kilometres travelled
- > Difficulty maintaining a constant speed
- > Failure to check mirrors
- > Missing an exit
- > Hallucinations

COUNTERACTING DRIVER FATIGUE

At the first sign of fatigue or drowsiness:

- > **Park your vehicle in a safe location.**
- > **Take a short nap.** Studies show that even a 15- to 30-minute rest will help restore alertness for a period of two to three hours.
- > **Have a coffee if you are making a short trip.**

A BREAK EVERY TWO HOURS IS AN EFFECTIVE WAY TO STAY ALERT.



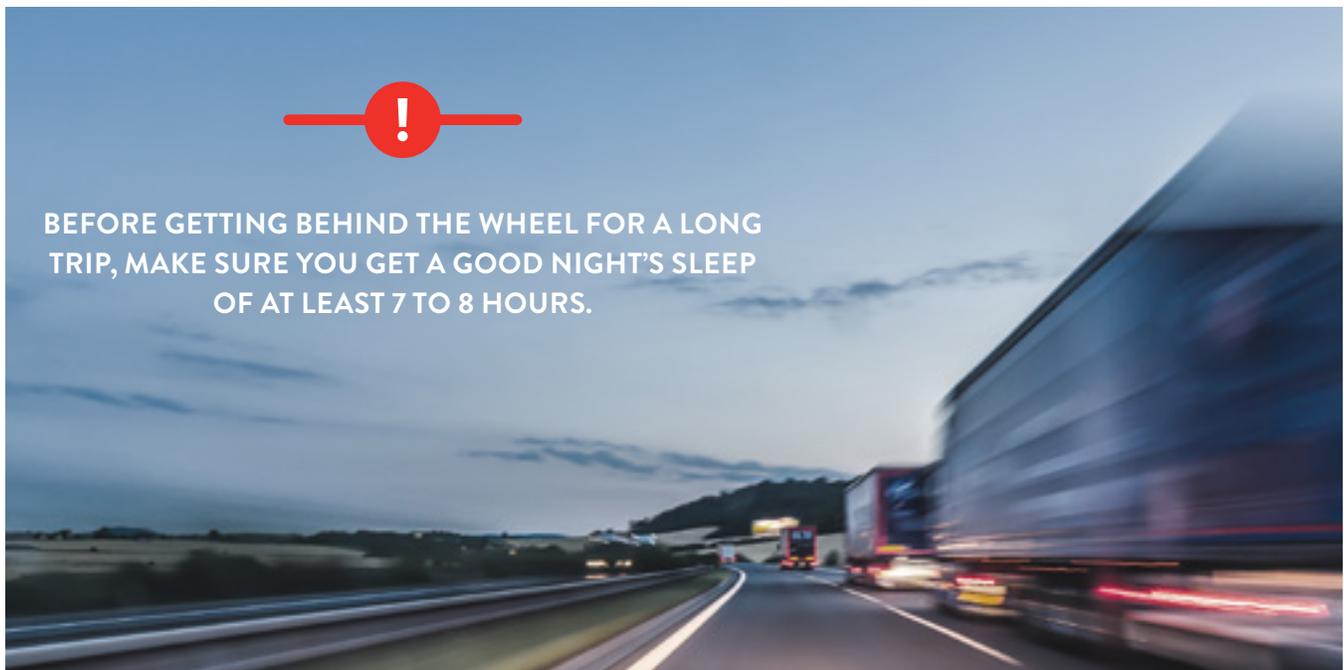
5 Peppard PE *et al.* "Increased Prevalence of Sleep-Disordered Breathing in Adults." *American Journal of Epidemiology*, 2013, 177, pp. 1006-1014. Cited in Colvin LJ and Collop NA. "Commercial Motor Vehicle Driver Obstructive Sleep Apnea Screening and Treatment in the United States: An Update and Recommendation Overview." *Journal of Clinical Sleep Medicine*, vol. 12, n° 1, 2016.

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

PREVENTING FATIGUE AND AVOIDING DROWSINESS

- > Respect your limits when it comes to fatigue and sleep.
 - > Before getting behind the wheel for a long trip, make sure you get a good night's sleep of at least 7 to 8 hours.
 - > 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 first 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.
- > To prevent visual fatigue:
 - at night, reduce the intensity of dashboard lights—light contrasts increase visual fatigue;
 - do not place objects on the dashboard—they reflect in the windshield and increase visual fatigue;
 - clean the windshield, rear-view mirrors and headlights regularly—better visibility reduces visual fatigue.

**REMEMBER, REST IS THE ONLY
REMEDY FOR FATIGUE!**



A FEW WORDS ABOUT THE INDUSTRY'S RESPONSIBILITIES

“CHAIN OF RESPONSIBILITY”

Fatigue can be the result of 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 party must be familiar with and fulfil their legal obligations to minimize fatigue-related accident risks. They must also 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 factors causing fatigue

- > Lack of flexibility for pickup hours.
- > Financial pressures that often take priority over driver fatigue and the related accident risk for the drivers and other road users.
- > No rest lounge for drivers who are waiting.
- > Poor planning of schedules and routes.
- > Non-ergonomic vehicles or vehicles that are ill-suited for the type of transportation required.
- > Nonexistent 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.
- > Lack of flexibility and short deadlines for unloading.
- > Unreasonable delivery demands.



FATIGUE CAN BE CAUSED BY THE DECISIONS OR ACTIONS OF VARIOUS PARTIES WITHIN THE CARRIER INDUSTRY.

FATIGUE MANAGEMENT

You cannot rely solely on regulations regarding hours of driving and rest to prevent and fight fatigue, drowsiness and falling asleep at the wheel. Legislation establishes maximum limits that must not be exceeded, not limits to 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 drivers and business managers to assess their activities and contribute to developing practices to prevent heavy vehicle driver fatigue.

TIPS FOR 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, etc.).
- > Drink water as often as possible.
- > Eat healthy meals at regular hours and avoid fatty foods, especially in the evening.
- > Keep a regular meal cycle whenever possible.
- > Wait 15 to 20 minutes before returning to the road after waking up to shake off grogginess and be alert (sleep inertia).

Caffeine can provide heightened alertness in the short term, but if consumed in excess it can have adverse health effects.



YOU CANNOT RELY SOLELY ON REGULATIONS REGARDING HOURS OF DRIVING AND REST TO PREVENT AND FIGHT FATIGUE.

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 ideally have input when schedules are organized because work shifts may affect each driver differently (family responsibilities and other factors).

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 can be 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.

In the case of any incident, regardless if anyone was injured, it is recommended that employers and staff follow the procedure below:

- > Determine what occurred during the incident and specify the cause.
- > Assess 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).
 - Inform drivers of your initiative.
 - Ensure that you comply with legal obligations.
 - Report and keep a record of each incident.

WORK SHIFTS 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 RISKIEST PERIOD OF THE DAY.

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.



TO ENSURE THE EFFECTIVENESS OF FATIGUE PREVENTION STRATEGIES, ALL FATIGUE-RELATED INCIDENTS SHOULD BE EXAMINED.

TO REMEMBER

Driver fatigue is the cause of many accidents in the carrier industry. Drivers play a key role in preventing accidents and adopting healthy and safe habits. However, the entire carrier industry must be involved to allow drivers to do their job under safe and favourable circumstances.

Moreover, new drivers should not disregard the input of experienced drivers when it comes to effectively managing fatigue. Drivers are encouraged to discuss appropriate ways of ensuring they drive well rested with their peers. Experience is a precious tool. Drive safely!



**FOR MORE
INFORMATION:**

saaq.gouv.qc.ca/fatigue