



Photo: Mik Eskestad

# DRIVER FATIGUE

By Kim Edmunds, Glen Edmunds Performance Driving School

Photo by Kim and Glen Edmunds

Driver fatigue is a very serious concern for all fleet managers and causes thousands of deaths and injuries each year.

- More than 750 people die and 20,000 more are injured each year due directly to fatigued commercial vehicle drivers.
- Large trucks are involved in multiple vehicle fatal crashes at twice the rate of passenger vehicles.
- In 1999 more than 5,200 people died in accidents involving large trucks over 10,000 pounds. That's the equivalent of a major airline crash every two weeks.
- One crash in every five among truck drivers is due to falling asleep at the wheel and that up to 30% of truck crash fatalities on rural roads are due to sleep deprivation.



Many people equate driver fatigue with falling asleep behind the wheel. The actual definition of fatigue is extreme tiredness or weariness resulting from physical or mental activity. Sleep is the acute version of this.

Fatigue can effect you anytime of the day and it can affect your driving long before you actually fall asleep at the wheel.

**Common symptoms of driver fatigue are:**

- Inability to stay in a lane
- Heavy eyelids
- Day-dreaming
- Mis-judgement of traffic situations
- Varying vehicle speeds for no apparent reason
- Feeling cramped and fidgety
- Continual yawning that cannot be prevented
- Rash decisions due to impatience

**What Causes Driver Fatigue?**

One of the main causes of driver fatigue is not getting sufficient sleep. Sleep requirements vary from person to person, but the average requirement is 7-8 hours a day. Receiving even 2 hours less per night can lead to fatigue the following day.

*"If a driver has a micro-sleep for just one second while traveling at a speed of 100 km/h, the car will have gone 28 metres without a driver in control."*

The New Zealand Land Transport Department reports that receiving insufficient rest for several nights can lead to what is known as a "sleep debt." This can cause the brain to go to sleep involuntarily (micro-sleep). Micro-sleep generally only last a brief period, but can be very dangerous if it happens while you're driving. For example, if a driver has a micro-sleep for just one second while traveling at a speed of 100 km/h, the car will have gone 28 metres without a driver in control. With that as only one of the many factors involved in driver fatigue related accidents, it's not surprising that so many occur.

Humans have an internal clock that co-ordinates daily cycles called Circadian rhythms. The clock is programmed to make us feel sleepy in the early hours of the morning particularly between 3 a.m. - 5 a.m. and during the mid-afternoon, after lunch between 3 a.m. - 5 p.m.

**The Federal Motor Carrier Safety Administration's (FMCSA) Driver Alertness and Fatigue Research Projects** found that driver alertness and performance were more consistently related to time of day than to time on task. Drowsiness episodes were eight times more likely between midnight and 6 a.m. than during other times.

**The New Zealand Land Transport Department** conducted a 5-year study of fatigue related crashes. A graph from this report showing fatigue related crashes by hours of the day, revealed that the number of crashes involving fatigue appeared to be highest during the hours of 4-7 a.m. and 1-5 p.m. in the Transit New Zealand (TNZ) East Wanganui Region.

Of course other factors can contribute to driver fatigue as well, such as excessive hours of work, irregular work/rest schedules, stress, dehydration, etc.

**Case Study**

In July, 2006 Glen Edmunds Performance Driving School (GEPDS) trained 122 drivers in separate defensive driving courses for a privately owned fleet in Nairobi, Kenya. GEPDS interviewed each driver and asked them pre-determined questions about their daily driving habits and what they ate and drank during the course of a work day. It soon became apparent that most of the drivers were working extremely long hours. Some were driving over 36 hours without proper rest stops.

We discovered later that some of the drivers who attended the GEPDS driving course had worked all night and were reporting to the school the next morning without sleeping. Their overall performance was much lower than their colleagues, with poor reaction time being the most obvious factors. Concentration levels were also low and they had poor attitudes. They were very impatient and complained occasionally of blurry vision.

Kenya law dictates that drivers of commercial vehicles cannot drive for more than a total of eight hours in any period of twenty-four hours. The Department of Transportation in America (DOT) recommends that drivers do not exceed a 10-hour driving shift and must have an 8 hours rest in between shifts. The EC Daily Driving Limit is stipulated to be for no longer than 9 hours in a day, but may be extended to 10 hours twice a week. And after 4.5 hours driving, whether continuous or accumulated, a driver must take a break of at least 45 minutes. The EC rules also state that a driver must have a minimum daily rest of 11 consecutive hours. A 1987 IIHS study showed that drivers behind the wheel for more than eight hours are almost twice as likely to have an accident as drivers who are rested.

**Why Do Drivers Break the Rules?**

Shippers often have unrealistic deadlines for their employees. Drivers often falsify log books and break driving quotas because they fear being "black listed" or given shorter, lower paid trips. In Kenya and other African countries, jobs are in short supply and many positions have many hundreds of applicants. Drivers told GEPDS that driving positions are particularly competitive as the pay is considered relatively good, but mostly it is because driving positions are a consistent source of income. The work is always there. Driver's that can't "cut it" or who aren't willing to meet the deadlines are replaced quickly and easily.

One fleet manager in Nairobi told us that companies want to "sweat the truck as much as possible." The trucks are only making money when they are on the road. He said that sometimes companies have an additional driver in the trucks to

serve as a relief driver, but they often both stay awake to keep each other company instead of getting the necessary sleep and rest required. And even though their shifts may last only 10 hours, the drivers are often sitting around for 4-5 hours waiting for their vehicles to be loaded or unloaded. This cuts into valuable time when they could be sleeping.

**The Federal Highway Administration (FHWA)** states that working long shifts not only radically increases the risk of performance errors due to lost alertness and drowsiness, but it also impairs a trucker's ability to gain proper restorative sleep even when they have sufficient off-duty time for sleep.

In their 2000 report, the **Federal Motor Carrier Safety Administration (FMCSA)** announced that the risk of a crash effectively doubles from the eighth to the tenth hour of driving, and doubles again from the tenth to the eleventh hour of driving alone.

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#### **Nutrition and Health as Factors in Driver Fatigue**

GEPDS asked each driver during their survey, what they were eating and drinking during their work day. Most of them were skipping meals and only having one evening meal late at night.

On average, each driver was taking approximately 3-4 cups of tea a day with 3 teaspoons of sugar per cup. They also consumed between 2-3 soft drinks a day, which contain an average of 10-12 teaspoons of sugar per drink. In addition they were also eating inexpensive boiled sweets throughout their shift. This amounts to approximately 42 teaspoons of sugar per day or more, per person!

It is well documented that excess amounts of sugar lead to extreme highs and lows in the blood stream, causing various emotional and physical symptoms including fatigue.

#### **According to experts**

Sugar depletes our immune system, and may in fact reduce the quality and number of white blood cells, and can make you more susceptible to illness, fatigue, and gaining weight.

Over-consumption (of sugar) can lead to hypoglycemia, diabetes, heart disease, and chronic tiredness. Balancing the blood sugar is an important part of regaining energy and health. Excess sugar consumption is one of the major causes for fatigue. Not only is sugar a major culprit, the consumption of refined carbohydrates that quickly turn to sugar in our blood is equally damaging.

It was also interesting to discover when GEPDS interviewed the drivers, that the majority of them never drink water, but only take tea and soft drinks. Tea and soft drinks contain caffeine, which acts as a diuretic and in excess amounts can lead to dehydration through increased urine production. If you do

consume drinks with caffeine it is advisable to drink lots of water to avoid further dehydration. It is important to note that Caffeine can give you temporary alertness and wakefulness, but it does not decrease a persons need for sleep.

Drivers should not forget to take into account that a cabin of a truck can get very hot during the course of a day. A driver sitting in a closed cabin of a truck generates heat through arm muscles shifting gears and wrestling the steering wheel. The sun shining through the windscreen increases temperature in the cabin as well as heat generated from the engine compartment. This all causes fluid loss through perspiration. This must be replaced through drinking adequate amounts of water or other liquids.

Water UK reports that motor coordination is sensitive to dehydration and can show a decline even at very low levels of dehydration (less than 1 per cent loss of body weight). As

dehydration increases to 2 per cent, functions such as short-term and long-term memory, motor coordination, reaction times, and perceptive discrimination decrease significantly. A simple rule of thumb, to monitor dehydration, is to maintain a pale coloured urine in copious quantities throughout the day. Then you know you are staying hydrated.

#### **Ways to avoid fatigue related accidents**

- > Get an adequate amount of sleep before you start a long trip.
- > Take a break from driving at least every two hours.
- > Share the driving whenever possible.
- > Avoid drinking alcohol before driving.
- > Pull over and stop when drowsiness, discomfort or loss of concentration occurs.
- > Get out of your vehicle and have a walk or some form of exercise to increase alertness.
- > If you are feeling sleepy have a short nap of less than 40 minutes. More time than that can leave you feeling groggy afterwards.
- > Avoid heavy meals at lunchtime as they can make you feel sleepy.
- > Have fresh air in the car.
- > Having the proper hand and seat position is critical.
- > Find out whether any medicine you are taking may cause drowsiness and affect your driving.
- > Stay hydrated by drinking lots of water.
- > Try not to drive during hours when you would normally be asleep.
- > If possible don't drive during hours when your natural bio-rhythms are at their lowest such as between 3-5 a.m. and 3-5 p.m.

**The Royal Society for the Protection of Accidents** suggest that employers have a vital role to play in managing the risks involved in their employees who drive for work purposes. They



recommend as part of their health and safety policies and practices, employers should adopt and implement the principles of managing occupational road risk, with particular reference to reducing the risk of their employees being involved in a sleep related driving accident. They suggest employers should do the following:

- > Manage the safety of their employees who drive.
- > Consider and implement the most suitable system of risk assessment and re-assessment for the road safety needs of the company and its employees.
- > Choose the right vehicle and the safest specification for the needs of the job.
- > Ensure that work practices, journey schedules, appointments and routes enable drivers to stay within the law.
- > Provide sensible guidelines about driving and for the use of the vehicles for all employees who may drive for the company.

No matter what fleet managers decide to do, being able to understand what causes driver fatigue along with common symptoms and how to counter them are key elements that will hopefully help fleet managers and employees work together to develop better programs to keep their drivers safe and thereby protecting other road users by reducing the number of fatigue related accidents.

### **Glen Edmunds Performance Driving School**

GEPDS is based in Nairobi, Kenya, the international hub for sub-Saharan Africa. Their specially designed training facility is situated just eight minutes drive from Jomo Kenyatta International Airport. This facility is the largest vacant, sealed surface in Nairobi. This offers specific and unique training opportunities in a safe, secure, private environment.

The 4WD off-road courses take place on a specially designed track on twenty-five acres of private land just 30 minutes drive from the city centre.

### **Contact us**

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