

# ASLEEP AT THE WHEEL

**DOZING OFF WHILE DRIVING CAN HAVE TRAGIC CONSEQUENCES. RESEARCH SUGGESTS IT CONTRIBUTES TO MORE ACCIDENTS THAN WAS PREVIOUSLY SUSPECTED.**

It's late at night and you're heading home at the end of a long day's motorway drive. The car is comfortably warm, soothing music is playing on the radio and the road stretches endlessly, monotonously ahead. Gradually your eyelids grow heavier and your concentration begins to wane. You're seconds away from becoming an accident statistic — one of the many motorists who have fallen asleep at the wheel of their car.

Fortunately, the vast majority of us will recognise the danger signs and take action before tragedy strikes, winding down a window to let in some fresh air and stopping for a break at the next available opportunity.

But not all drivers heed the warning signs. Some actually fall asleep behind the wheel, resulting in often horrific accidents. Crashes caused by a sleeping driver tend to be more severe than usual, precisely because the driver is unable to slow down or take avoiding action.

Until recently driver fatigue was not placed very high on the list of road safety priorities. Sleep related incidents are not recorded in UK accident statistics, and a major problem in determining the extent of the problem is that drivers who have fallen asleep at the wheel are likely to be reluctant to admit it — especially where an accident has resulted.

Dr Mervyn White, head of the Royal Surrey Hospital sleep study unit, says 'We do have a problem because people are very sensitive about their driving. One of the questions we ask people who come to us with a sleeping problem is whether they have fallen asleep behind the wheel. Very few admit to it, but I suspect that many of them have done so and that's precisely why they come to see us in the first place.'

However, there is growing evidence that driver fatigue plays a part in a significant proportion of road traffic accidents. Regional studies have indicated

that drowsiness accounts for some 16% of all road accidents, and over 20% of motorway accidents. One study carried out on the M180 in South Humberside indicated that driver fatigue could have been implicated in all four of the fatalities that occurred on the road over a 12-month period, plus 47% of the serious injuries and 34% of the slight injuries.

Numerous factors contribute towards a driver feeling drowsy behind the wheel, explains Dr Peter Holden, the British Medical Association's representative on the IAM Council. 'It is an increasing problem because we travel in quieter and smoother cars, we try to cover greater distances, our eyes may be very tired from focusing on a computer screen all day long and increasingly we use aids such as cruise control that give us less to do at the wheel. While it's true that a comfortable drive is less stressful, you actually need a minimum of stress to keep you awake.'

Business drivers are often particularly at risk because their companies expect too much of them, says Dr Holden. 'Firms have got to stop expecting unrealistic schedules from their drivers, and drivers must have time to take regular breaks. By law an LGV driver isn't allowed to put in more than four-and-a-half hours behind the wheel without a break, so why should firms expect more than that of their company car drivers?'

When on the road, drivers need to be particularly aware of the lulling sensation caused by regular patterns or noises, continues Dr Holden. 'There is a problem of beat notes, particularly in automatic cars where there is a slight mismatch between engine speed and gearbox speed because of the torque converter. The RAF had this problem with the old multi-engined bombers they used during the war. They had to synchronise the engines to remove this beat because it was sending crews to sleep during a long flight. Music with a strong beat can act in the same way and be very soporific.'

Drivers must also be careful to avoid taking any medicines that cause drowsiness as a side-effect. Anti-motion sickness pills, sedative antihistamines and certain cold and flu remedies are among drugs available over the counter which can make driving dangerous. These carry a written warning so it is important to check the label of any drugs you are taking before getting behind the wheel.

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It's also important to be aware of the times when drowsiness is most likely to strike. Major disasters such as Three Mile Island, Chernobyl,

Bhopal, and the sinking of the Herald of Free Enterprise and Exxon Valdez, all occurred during the early hours of the morning when the body's natural rhythms are at a low ebb.

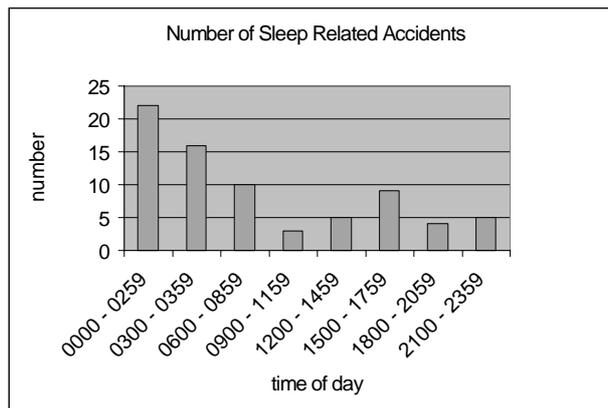
Professor Jim Horne, Director of Loughborough University's sleep research laboratory, comments that 'The effect of the time of day of driving in relation to the body's natural biological clock is profound, and is at least of equal importance as the duration of the drive. Young drivers are the most likely to have these [fatigue related] accidents, especially in the early morning, whereas older adults may be more vulnerable in the early afternoon.'

Studies carried out by Professor Horne have confirmed a surge in sleep related accidents at these times. He notes 'low incidences of sleep related vehicle accidents during 0900 - 1059hr and 1900 - 2059hr which are times of the day when people naturally feel more alert. The peak times for all road accidents in the UK are around the rush hours of 0800 - 0900hr and 1700 - 1800hr, which are distinct from the peaks associated with sleep related vehicle accidents.'

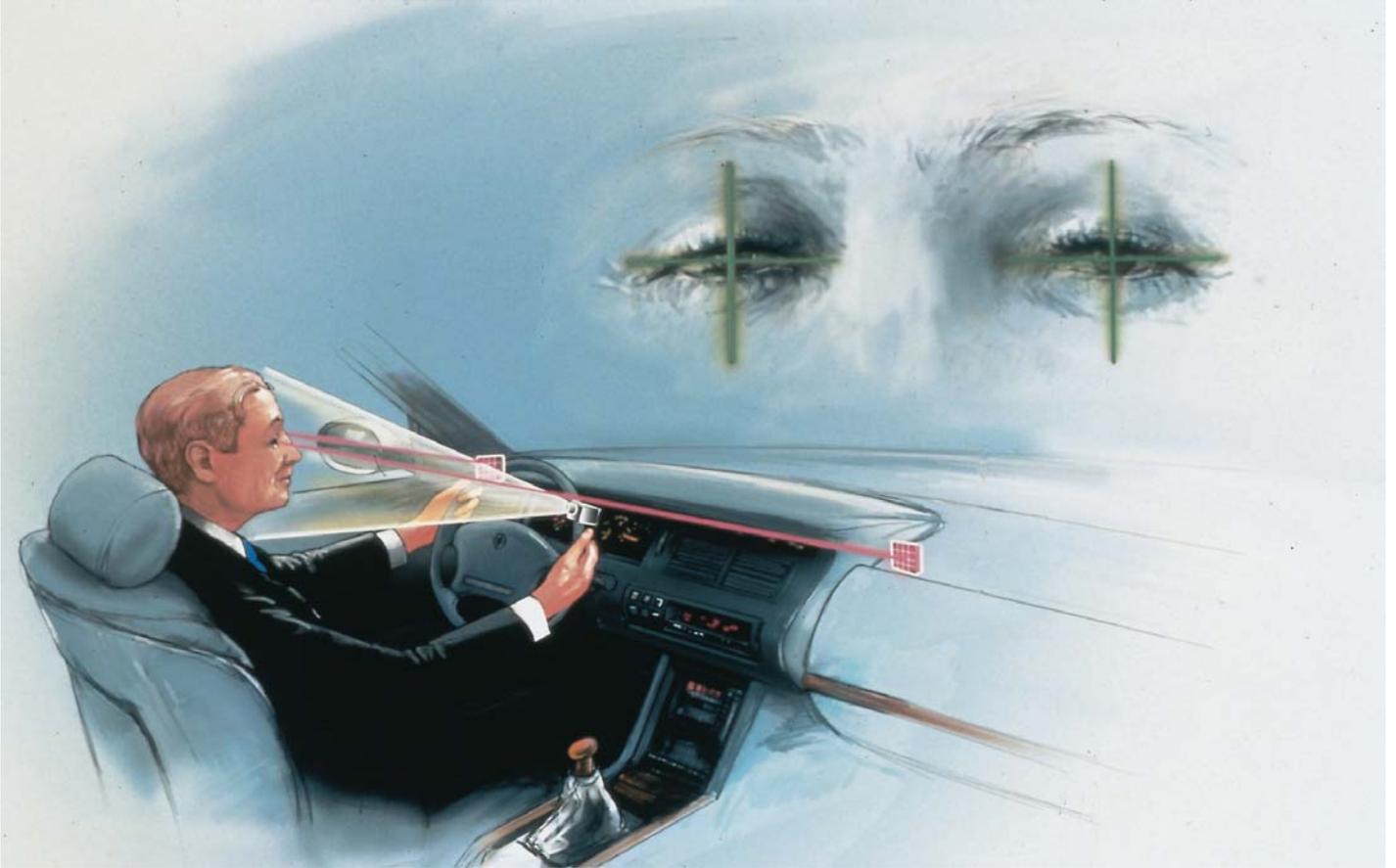
One category of drivers who may particularly risk feeling drowsy behind the wheel are those who suffer from a disorder such as sleep apnoea. This may be more prevalent than was once thought. 'Sleep apnoea is

generally said to affect 8% of the population,' says Dr Mervyn White, 'but personally I would say that 25% to 33% of the population after the age of 40, male and female, have some sort of obstructive airway problem.'

'The disorder is caused by the pharynx at the back of the throat, which in some people flops back and blocks the airway once they have gone to sleep. The oxygen concentration in their blood goes down, and when their brain senses this it sends them a message to wake up. As they do so they regain control of their pharyngeal muscle and so clear the blockage. They don't wake up



## RENAULT'S SLEEP ALERTNESS SYSTEM MONITORS THE DRIVER'S RATE OF EYE-BLINKING TO DETECT SIGNS OF DROWSINESS



### CARS THAT CAN KEEP YOU AWAKE

Several manufacturers have devised warning systems aimed at monitoring drivers' alertness and waking them when they start to doze off. Toyota's drowsy driver warning system uses a steering angle sensor built into the steering wheel and a pulse sensor on the driver's wrist. If it decides the driver is showing signs of tiredness a two-stage warning signal is triggered: first, there's a warning buzzer and light, and if this fails the driver's seat starts to vibrate vigorously.

Renault's device is being developed primarily for long-distance truck and coach drivers. A small camera mounted in the instrument panel locks on to the driver's eyes and follows the movements of his head. By analysing these images it can tell how long the driver is closing his eyes when blinking and thus whether he's in danger of falling asleep.

A warning can then be given in a number of ways, from turning the air-conditioning onto maximum cold, raising the hi-fi volume or even spraying a jet of cold water onto the driver's face. Renault's engineers are still testing to find the most effective system, but expect it to be on the market within a couple of years.

fully but drift off to sleep again, and then the cycle repeats itself over and over throughout the night. So although they apparently have had a good night's sleep, they wake up in the morning unrefreshed and go through life feeling constantly tired.'

Excessive snoring is often the first sign of sleep apnoea, particularly if the person still snores while sleeping on their side. If untreated the condition can lead to heart and lung problems, as well as the dangers a sufferer faces in everyday life while driving or operating dangerous machinery. Treatment involves sleeping with a CPAP (continuous positive airway pressure machine) worn over the nose. This provides a steady pressure of air into the lungs, pushing the soft tissue of the pharynx out of the way to maintain a clear air passage and give the patient an untroubled night's sleep.

In August last year sleep apnoea was used for the first time as a mitigating factor in a motoring court case, with a Derbyshire lorry driver being given a suspended sentence after falling asleep at the wheel and driving into a queue of motorway traffic, killing two people. However, the more general excuse of falling asleep at the wheel is not so likely to be accepted by magistrates. Legal precedents have established that a driver who falls asleep is committing at least the offence of driving without due care and attention. It could also come under the more serious offences of dangerous driving or causing death by dangerous driving. But convictions are unlikely to result in the absence of additional factors such as driving under the influence of drink or drugs.

Crucially, the onus is on the driver to take steps to avoid falling asleep behind the wheel. 'Drivers falling asleep are unlikely to recollect having done so,' says Professor Horne, 'but they are aware of the precursor of feeling sleepy, as normal sleep does not occur spontaneously without warning.'

'Putative countermeasures to sleepiness during continued driving, such as cold air, or using the car radio, offer only temporary relief at best. The only safe countermeasure is to stop driving. Then, a short nap and/or cups of coffee can be very effective. Exercise is of little use. More driver education is needed about the dangers of driving whilst sleepy.' Dr Rob Tunbridge, road safety research programme manager at the Department of Transport, also emphasises drivers' responsibility to take note of the warning signs of drowsiness.

'In experimental studies drivers are invariably aware of how sleepy they are. They do not suddenly fall off to sleep or go into a trance-like state. They do however

have a pronounced tendency to continue driving even when very tired. The implications of this are that although devices such as rumble strips can be very effective in warning drivers in the early stages of sleepiness, they will not eliminate the chances of having an accident if the person continues to drive. This makes it of paramount importance to emphasise to drivers the need to adopt measures which will minimise their chances of becoming sleepy.'

**AS YOU GET SLEEPY YOU LOSE  
THE WILL POWER TO PULL OFF  
THE ROAD**

The Department of Transport has issued the following guidelines for drivers:

Make sure you are fit to drive, particularly before undertaking any long journeys (over an hour). You should avoid such journeys in the morning

without a good night's sleep or in the evening after a full day's work.

Avoid undertaking long journeys between midnight and 6 am, when natural alertness is at a minimum.

Plan your journey to take sufficient breaks. A minimum break of at least 15 minutes after every two hours driving is recommended.

If you feel at all sleepy, stop in a safe place and either take a nap for not more than 15 minutes or drink two cups of strong coffee.

Recent research carried out by Professor Horne suggests that combining the nap and the coffee can be the most effective step of all. Caffeine in coffee takes half an hour to have an alerting affect, so it's possible to have a short nap after drinking a cup, and his study showed that this 'combined treatment' effectively eliminated the mid-afternoon peak of sleepiness while behind the wheel.

Ultimately, drivers must recognise the dangers of continuing to drive while they are tired and have the self-discipline to stop and take a break instead of pressing on, even if they are running late.

'I often face a 200 mile drive at 11 o'clock at night,' says the IAM's Dr Holden. 'I'll crack the first 50 miles then pull in and go to sleep for half an hour - it's a sight better to add half an hour to your journey than spend three days in intensive care.'

**THE ONLY SAFE COUNTERMEASURE  
IS TO STOP DRIVING**

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# SLEEPING SICKNESS

## A SLEEP APNOEA SUFFERER SHARES HIS EXPERIENCE

I was well into my 40s when I developed sleep apnoea, and for some years I thought it was something everyone got in middle age — a tendency to nod off at odd moments. When those odd moments started to include driving, I began to take it more seriously.

The condition reached the point at which, even on a short journey, or as early as mid morning, I would be overtaken by an overpowering need to sleep. Unless you have experienced this you cannot imagine it. When sleep apnoea really has a hold you can forget nodding off; it's more like passing out. Within a few minutes the sufferer can go from merely feeling drowsy to giving up the unequal struggle to stay awake, no matter how hard he or she tries. One of the worst aspects is that as you get sleepy you lose the willpower to pull off the road and give in to the need to sleep. Some weak-minded part of your brain tells you that you can make yourself stay awake, if not for the rest of the journey then certainly until you get to a convenient parking spot. Meanwhile, your alertness is reducing from normal to that of a person who is as much asleep as awake.

When you do stop most prescribed remedies for tiredness at the wheel are useless. There's no point in walking up and down, even jogging. You just have to close your eyes and let go. The period of sleep itself is quite short, usually from ten minutes to half an hour. You wake up feeling quite normal again and refreshed enough to drive back at your full level of alertness.

The cure? There is no instant solution, apart from schooling yourself to stop at the first sign of wanting to doze instead of going on until the need for sleep is uncontrollable.



**FOR SOME, CPAP IS THE ONLY ANSWER**

My family soon learned to recognise the early signs of an 'attack'. They would insist there and then that we stopped and changed drivers. But this was not the long-term answer. Neither was strong coffee, playing the radio loudly, having the windows wide open. I had to get rid of the cause, not the symptoms.

An ear, nose and throat specialist soon pointed out that the airway into my throat, not large at the best of times, had shrunk as I put on weight. Middle aged spread doesn't just add fat around your middle.

I was able to confirm his assumption that I had developed a deafening snore. Every now and then throughout the night I would stop breathing altogether, as the soft palate closed off the airway. After half a minute or so I would wake up with a start, the brain having received a panic message from the lungs about oxygen shortage and sent a shot of adrenaline around my body to get things going again. I would half-wake, not consciously realising any of this was going on, then go back to sleep again.

It meant I was not getting the steady, deep uninterrupted sleep needed for full alertness the next day. My body and brain, in the insistent way they have, would compensate by organising unexpected naps at odd times — like when we were at a steady 70mph on the motorway.

To relieve the problem, said the specialist, I could use a Darth Vader kind of mask, clamped to my face at night and feeding in air from a blower unit beside the bed. Did it work? I don't know. I couldn't bring myself to try it. Or I could have part of the soft palate removed, to get rid of the self-sealing valve I seemed to have developed in my airway. I'd have gone for that had the surgeon not warned me that it didn't always work, and it often left people with a different and less agreeable tone to the voice. So that was out.

In the end, I just took more care about what I ate, lost weight (no bad thing in itself) and got rid of the extra fat that was clogging up the works. Simple really, and better than causing a massive accident by falling asleep behind the wheel.