

Warning signs of drowsiness & fatigue:

If you...

- can't remember the last few miles driven
- have wandering or disconnected thoughts
- experience difficulty focusing/keeping eyes open
- have trouble keeping your head up
- drift from lanes or hit a rumble strip
- yawn repeatedly
- tailgate or miss traffic signs
- find yourself jerking your vehicle back into lane

...then you may be suffering from drowsiness or fatigue. Continuing to drive in this condition puts you at serious risk of being involved in a fatigue-related crash. You should pull over in a safe place and get some rest before resuming your trip.

What you can do to stay alert while driving:

- The best approach is to get adequate rest beforehand, share the driving with a passenger or take a break every two hours or every 100 miles. It helps to take a nap, stretch, take a walk or get some exercise before resuming your trip.
- Sleep/take naps: Your best bet is to get enough sleep every day. If you must stay up late, afternoon naps are a great way to get more sleep. If you feel drowsy while driving, a 15-minute nap can be very effective. Make sure to pull over in a safe place.
- Caffeine: Avoid caffeine during the last half of your workday as it may contribute to sleeping problems. You can gain short-term alertness by drinking coffee or other caffeine sources if driving, but it usually takes 30 minutes to take affect and wears off after a few hours.
- Regular stops: You should stop every 100 miles or 2 hours. Switch drivers if you can.
- Avoid Alcohol: If you have been drinking, please don't drive! In addition to being illegal, alcohol makes you sleepy and amplifies your fatigue.

Foods with Sleep-Inducing (Tryptophan) & Stimulating (Tyrosine/Caffeine) Effects

Foods with Tryptophan (SLEEP-INDUCING EFFECTS):

- Bananas & Pineapple
- Cheese
- Eggs
- Ice Cream
- Lobster
- Meat (Beef)
- Milk
- Potatoes
- Turkey
- Valerian Tea

Foods with Tyrosine/Caffeine (STIMULATING EFFECTS):

- Avocados
- Beef (Aged)
- Cheese (Aged)
- Chicken & Fish
- Chocolate
- Coca Cola & Coffee
- Figs (Canned)
- Garlic
- Ginger Ale
- Horseradish
- Persimmon
- Pickled Herring
- Sour Cream
- Soy Sauce
- Sprouts
- Yogurt



~ Shiftwork, Fatigue & Performance ~

Living With Shiftwork

Regimentation of sleep is critical. A regular sleeping schedule, whether during the day or night, is more likely to result in a good amount of sleep. Whenever possible, sleep when given the opportunity and plan activities around your sleep time (not the other way around). This way you won't reduce or sacrifice sleep.

You may need to trick your body into thinking it is sleeping at night. If you've been up all night, try sleeping early in the day, because generally it is better and easier to do so. Going to bed later generally means you'll wake too soon and won't be able to get back to sleep. If you're inclined to do so, preparing a special room helps for daytime sleeping (you may be able to get one long sleep period).

If you are over 40 your sleep will probably be different to when you were 24. You sleep worse at night and tend to be more drowsy and susceptible to microsleeps. For older shiftworkers, it is more difficult to stay awake at night and to sleep during the day.

To help you get to sleep and stay that way it may be useful to *(The University of South Australia):*

- Sleep in a room away from traffic and neighborhood noises.
- Install double-glazing, it will help to reduce noise and assist with temperature control.
- Use an air conditioner to control room temperature and to provide "white noise" that will mask other external noises.
- Install insulation, as it will assist to maintain temperatures during summer and winter.
- Use an answering machine or unplug the phone to reduce interruptions.
- Close curtains or blinds to block out light.
- Learn to relax (muscle relaxation, breathing techniques).



- Enlist family members to support your sleep time, get them to use headphones if watching TV or listening to music.
- Go to bed at similar times during the day or night, this might help you get off to sleep a bit faster.
- Let others know you're trying to sleep during the day, so if they like you, they'll make an effort to keep the noise down. If they don't like you, you're in trouble.
- Develop bedtime routines, they allow your body and mind to shift gear and get ready for sleep. You could for example, shower, read, listen to relaxing music, clean your teeth, go to the toilet, check the locks, etc.
- If you can't go straight to sleep, don't panic. Listen to music, read, watch TV (but not in bed). Do something you find relaxing and easy. Get out of bed and return when you feel ready to sleep.

Recognizing Fatigue

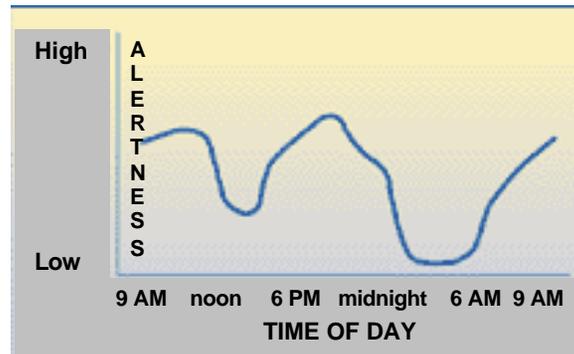
It is important for supervisors and co-workers to recognize fatigue's signs and symptoms, to know what to look for in others. Fatigue impacts hand-eye skills, judgment, decision-making, etc. Risky behavior increases and the quality of work decreases.

- Degraded performance while driving, monitoring equipment, operating and maintaining aircraft, performing medical procedures, etc. Translates into degraded vigilance and decision-making. Your margin for error (or safety margin) is decreased.
- Poor memory (forgetful), poor decisions, apathetic, lethargic, bad mood, and nodding off.
- Decreased hand-eye coordination, and poor communication and information processing.
- Poor decision-making (fixation on certain aspects of a situation to the neglect of other information).
- Poorer performance despite increased effort. We are poor judges of our own performance levels.
- Slowed/Increased Reaction Time: it takes longer to react to unsafe conditions, and to shut down equipment in time and to avoid any roadway obstructions.
- Reduced vigilance and lower alertness levels.

- Lapses in Attention: inability to concentrate and keep a visual scan of instruments and gauges.
- "I just want to get finished" attitude. We tend to press the envelope of safety more because we are too tired to realize how badly the fatigue is affecting our performance, or we *just want to be finished*. We also accept lower standards.

Circadian Rhythm "Peaks/Valleys" & The Risk of Driving While Drowsy

There are two circadian functions that we can observe on our own without complex measurements: changes in temperature and changes in drowsiness. These two are usually closely related and are most significant from 3:00 to 5:00 AM and PM (Figure). As core body temperature decreases, drowsiness increases. Melatonin levels are substantially increased (a strong contributor to drowsiness). At the same time there is an increase firing of the brain's sleep-inducing organs. These inhibit the neural system/structures that keep our brain in the active waking state. This is the same system that acts on the brain of the baby rocked to sleep by its parent. Before sleep (bedtime), the brain begins a firing pattern that is characteristic to initial stages of sleep. With the depression in the activity of the neural system, we quickly lose interest in demanding intellectual activities. Soon the only thing we can think of is sleep. Once we rest in an undisturbed place, we drift into "dreamland".



Figure

The risk of danger increases when sleepy people have a critical task to perform, like driving. In a *National Sleep Foundation* poll, half of Americans (51%) reported driving while drowsy during the past year and nearly one out of five (17%) say they have actually dozed off behind the wheel. According to the *National Highway Traffic Safety Administration*, 100,000 auto accidents occur each year because of "fall-asleep" crashes.

An *AAA Foundation for Traffic Safety* study identified lifestyle factors that contribute to sleepy driving. People who hold more than one job, who get six hours or less of sleep, or who drive between midnight and 6 a.m. are at significantly higher risk of a drowsy driving crash. Other studies show that sleep-deprived drivers have reactions like those of people who have been drinking alcohol. Your performance, particularly of critical tasks, is equally impaired by 17 hours of continuous wakefulness or a .05 BAC. Something to think about if you're planning a trip.

Planning A Trip (Driving Strategies)

If you are planning a long trip, AAA offers the following tips for avoiding fatigue:

- Prepare for your trip by getting a good night's sleep the night before. Plan to drive during the time that you are normally awake, and stay overnight rather than traveling straight through.
- Avoid driving during the body's "down time". According to AAA, this is generally in the mid-afternoon and between midnight and 6:00 a.m.
- If you have passengers, talk to them. It will help to keep you alert, and they will also be able to tell if you are showing signs of getting sleepy.
- Schedule a break every 2 hours or every 100 miles. Take a nap, stretch, take a walk and get some exercise before resuming your trip.
- Stop sooner if you show any danger signs of sleepiness.

"Tricks" that do not work: Opening the window, turning on the air conditioning, or playing loud music are not effective in keeping drivers alert for any extended period of time.