



# Sleep and Fatigue

## Shift Worker Safety Training Program



### Introduction

Shift workers perform vital functions in hospitals, on police forces, as emergency personnel, and in the transportation and manufacturing industries. They meet the demand for around-the-clock service and production in communities and across the globe.

Between 26 and 38 million Americans are shift workers,<sup>1</sup> meaning that their work schedule falls outside the hours of 7 a.m. and 6 p.m.<sup>2</sup> According to the U.S. Bureau of Labor Statistics (BLS), about 16% of wage and salary employees follow shift-work schedules.<sup>3</sup> This includes the 6% who work evening shifts and the 4% who work night shifts.

### Shift work and sleep

Unfortunately, when it comes to sleep, most shift workers do not get enough. When shifts

fall during the night, the worker is fighting their natural wake/sleep pattern. It may be hard to stay alert at night and equally as hard to fall asleep and stay asleep during the day. Night shift workers get a daily average of two to four hours less sleep than daytime workers, and the sleep is usually less restful.<sup>4</sup>

Sleep is more than just beauty rest for the body. It helps restore and rejuvenate the brain and organs, so they function properly. Chronic lack of sleep can affect a person's health, memory, mood, and work performance, which affect workplace safety.

### Sleep and the circadian clock

All creatures need sleep — even plants appear to have rest periods. The human body naturally follows a 24-hour period of wakefulness and sleepiness, known as the body's *circadian clock*. This internal clock is



sleep than they need, they think and move more slowly, make more mistakes, and have more difficulty with memory. These negative effects can lead to lower job performance and increased accidents that cost U.S. businesses about \$136 billion each year in health-related lost productivity.<sup>8</sup>

On a personal level, shift workers may be more likely to experience poor mental and physical health. Lack of sleep increases irritability, impatience, anxiety, and depression, which can harm

relationships and spoil social activities.<sup>9</sup> It can also cause stomach issues -- especially heartburn and indigestion -- heart problems, high blood pressure, menstrual irregularities, colds, flu, and weight gain.<sup>10</sup> In addition, tired shift workers driving to and from work are at an increased risk of vehicle accidents.<sup>11</sup>

linked to nature's cycle of light and darkness. It regulates body temperature, hormones, heart rate, and other body functions.

For humans, the desire to sleep is strongest between midnight and dawn.<sup>5</sup> Many people are alert in the morning, with a natural dip in alertness in the mid-afternoon. It is difficult to reset the internal circadian clock, so it is not surprising that 10% to 20% of night shift workers report falling asleep on the job.<sup>6</sup> It is also the reason why night shift workers may find it difficult to sleep during the day, even though they are tired.

## When employees do not get enough sleep

According to the [American Sleep Apnea Association](#), 70% of adults report that they do not get enough sleep at least one night a month. An additional 11% report a lack of sleep every night.<sup>7</sup>

Most adults need eight hours of sleep to function at their best. When people get less

relationships and spoil social activities.<sup>9</sup> It can also cause stomach issues -- especially heartburn and indigestion -- heart problems, high blood pressure, menstrual irregularities, colds, flu, and weight gain.<sup>10</sup> In addition, tired shift workers driving to and from work are at an increased risk of vehicle accidents.<sup>11</sup>

## Educate employees about the dangers of lack of sleep

Lack of sleep is dangerous because workers often fail to know its symptoms and effects. Fatigue and sleep deprivation can cause employees to forget or misjudge safety steps and work in other risky ways. Fatigue has also been cited as a factor in some of the [biggest workplace accidents in history](#) including the 2005 BP Texas City oil refinery explosion and the nuclear accidents at Chernobyl and Three Mile Island.<sup>12</sup> That is why it is important to educate all employees about the dangers of sleep deprivation and train workers, especially managers, to [spot fatigue](#) before accidents occur. Look for:

- Yawning.
- Frequent blinking.
- A sense of tiredness.
- Failure to make routine safety checks.

Let workers know that when they feel sleepy, they should:

- Stop work as soon as safely possible.
- Contact a supervisor to request a break or nap.
- Drink a caffeinated product for short-term alertness; however, caffeine is never a long-term substitute for sleep.

## Getting ready for successful shuteye

Shift workers can set the stage for better sleep by preparing their minds and bodies in the following ways:

- Wear wraparound dark glasses when traveling home from work. This will prevent sunlight from activating the workers' internal daytime circadian clock.
- Follow bedtime rituals and try to keep a regular sleep schedule even on days off.
- Go to sleep as soon as possible after work.
- Ask family and friends to create a quiet and peaceful setting at home during sleep time. Have family members wear headphones to listen to music or watch TV. Ban vacuuming, use of the dishwasher, and noisy games during sleep time.
- Put a "Do Not Disturb" sign on the front door so that delivery

personnel and visitors will not knock or ring the doorbell.

- Schedule household repairs during normal awake hours.

## Tips for falling and staying asleep

There are several steps a shift worker can take to successfully fall asleep and stay asleep. The key is to make sleep a priority!

### ***Create a bedtime ritual***

- Take a warm bath or soak in a hot tub.
- Lower the room temperature. A cool environment improves sleep.
- Do not activate the brain by balancing a checkbook, reading a thriller, or doing other stressful activities.

### ***Reduce light***

- Darken the bedroom and bathroom.
- Install light-blocking and sound-absorbing curtains or shades in the bedroom.
- Wear eyeshades while sleeping.



## Block out sounds

- Wear earplugs.
- Use a white noise machine, like a fan, to block other noises.
- Install carpeting and drapes to absorb sound.
- Turn off or unplug the telephone.
- Choose food and drinks wisely
- Avoid caffeine less than five hours before bedtime.
- Do not stop for a drink after work. Although it may bring the feeling of relaxation, alcohol disturbs sleep.
- Eat a light snack before bedtime. Do not go to bed too full or too hungry.
- Avoid exercise before bed. For those who exercise at the workplace, do so at least three hours before going to bed. Otherwise, wait to exercise until after sleep. Exercise increases alertness and raises body temperature. It should not be done too close to bedtime.

## Sleeping pills and aids can provide short-term help

Prescription sleep medications do not cure sleep problems but may be recommended for short-term use. Shift workers should inform their doctors of their work schedules because sleep medications may help for one or two sleep cycles after a shift schedule change.

## Sleep and melatonin

Melatonin is a hormone released by the brain at night. It appears to have a strong link to the wake/sleep cycle. Its release is regulated by the pineal gland in the center of the brain and serves as the body's internal clock.<sup>13</sup> Taking melatonin is most effective in helping people with jet lag. For other people, it may



have a mild effect, if any at all.<sup>14</sup> [Studies](#) have found melatonin to be safe in healthy adults on a short-term basis, but information on long-term safety is lacking.<sup>15</sup> The fact that it is widely available in stores does not guarantee its safety.

## Embrace napping

It is important for shift workers to keep a regular sleep schedule, even on days off. However, if they cannot get enough sleep or feel drowsy, naps 30 minutes in length or less can improve alertness, performance, and mood.

More and more companies are providing employees time on the job to nap, and many U.S. companies allow naps during breaks at work. Some companies even offer [sleep pods](#) or private rooms to snooze.

[Studies](#) show that napping at the workplace is especially effective for workers who need to maintain a high degree of alertness, attention to detail, and make quick decisions. In situations where the worker is working double shifts or 24-hour shifts, naps at the workplace are even more important and useful.<sup>16</sup> While some people may feel groggy or sleepier after a nap, those feelings usually go away within 15 minutes. However, the benefits of the nap can last for hours.



## Caution on the ride home

Driving home after work is risky for night shift workers. Their body needs sleep after being awake all night. Also, coming home around or after midnight increases the risk of meeting drunk drivers. [Studies](#) show that opening the car windows or listening to the radio keeps drowsy drivers awake only for a short time.<sup>17</sup> Workers who are sleepy when their shift is over should take a nap before driving home. Remember, sleep can quickly overcome a driver.

Follow these steps to arrive home safely:

- Carpool, if possible, and have the most alert person drive.
- Drive defensively.
- Do not stop for a “nightcap.”
- When sleepy, stop to nap but do so in a locked vehicle in a well-lit area.
- Take public transportation, if possible.

## Promote alertness at work

In the same way, a worker can take steps to ensure good sleep, there are tips to stay alert on the job:

- Take short breaks throughout the shift.
- Try to work with a co-worker to remain alert. Co-workers can also look for signs of drowsiness or fatigue that can cause accidents.
- Try to exercise during breaks. Use the employee lounge, take a walk outside, shoot hoops in the parking lot, or climb stairs.
- Try to eat three normal meals per day. Eat healthy snacks and avoid foods that may upset the stomach.
- If drinking caffeinated beverages such as coffee, tea, or sodas, do so early in the shift, before 3 a.m. for night shift workers.
- Do not leave the boring tasks to the end of the shift. Night shift workers usually hit their drowsiest period around 4 a.m.
- Exchange ideas with co-workers on ways to cope with the problems of shift work. Set up a support group at work and learn from others.

## Balancing life and work

The shift worker faces special problems in trying to maintain family relationships and social and community ties. It becomes difficult to balance work, sleep, and personal time. The need to sleep during the day -- or, for the evening worker, to be on the job during the dinner hour and the family-oriented part of the day -- means that the shift worker often misses out on activities, entertainment, and other social interaction. For this reason, it is important to talk with family members and friends about these concerns. With their help, schedule special and regular times to spend with them. Remember that sleep loss and feeling at odds with the rest of the world can make workers irritable, stressed, and depressed.

## When to seek medical help

If a shift worker cannot get enough sleep after trying these tips, seek professional help. Remember, when workers are not getting the sleep they need, they and those around them are at risk. Inadequate sleep increases the risk of falling asleep at the wheel, accidents on the job, health issues, and problems at home. A doctor or sleep specialist can help identify the cause and treat or manage the problem.

## Ways employers can help

There are ways employers can help employees create better sleep habits and make the workplace safer and more productive for shift workers:

- Educate managers and shift workers about the need for sleep and the dangers of fatigue.
- Install bright lights in the work areas. A well-lit workplace signals the body that it is time to be awake and alert.
- Provide vending machines with healthy food choices and a microwave oven.
- Schedule shifts to allow sufficient breaks and days off, especially when shift workers are re-assigned to different shifts. Plan enough time between shifts to allow employees to get the sleep they need and attend to their personal lives.
- Do not promote overtime among shift workers.



- Develop a napping policy. Encourage napping by providing a sleep-friendly space and time for scheduled employee naps. A short break for sleep can improve alertness, judgment, safety, and productivity.
- Encourage the use of carpools, public transportation, rested drivers, and even taxis to provide safety for employees traveling to and from work.

Remind employees that shift work is not all bad. There are some advantages such as:

- Shopping in less crowded stores.
- Attending daytime and school events.
- Participating in sports, such as golf or tennis, during off-peak hours.
- Having less supervision at work, which creates a more relaxed atmosphere.
- Dressing more comfortable when working during off-shifts.
- Forming unique bonds with other shift workers.

For more information, download or stream any of DWC's free [safety and health publications](#) or [workplace safety videos](#). A list of DWC's safety and health training programs is available [here](#). For customized employee training, contact a DWC safety training specialist today at [safetytraining@tdi.texas.gov](mailto:safetytraining@tdi.texas.gov) or 1-800-252-7031, option 2.

## Jobs & Categories of Shift Work

Workers are most likely to be on the job between 8 a.m. and 5 p.m.<sup>18</sup> However, according to the [BLS](#), about 29% of workers were on the clock at 7 a.m. At 9 p.m., about 12% of workers were on the job. By 2 a.m., that percentage fell to 3%.

To better examine the effects of shift work, the BLS divides hours of work into three selected groups:<sup>19</sup>

### **Evening shifts**

Evening shift work between 6 p.m. to 10 p.m. includes jobs such as:

- Servers, bartenders, and other food service employees;
- Hairdressers, salon staff, personal trainers, and other personal care employees;
- Retail store workers, real estate agents, cashiers, and other sales personnel; and
- Musicians, directors, broadcast technicians, and others who work in the arts, sports, health care, and media.

### **Night shifts**

Common night shift jobs that fall between the hours of 11 p.m. to 3 a.m. include:

- Doctors, nurses, paramedics, and other health care practitioners.
- Nursing assistants, psychiatric aides, veterinary assistants, and other health care support staff.
- Firefighters, police officers, security guards, and other protective service employees.
- Bakers, machinists, assembly line workers, and others who work in manufacturing and production.
- Truck drivers, air traffic controllers, conveyor operators, and other transportation and material moving employees.

### **Early morning shifts**

An early morning shift usually falls between the hours of 4 a.m. to 8 a.m. Typical occupations with early morning shifts include:

- Architects and engineers.
- Carpenters, equipment operators, roofers, and other construction and extraction workers.
- Farmers, fishing workers, and forestry personnel.
- Aircraft and industrial machinery mechanics, telecommunications equipment repairers, and other installation, maintenance, and repair professionals.

## Review questions:

1. What is the recommended amount of sleep the average adult should have in 24 hours?
2. Caffeine helps shift workers stay awake when they get sleepy. True or False?
3. What hour is considered the most dangerous for the shift worker to stay awake?
4. An alcoholic drink at bedtime will help a shift worker get to sleep. True or False?

### Answers

1. Eight hours is recommended.
2. False. Caffeine will not keep shift workers awake if they are sleepy.
3. 4 a.m.
4. An alcoholic drink may relax a shift worker, but it can disturb their sleep.

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*The Texas Department of Insurance,  
Division of Workers' Compensation (DWC)-Workplace Safety  
P.O. Box 12050  
Austin, TX 78711-2050*

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