

### Before you begin:

#### Review these questions:

- Does your company have employees who work before 7 a.m. or after 6 p.m.?
- Look at your OSHA 300 and first-aid logs. Are there more injuries during the second or third shift? Is fatigue listed as a possible cause?
- Are there problems with productivity or quality during second or third shift?
- Have any of your second or third shift employees had accidents while commuting?
- How does the company schedule shift work and manage workers on second and third shift?



### Introduction

America runs 24-hour a day, seven-day a week, with over 15 million Americans regularly working night shift. Working shifts other than the normal hours of 7 a.m. to 6 p.m. can lead to serious problems with worker health and safety.

## Definitions

**Rotating shift:** A schedule where working hours vary from day to day or from week to week. Examples include rotating between day, evening, and night shift every 7 days, or working a 12-hour shift for 3 days, then having 2 days off.

**Shift work:** a work schedule that occurs outside the hours of 7 a.m. to 6 p.m., including shifts that begin or end outside of these hours such as 4 p.m. to midnight, or 6 a.m. to 3 p.m.

**Split shift:** A work schedule in which work hours are split into two or more parts, with work hours (paid) separated by nonwork hours (unpaid). Regular breaks for rest or meals do not count as nonwork time. An example is working from 5 a.m. – 9 a.m., off work from 9 a.m. to 2 p.m., then working from 2 p.m. to 6 p.m.

## Discussion

Our bodies are governed by a circadian rhythm. This is a major body rhythm with regular fluctuations during the 24-hour day. People usually feel sleepiest from 4 a.m. to 6 a.m., regardless of their work schedule. While individuals may have slightly different preferences for the ideal time to work, most prefer working during the day and sleeping at night. Night shift workers who must sleep during the day may struggle to fall asleep or stay asleep. Often, they suffer from poor quality of sleep as a result of the desynchronization of their circadian rhythm, which occurs when their internal circadian rhythm is not synchronized with the external light-dark cycle.

### Health Effects

The shift worker must sleep when the body wants to be awake and must work when the body wants to be asleep. This disruption of the natural sleep/wake cycle can lead to poor sleep, fatigue, and long-term health issues. Researchers have linked shift work with increased risk of heart attacks, obesity, and high blood pressure. Diabetes, ulcers, and certain cancers are also associated with shift work. Shift workers report difficulty in falling asleep and staying asleep, as well as excessive sleepiness during waking hours.

### Safety Effects

Shift work can seriously impact workers' safety. Worker fatigue shows up as a causal factor in many serious industrial incidents. Many long-haul trucking accidents are caused by driver fatigue. Studies show an increased risk at night when the attention is low and mental fatigue is high.

Worker fatigue increases the risk for illnesses and injuries. According to OSHA, accident and injury rates are 18% greater during evening shifts and 30% greater during night shifts when compared to day shifts. Research indicates that working 12 hours per day is associated with a 37% increased risk of injury.

## Managing Shift Workers

How can you reduce the shift worker's risk? You cannot change the circadian rhythm, but you can schedule work shifts to minimize circadian rhythm disruptions and worker fatigue. Ideally, a shift should be 8-10 hours long. Avoid shifts greater 12 hours and split shifts.

Workers need at least six hours of deep sleep, but most need more sleep than that. There should be a minimum of 10 hours between successive shifts so that workers have enough time to travel home, unwind from work, and sleep for 7-8 hours. Workers with long commutes need more than 10 hours between shifts.

Brightly lit work areas help workers stay alert. Avoid blue LEDs in the workplace, since blue light can interfere with melatonin production and keep shift workers from falling asleep easily when they go home. Avoid having work areas that are quiet, dark, and warm because these can induce sleepiness, especially during second and third shift when workers naturally feel sleepy.

Avoid rotating shifts whenever possible because it is difficult for workers to keep changing their sleep schedules. If rotating shift cannot be avoided, schedule so that each successive shift is later than the previous. It is easier to rotate clockwise (from day to night to early morning shifts), than counterclockwise. Slow rotations are preferable, where the worker works at least two weeks on one shift before rotating to the next. Avoid fast rotations where each shift lasts less than one week since workers don't have enough time to adapt to the new schedule.

## Tips for Shift Workers

Here are tips to help ensure good sleep and avoid fatigue at work.

### **Bedtime rituals**

- Take a warm bath or soak in a hot tub to relax and unwind from the day's activities.
- Lower the bedroom temperature because a cool room improves sleep.
- Do not activate the brain by doing stressful activities.
- Limit screen time before bedtime. Stop using your computer or smart phone two hours before bed.

### **Light**

- Install light blocking curtains or shades to darken the bedroom and bathroom.
- Wear eyeshades if needed, to block light during sleep.

### **Sound**

- Wear earplugs or use a white-noise machine, such as a fan, to block out noises.
- Install carpeting and drapes in the bedroom.
- Silence your phone, including text notifications.

### **Food**

- Avoid caffeine at least six hours before your bedtime.
- Avoid alcohol after work. Although it may bring initial drowsiness, alcohol disturbs deep sleep.
- Eat a light snack but avoid too much sugar or fats before bedtime. Don't go to bed too full or too hungry

### **Exercise**

- Don't exercise at least three hours before you go to bed. Exercise increases mental alertness and raises the body's temperature. It should not be done too close to your bedtime.

### **Driving danger**

Another concern is returning home after work. For workers that are already fatigued from poor sleep and a long shift, the drive home can be dangerous. A moment of inattention can be disastrous. Here are ideas to help you avoid the danger of driving when you are tired.

- If possible, carpool. Have the most alert person do the driving.,
- Drive defensively.
- If you can, stop for a short nap (15-30 min.) if you are very sleepy. Lock your vehicle and park in a safe location.

## **Conclusion**

Shift work can disrupt our health and our personal lives. Working nights puts you in a situation where you are active when your family and friends are asleep, and you need to sleep when they are active. Careful planning helps you maintain as normal a life as possible while ensuring you get the good quality sleep you need to avoid fatigue.

### **Ask the group**

- What helps you sleep and when do you sleep best?
- What foods and beverages should you avoid just before bedtime?
- How do family members deal with your need to sleep during their active time?
- What time of day are you most tired? How do you counteract that tiredness if it is during work?
- Does lack of sleep effect the quality of your work?

## **Group Activity**

- Talk about methods to deal with fatigue and problems arising from shift work. For example, in the work place avoid repetitive tasks and monotonous sounds if possible.
- To reduce shift-work stressors, develop strategies to deal with scheduling and work assignments.

## **Resources**

[National Safety Council Safety Topics: Fatigue](#)

[NIOSH Plain Language About Shiftwork](#)

[OSHA Long Work Hours, Extended or Irregular Shifts, and Worker Fatigue](#)