



Workplace Safety

## 4 Safety Takeaways from Fatigue Risk Management System Programs

Gillian Scott | Feb 21, 2019

When workers are tired, it's harder for them to focus. They're more likely to make mistakes, and tasks may feel like they take more effort than usual. In a manufacturing workplace, that kind of fatigue can have serious consequences, leading to accidents, injuries and even fatalities.

"A typical employer with 1,000 employees can expect to experience more than \$1 million lost each year to fatigue," reports the *National Safety Council* (NSC). That includes both absenteeism and losses when employees are at work but are not fully functioning. The NSC *notes* that 69 percent of employees surveyed reported feeling tired at work.

Fatigue risk management systems were designed to help aviation companies keep workers—who may be working overnight or for extended hours—alert and safe on the job. But the principles used in the aviation industry may have valuable information for managers in other industries, including manufacturing.

### How Worker Fatigue Impacts Workplace Safety

#### #1: Sleep Is Key

In 2018, the NSC released a series of reports addressing the causes and consequences of workplace fatigue. "Fatigue affects every workforce," the NSC says in the first report, "*Fatigue in the Workplace: Causes & Consequences of Employee Fatigue*." "Fatigue decreases a worker's ability to think clearly, make informed decisions, and be a safe and productive worker."

According to a study published in *Sleep Medicine Reviews* in 2014, approximately 13 percent of workplace injuries can be attributed to sleep problems. In addition, the study concluded that workers with sleep problems were 1.62 times more likely to be injured than workers without sleep problems. In addition to injuries, the study notes that a lack of sleep can lead to diabetes, obesity, burnout and poor job performance.

The American Society of Safety Professionals (ASSP) has also been studying fatigue. In a *report released*

*in December 2018*, the society noted 57.9 percent of respondents to their survey reported feeling fatigued in the week prior. Respondents were most likely to report feeling the affects of that fatigue in their ankles, feet, lower backs and eyes.

Whether it leads to accidents and injuries or not, fatigue will inevitably impact a company's finances. NSC developed a ***Fatigue Cost Calculator*** to help employers determine how fatigue affects their bottom line.



*Concerned about injuries on the job? Use our Workplace Injury Cost Calculator to see the impact.*

## What Causes Fatigue in the Workplace?

### #2: Long Hours, Commuting and Extended Shift Work Are Partly to Blame

Off-the-job sleep problems that can leave workers tired include insomnia, obstructive sleep apnea and restless leg syndrome. These are not factors that an employer is easily able to influence.

But some workers are more likely to get tired on the job than others due to the very nature of their work. According to the NSC "Fatigue in the Workplace" report, some other risk factors for workplace fatigue include:

- Shift work
- High-risk hours (nights and early mornings)
- Jobs that require sustained attention or are physically or cognitively demanding
- Working shifts that are 10 or more hours long
- Working 50 or more hours a week
- Not getting rest breaks
- Not getting at least 12 hours off between shifts
- Long commutes

## Measuring Worker Fatigue

In 2018, the American Society of Safety Professionals (ASSP) conducted *a study* on 25 participants. Using wrist, hip and ankle sensors, researchers were able to measure worker performance and fatigue without interfering with their normal work process.

"We identified behavioral changes in how people conduct work over time," Lora Cavuoto, Ph.D., an associate professor at the University at Buffalo and one of the study's authors, *told EHS Today*.

"For example, we saw how workers performed the same task in the first hour as compared to the third hour when fatigue became a factor," says Cavuoto. "Wearable technology can uncover precursors to larger problems and help establish safety interventions that may call for scheduled breaks, posture adjustments or vitamin supplements that help the body."

The study also includes recommendations for manufacturing facilities that want to measure worker fatigue.

## How the MRO System in Aviation Manages Fatigue

### #3: Focus on Rest Between Shifts

According to the *International Air Transport Association* (IATA), fatigue risk management systems (FRMS) were developed to manage the fatigue that is inevitable in a 24/7 operation.

"An FRMS allows an operator to adapt policies, procedures and practices to the specific conditions that create fatigue in a particular aviation setting," says the IATA.

An FRMS limits factors like flight time, flight duty periods, duty periods and rest periods. But FRMS are also used for the MRO side of aviation, helping limit fatigue for the workers who maintain and repair equipment. It is these standards and systems that can be applied more easily to manufacturing.

"There are two primary ways to address fatigue in maintenance organizations: duty time limitations or an FRMS," William L. Rankin, Ph.D., *writes for Boeing's AERO magazine*. "However, there is general agreement that duty time limitations are not the best approach in maintenance because they do not deal with the root problem of fatigue."

That is, it doesn't help to limit the time workers are on duty if they get fatigued during a normal shift or if they are not getting adequate rest when they're off duty.

**"In maintenance, falling asleep at work is not the main hazard created by fatigue. Rather, a fatigued maintainer is at increased risk of maintenance errors due to impaired mental functioning."**

Maintainer Fatigue Risk Management Advisory Circular  
Federal Aviation Administration

## How Fatigue Risk Management Systems Are Combating Worker Fatigue

### #4: Naps, Bright Lights and More Breaks Can Help

"In maintenance, falling asleep at work is not the main hazard created by fatigue," the Federal Aviation Administration says in its ***Maintainer Fatigue Risk Management advisory circular***. "Rather, a fatigued maintainer is at increased risk of maintenance errors due to impaired mental functioning."

The FAA says that though maintenance workers face a unique set of challenges, they also have access to a wider range of fatigue countermeasures than flight crews or vehicle drivers. "Maintenance organizations have greater opportunities to alter the scheduling and method of task performance in response to the threat of fatigue," the agency says.

The FAA suggests the objectives of an FRMS for maintenance workers should be:

- To reduce the level of fatigue workers experience on the job through methods such as education, allowing naps and making adjustments to hours of service and shift schedules.
- To reduce the number of mistakes made by fatigued workers through methods such as requiring more work breaks, providing caffeine or brighter lighting, and introducing task steps that capture errors.
- Task-specific changes focus either by changing how a task is performed (such as by working in pairs) or changing when it is performed (such as by scheduling challenging tasks at the beginning of a shift when workers are most alert).
- To minimize the operational consequences of errors, including those caused by fatigue, by keeping "the most safety-critical tasks out of the hands of the most-fatigued people."



*For help reducing workplace fatigue, check out our **anti-fatigue mat guide**.*

The FAA notes that applying FRMS strategies benefits both companies and employees, reducing not just on-the-job accidents and injuries, but also reducing absenteeism, turnover, morale problems, insurance claims and damage to equipment.

Whether or not they implement an FRMS, the NSC recommends that companies take precautionary measures to manage fatigue and educate employees about fatigue with posters and infographics as well as by including fatigue in safety talks and in newsletters and other communications.

*How does your company address workplace fatigue?*

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