

By Ami L. Randall

Risk Never Sleeps

Containing
the Costs and
Risks of

24/7

The 24/7 economy may look profitable on paper, but not if potential profits are eaten up by lawsuits and skyrocketing insurance premiums.

EACH NIGHT, as many Americans drive home from work, 25 million people are just starting their day. The global phenomenon of 24/7 is here to stay.

Running nonstop can be good for businesses and their clients. Companies that run 24/7 lower their per-unit costs, shorten their supply chains, increase asset utilization, and provide high-quality customer service and convenience. But these benefits are not without cost. The average “round-the-clock” operation is riddled with unmanaged risks and costly liabilities, including increased accident rates, disproportionate health problems among shiftworkers, rapidly expanding legal liabilities, and even rising insurance pre-

miums linked directly to 24/7 workforce problems. Fortunately, it's possible to successfully manage the unintended costs, risks, and liabilities of 24/7 operations.

To understand the challenges of 24/7, one must first be familiar with the identity of the 24/7 workforce. Currently, more than one-quarter of the U.S. workforce works outside the traditional hours of 9 to 5. Though the term “shiftworker” is typically used to describe blue-collar, high-school-educated, unskilled, or semi-skilled laborers, today's night shift employee looks a little different. Now the paradigm includes logistics specialists, transportation providers, customer service agents, technical support personnel, and even retail clerks.

It should come as no surprise that there are now more than 1,500 Wal-Mart stores open for business 24/7. Indeed, the typical shiftworker in 2003 may be highly educated, technically skilled, and even working in a white-collar position. Employees are also increasingly female, often single parents, and may not speak English as their first language. This changing workforce reflects a transformation in the types of companies whose operations have expanded to 24/7.

The changing workforce is critical to consider when managing the costs and risks of 24/7 operations. While shiftwork managers of the past may have been primarily concerned with industrial accidents and injuries, the manager of today must consider the impact of 24/7 across the supply chain. While safety is still a major consideration in manufacturing, 24/7 problems can just as often be found in trucking accidents, turnover problems among service personnel, child-care breakdowns and absenteeism among call-center operators, and runaway overtime across all company operations.

Costs, Risks, and Liabilities

The primary problems associated with running 24/7 can be categorized into three groups: safety, performance, and health. Yet the trouble doesn't end there. For each of these immediate concerns, there are costly aftermaths, including increased workers' compensation claims, negative public relations, and lawsuits—many of them class-action.

Safety problems are often the most recognized aspect of 24/7 operations. Some of the most troubling industrial accidents of our time have been linked to human factors in the 24/7 workplace, including the ExxonValdez oil spill, the Bhopal chemical release, the Chernobyl meltdown, and the space shuttle Challenger explosion. Each of these disasters, or the decisions that led to them, occurred between 12:00 a.m. and 5:00 a.m. Indeed, it should be no surprise that there are five times more industrial accidents and up to 20 times more transportation accidents during the overnight hours, when employees exhibit poorer judgment, slower reflexes, and a lack of concentration and focus.

It's well-known that human error caused by fatigue is the cause of nearly 90 percent of all accidents and injuries. Still, many managers mistakenly fault behavioral or performance problems as the source of human-error accidents and injuries. In fact, physiology may just as often be at fault. In study after study across a range of industries, fatigue is found to be the culprit of between 30 and 50 percent of all human-error accidents and injuries. And the cost? Studies have pinned the price tag of fatigue-related accidents and injuries to U.S. businesses at roughly \$77 billion each year, including cleanup costs, fines, lawsuits, and lost productivity.

Work hours are also a major contributing factor in many accidents and injuries. It's well-documented that human performance declines after four consecutive 12-hour shifts or seven consecutive 8-hour shifts. Yet 24/7 employees are working longer

hours than ever. The 2002 Shiftwork Practices Survey conducted by Circadian Technologies, Inc. found that the average shiftworking employee works 248 hours of unscheduled overtime each year, with more than 10 percent of these employees working more than 500 hours of overtime.

Not surprisingly, a study at one large petrochemical facility found that the divisions with the highest levels of overtime also had the most accidents, the most injuries, and the highest levels of severe health problems. Likewise, an assessment of several offshore oil rigs, at which rig hands worked 14 consecutive 12-hour shifts, found that most accidents occurred on the first night shift (when employees were not yet adjusted to the working hours), and the last shift before going off duty (when cumulative fatigue had built up to dangerously high levels).

But the 24/7 problem is more than just accidents. Research at many facilities has found decreased quality assurance, reduced productivity, and falling employee performance levels during the overnight and post-lunch dip hours. In one groundbreaking study adapted from Dawson and Reid (1997), scientists determined that a person who has been awake for 22 straight hours—not uncommon for a shiftworker working her first night shift after a weekend off—is impaired to the same level as a legally intoxicated person with a 0.08 blood alcohol content.

Since performance correlates directly to a person's alertness, employees are most susceptible to performance problems during the overnight and post-lunch hours, when the human body is naturally at its lowest state of alertness. In one study we conducted at an electronics manufacturing facility, quality assurance inspectors missed five times more errors during overnight and post-lunch hours than at other times of day. Estimates are that performance-related errors leading to scrap and rework cost companies \$55 billion each year.

Fatigue isn't the only factor affecting performance in 24/7 operations. In fact, concerns such as child care, elder care, and college classes are increasingly affecting performance and employee retention in shiftwork operations. The Bureau of Labor Statistics reports that 10 percent of shiftworking employees are single mothers, and more than half of shiftworking employees have children. Yet, less than two percent of facilities provide child care services during the overnight hours, and fewer than one-third of managers even know about the availability of extended-hours child care in their areas. As a result, 29 percent of employees report that they've experienced a child-care breakdown within the last three months, forcing them to call in sick.

What's the outcome? Employees who experience a breakdown between work and family issues are three times more likely to quit than employees who don't. With the costs of recruiting and training new employees running anywhere from \$5,000 to \$25,000, the costs of failing to address work-family breakdowns can be severe.

Given the sharp increase in health care costs, risks related to health are also an increasingly expensive problem caused by



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Improper shift scheduling, inadequate training on managing a shiftwork lifestyle, and limited prevention programs can significantly contribute to the severity of shiftworkers' health problems. For example, one survey of an automotive glass manufacturer found that the facility was spending \$800,000 each year on medication to treat ulcers and indigestion; following the implementation of a "bio-compatible" shift schedule, these drug costs disappeared.

Assessing the total costs of health problems linked to shiftwork can be difficult, though one 1994 study, "Understanding Human Limits in a World that Never Sleeps: The 24-Hour Society" by Martin Moore-Ede, M.D., Ph.D., estimated the cost to be \$6 billion per year; no doubt, given annual health care cost increases of 30 percent, that number is likely to be significantly higher today.

Rising 24/7 Costs Increase Liabilities

The performance, safety, and health challenges associated with 24/7 operations have inevitably led to a flood of lawsuits and increasing legal liabilities for employers. Major new areas of employer liability include employee actions while offsite and off duty, failure to limit working hours, and shiftwork-related violations of the Family Medical and Leave Act (FMLA) and the Americans with Disabilities Act (ADA). These new liabilities come on top of a long history of civil and criminal cases related to fatigue-caused accidents and injuries, in which fines can run well in excess of \$100 million.

Since a precedent-setting 1984 lawsuit against McDonald's, following a fatal car accident involving a teenage employee who worked back-to-back shifts, employers have repeatedly been found negligent in fatigue-related automobile accidents that oc-

cur when a shiftworking employee is commuting to and from work. Even if the employee is off duty and dozens of miles from his workplace, juries in multiple states have held the employer liable, with judgments ranging from \$5 million to \$20 million.

The only successful defense to date has been when an employer can demonstrate "reasonable accommodation," in which it's proven that employees were trained on how to recognize the signs of driver fatigue, napping facilities have been provided at the worksite, and employees were given the option of resting before the drive home.

Work hours are another expanding area of employer liability. As previously discussed, overtime hours are rapidly increasing for shiftworking employees. Employers have a number of options for assigning overtime duty, including mandating overtime shifts, accepting employee volunteers, holding employees over following the end of their shift, and calling in off-duty employees.

In many cases, the lure of extra overtime pay will prompt an employee—even one who may be severely overworked—to volunteer for overtime shifts. In a 2002 New Jersey district court decision, Conrail was held liable and had to pay \$50 million following the death of a rail-yard supervisor who was run over and killed by a rail-yard employee who nodded off while moving a locomotive. In this case, the employee had volunteered to work a double shift; nevertheless, the employer was judged liable for allowing an employee to work dangerously long hours that left him operating in a fatigued state.

In recent years, employers have also been served with an increasing number of shiftworker complaints alleging discrimination and unfair work practices based on FMLA and ADA regulations. In several FMLA cases, female shiftworkers who were working fixed day shifts when they took maternity leaves were assigned to night shifts upon their return. Even though the pay and work duties were equal for both shifts, the employers were found in violation of FMLA provisions since the day and night

shifts were not judged to be "equivalent" positions (FMLA requires that employees assign employees to their old job, or to an equivalent position, upon their return from leave).

Likewise, several shiftworking employees with depressive disorders filed ADA claims demanding to be transferred from night shifts to day shifts, and were successful. Arguing that shiftwork has been demonstrated to exacerbate depressive disorders, the employees argued that "reasonable accommodation" must be provided by transferring them from night and rotating shifts onto fixed day shifts.

Shiftwork Liabilities and Insurance Rates

What does all this mean for insurance providers, as well as those companies that are experiencing rapidly increasing premiums? The trucking insurance market can provide one telling example.

The National Transportation Safety Board (NTSB) has recently cited driver fatigue as the No. 1 cause of serious accidents and injuries in the trucking industry. But these accidents aren't spread evenly throughout the day. In fact, an examination of insurance claims data shows that 77 percent of all trucking accidents occur between the hours of 11 p.m. and 7 a.m., the same hours when human alertness and performance are at their lowest levels.

The data also show that these fatigue-related accidents tend to be significantly higher in cost and injury than other accidents. The consequences have been clear for trucking insurers, with loss ratios as high as 160 percent (as was the case for the trucking underwriting department of one major international insurer).

Examining several cases in greater depth can be particularly telling. In one study (Circadian Technologies, Inc. analysis of claims data provided by Allianz Australia) data were gathered at a large trucking company with annual revenues of \$2 billion to \$3 billion. The company experienced 105 fatigue-related accidents in 2001, which represented 5.48 percent of the total accidents for that year. The total cost of the fatigue-related accidents was \$20 million, or 42.55 percent of the total cost of accidents that year—an extreme imbalance. The relative cost of fatigue-related accidents was \$0.01 per mile, and represented 0.71 percent of company revenues for 2001.

A second study analyzed claims data for a mid-size trucking company with annual revenues of \$50 million to \$100 million. In 2001, the company experienced 19 fatigue-related accidents, representing 11.24 percent of the company's total accidents for that year. Yet the total cost of these fatigue-related accidents was \$1.3 million, or 81.25 percent of the total accident costs in 2001. This translated into a cost of \$0.02 per mile, or a staggering 2.07 percent of company revenues for 2001 (virtually wiping out the company's slim profit margin). Not surprisingly, the compa-

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ny's insurance carrier, which was carrying a loss ratio of 147 percent (\$1.47 paid out for every dollar taken in premiums) on its coverage of this company, was on the verge of dropping coverage and suggested a new approach to managing fatigue.

The result was a Fatigue Management Plan (FMP) that took into account several company policies and procedures as well as driver schedules and customer relationship management. After the implementation of the fatigue-management program, the loss ratio decreased to 23 percent (\$.23 paid out for every dollar taken in premiums), with zero fatigue-related accidents in 2002.

Mitigating the Downside

If left unmanaged, the costs and risks of 24/7 operations can cost a company tens of millions of dollars in unnecessary labor unrest, accidents, performance errors, health afflictions, and legal liabilities. Although the benefits of operating 24/7 are myriad, they don't compare to the long-term effects of overlooked hazards in the workplace and the exponential liabilities of shiftwork.

Fortunately, there are a variety of solutions to counteract the unforeseeable costs and risks that can cripple an improperly managed continuous workforce. A 24/7 workforce efficiency program is the ideal platform on which to build a comprehensive approach. Whether consolidating facilities, expanding operations, or simply attempting to improve existing workforce management programs, it's essential that corporations take several key steps:

- **Risk analysis.** Conduct a comprehensive assessment designed to identify the real impact of shiftwork on fatigue, safety, performance, health, and the resulting risks and liabilities. This will likely include an examination of accident records, workers' compensation reports, overtime and pay logs, insurance claims, and health provider data.
- **Scheduling.** It's critical to implement schedules that are conducive to maintaining efficient operations as well as ensuring the health and safety of employees. The best "bio-compatible" schedules consider the facility's basic operating requirements, employee preferences, and necessary physiological parameters. In a transportation, logistics, or customer service operation, in which hours-of-service regulations and customer demand drive workload, more advanced "proportional staffing" solutions will likely be required.

For example, the Canadian National railroad uses highly advanced scheduling algorithms to match train crews to train flow in a manner that maximizes the efficient movement of freight while minimizing crew costs and the level of crew fatigue.

- **Training and support.** Because shiftwork poses physical, mental, and social stresses unknown to most day workers, managers and employees must be taught how to cope with the difficulties of shiftwork. A "best practices" training program for shiftwork managers and their employees should include information on maintaining alertness, getting good daytime sleep, maintaining proper shiftwork nutrition, managing shiftwork-related stress, minimizing the risks of fatigue-related accidents and injuries, and maintaining a positive family and social life.

An effective 24/7 workforce efficiency program will combine each of these suggestions to create a comprehensive approach designed to minimize the costs, risks, and liabilities of 24/7 operations. Employers can contain rising health care expenditures, unnecessary accidents and the cost of legal liabilities by implementing effective workforce efficiency programs. And they can also maintain continued positive labor relations and high worker productivity by addressing the fatigue and lifestyle issues inherent in 24-hour operations.

The extent to which employers become committed to and deal with the human-factor challenges of shiftwork operations will determine whether the promise of 24/7 is a driver of corporate profitability, or just another unintended consequence. ●

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