IPIECA

International Association of Oil & Gas Producers

Extended Hours

Working for extended hours, whether through a shift system, overtime, on-call, or catching up on work at home following a day in the office, can potentially result in fatigue through sleep loss.

In order to maintain a high level of alertness and performance, we are best suited to being awake for no more than about 16 hours following 8 hours of good quality sleep, although these values can differ slightly among individuals. However, you cannot 'train' yourself to work for longer or to need less sleep.

After being awake for 19 hours, even with 8 hours of good quality sleep beforehand, our reaction times are around 30% slower than when we are fully rested. The increased sleepiness from being awake all day and the slower reactions are fine if we are at home, at the end of our working day, but for those working overtime, or on-call emergency response workers, this reduced performance and our slowed reactions can have significant impacts for safety and productivity.

If you have not been able to get as much sleep as you might need, or are awake when you would normally be asleep, the reduced performance and longer reaction times occur more quickly.

WHAT CAN I DO ABOUT IT?

Sleep: In order to maximise the length of your period of 'useful wakefulness', try and make sure that you sleep as much as you need (between 7-9 hours for most people) as often as possible. If your work schedule makes this difficult during the night, try napping during the daytime to top-up your sleep and increase your total in 24 hours.

Be aware of the early warning signs of reduced alertness: the longer we are awake, the more performance levels decline. It is important to be aware of the early warning signs that you need rest. Problems with concentration, maintaining focus, and visible signs, such as yawning, should not be ignored: they are an early warning that it is time to take a break.

Take breaks: During long work days, planning and taking regular breaks away from the work environment will help slow reductions in your performance. If possible, use the break to get some natural light (or move to a brightly lit area if the break is at night), and to refuel yourself with food and water. If you have a longer (at least 30 minutes) break at night, the best use of time is to take a nap – if this is permitted by your area of the Business. After informing your colleagues, move to a quiet location, ideally where you can lie-down. Set an alarm for 20 minutes and lie-down. When the alarm goes off, get up and walk around for 10 minutes until any post-sleep grogginess has gone. If possible, have 1-2 cups of coffee before attempting to sleep, the caffeine will kick-in while you are sleeping, giving you the dual benefit of sleep and caffeine when you return to work.

WHAT CAN THE COMPANY DO?

Limit duration of on-call periods

Research shows that when workers are on-call, they experience higher levels of anxiety, lower sleep quality, and poorer performance the next day – even if they are not called. If workers are called in during the night, they also suffer sleep loss. Make sure that on-call periods are short, and rotated amongst the team to allow for recovery from both the sleep loss associated with any call outs, and the impacts on sleep of just being on-call. As far as possible, on-call periods should be separated by an off-duty night from the next

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work period, to allow for recovery – especially when the worker is highly likely to be called out, and therefore lose sleep.

Reduce uncertainty

One of the major stressors for workers on-call is the uncertainty associated with the possibility of being called out and the impact this has on sleep quality and duration. Where possible, try to build some predictability around the on-call periods, such as a 'no-contact period' to allow workers to prepare themselves by planning sleep. Informing the employee of the extended shift as early as possible within the shift allows the worker more time to plan and address their needs, and therefore they are less likely to experience stress during the extended period.

Limit out-of-hours working

As lowered performance in office workers decreases productivity, and out-of-hours working can interrupt sleep, enact a 'no contact' policy, turning off work emails for office workers/managers.

Consider shift duration

Twelve-hour shifts may seem an attractive option – the working week is compressed; depending on the shift timing, shifts can be scheduled to encompass times of high circadian alertness as well as the times of low alertness in the middle of the night; and the number of shift handovers (a recognised time of elevated risk) are reduced. However, data shows there was an overall decline in alertness in a workforce who moved from 8 hour shifts to 12 hour shifts, primarily due to the longer working time per day. When comparing longer shifts (12 hours or 16 hours) with shorter shifts (8 hours), generally, there is an overall decline in alertness across the workforce. However, the findings for individual shifts may vary depending on workload during the shift, any nap-opportunity provided, rest time between shifts, and whether workers on the longer shift adjust their behaviour (e.g. by sleeping longer). If the longer shift requires work at the same/similar rate to the shorter shifts, does not allow nap opportunities, and/or is not followed by longer compensatory rest, then it is expected that the fatigue level will be elevated compared to shorter shifts.

Even where 12 hour shifts are not the norm, overtime can result in working for an extended duration, and therefore reduced alertness and performance associated with such extended working times. Be aware of the potential for reduced alertness to affect operational performance if workers are working for longer than normal and put in place mitigations to address this additional risk.

Be mindful of overtime

While normal working hours (e.g. 84 hours per week for North Sea Oil and Gas personnel) usually allow workers to obtain sufficient sleep between shifts, working overtime is associated with sleep loss. One study showed that those working an 'average' amount of overtime (16 hours per week), were able to obtain 6.5 hours of sleep per night, less than the 7-9 hours that most of us need. This sleep loss increases as the amount of overtime increases – those working 33 hours or more of overtime per week obtained 6 hours of sleep per night. Evidence suggests that sleep loss at this level is associated with negative health and safety outcomes.

Longer work durations during the day result in less opportunity for sleep. No matter the duration of work, workers should always try to ensure that they have obtained at least 6 hours (but ideally 7-9 hours) of sleep, and the company must provide opportunity for this. The Company Fatigue Management Plan may contain an assessment that supervisors can use prior to authorising overtime, to reduce the likelihood of having a significant impact on sleep.

Be aware of extended roster periods

Working a roster consisting of two weeks on/two weeks off can be associated with different levels of fatigue, depending on the arrangement of shifts and positioning of night shifts. Where a fixed-shift rotation is worked (i.e.,, alternating day-shift and night-shift tours), and workers do not need to adapt to a changing shift timing during the work period, studies in oil and gas worksites and at remote construction sites have found that there is no clear evidence of cumulative fatigue over the course of a 2 week offshore work period – when this consists of only day shifts. When working a full work block of night shifts, the 14-day period allows for a much greater degree of adaptation, and improvements in subjective alertness, sleep quality and end of shift reaction time are all noted after 5-6 days offshore compared to the first day. When working swing-shifts (i.e., nights-to-days, or days-to-nights), the shift-change within the middle of the block, and the associated requirement to adapt, leads to elevated levels of cumulative fatigue, particularly during the second week. This is greater when night shifts are worked first.

Extended breaks also provide an opportunity to spend time with family. Breaks should be regular, predictable, and proportional to the amount of work. For example, in the Norwegian offshore industry, worktime regulations require the off-duty time between two blocks of work to be at least as long as 1/3 of the time spent at work. The longer the work sequence, the more workers will benefit from even-time rosters (e.g., 14 days on/14 days off), as the extended break permits recovery time from cumulative fatigue, time to be spent with family, and preparation for the next work period. In remote Fly-In, Fly- Out/Drive-In, Drive-Out (FIFO/DIDO) operations, due to the isolated nature of these sites, the time taken to get to/ from the site can potentially take 1-2 days. The breaks should therefore also take account of the time required to commute to/from the work site, as well as the duration of the block of work.

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A series of studies supported by the UK Health and Safety Executive identified that cumulative fatigue is increased when work blocks exceed 14 days. Additionally, the ratios of fatalities and severe injuries, compared to more minor injuries, increases sharply when work blocks exceed 14 days (however, it was not possible to determine fully from the data whether this was due to cumulative fatigue).

A study of 80 expatriate workers in a desert based oil field, carried out by the Institute of Occupational Health at Birmingham University, who were working extended roster periods (21 – 56 days) found that such long durations were associated with increased fatigue levels, confusion, and anger across the duration of the roster period, with the time away from home and missing family life having a significant impact. Particularly challenging are roster periods that are extended unexpectedly, for example due to bad weather preventing transport arriving, or staff-shortage meaning no back-to-back replacement worker arrives. It seems that workers adapt the pace and effort of their work to match the duration of the roster period, and if this is suddenly extended, then fatigue is elevated and mood is decreased.

Key references

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