



A GMB Reps guide to shift work

Shift work in the UK

The number of shift workers in the UK has gradually increased over the last 25 years, reaching a peak in 2005, when around 15% of the working population (3.80 million people), worked shifts for 'most of the time'. Since then numbers have stabilised, with around 14% of the working population (3.60 million people) now doing shift work 'most of the time'.¹

Traditionally in the past shift work was associated with industries where 24-hour operation was either necessary (e.g. essential public services like hospitals, the police, the fire brigade and the utilities) or practical (e.g. the transportation, chemical, mining and other processes and manufacturing industries). The recent upward trend in the percentage of people employed in shift work reflects an adoption of shift work beyond the traditional sectors.² For example Supermarkets, Petrol Stations, Call Centres, Local Authorities commonly employ shift workers.

This trend has developed because of changes in society, supported by workers who are prepared to do shift work. There may be several reasons for this, such as the recent shift towards a 24-hours society, lack of employment options or a preference for compensatory factors such as flexible working, better pay or time off in lieu.

What is meant by shift work?

There is no specific classification of shift work in law, but the Health and Safety Executive's (HSE) definition is as follows:

- Work actually scheduled outside standard daytime hours, where there may be a handover of duty from one individual or work group to another; or
- A pattern of work where one employee replaces another on the same job within a 24-hour period.³

The HSE definition of standard daylight hours are considered as follows:

- A work schedule involving an activity during the day, commonly for a period of eight hours between 7:00 am and 7:00 pm; and
- There are usually two periods of work, one in the morning, and the other in the afternoon, separated by a lunch-time break.

In this guidance, all systems of work other than standard daytime hours are considered as shift work. Examples of shift work might be:

- Work during the afternoon, night or weekend, typically with periods of the work schedule outside standard daytime hours;
- Extended work periods of 12-hours or more, often associated with compressing the working week;
- Rotating hours of work;
- Split shifts where work periods are divided into two distinct parts with several hours break in between;
- Overtime; and
- Standby/on-call duties.

How employers should assess and manage the risks associated with shift work?

Employers are required under Regulation 3 of the Management of Health and Safety at Work Regulations (as amended) 1999, to undertake a "*suitable and sufficient*" assessment of the risks associated with shift work as part of their organisations health, safety and welfare management system. This assessment should be reviewed periodically and whenever changes are considered. The risk assessment requires the employer to consider risk factors at work and those who might be harmed as part of the organisations undertakings. The assessment need to take full account of the hazards associated with fatigue, and the likelihood of fatigue occurring because of shift working.

The HSE publication Successful health and safety management⁴ describes a systematic approach to assessing and managing health, safety and welfare risks. A best practice approach based on the HSG65 guidelines that you might wish to use to manage shift working arrangements, has been summarised in Figure 1.

This approach will allow you to assess and better improve and organise your shift work schedules. You may also wish to consult outside organisations where improved workplace standards have been developed for your particular sector of industry.

For example when:

- Your organisation has difficulty making decisions;

- Shift working schedules are becoming to complex; and
- There are safety critical issues to consider.

Figure 1 **A systematic approach to assessing and adequately managing the risks associated with shift working.**

<p>Consider the risks of shift work and the benefits of effective management.</p>	<ul style="list-style-type: none"> • What are the undesirable effects of shift work? • Consider the costs and benefits of effective management of shift working arrangements.
<p>Establish systems to manage the risks of shift work.</p>	<ul style="list-style-type: none"> • Seek managements commitment to control the risks of shift work; • Identify individuals responsible for shift-working arrangements; and • Consult safety representatives <i>"in good time"</i> and their members.
<p>Assess the risks associated with shift work in your workplace</p>	<ul style="list-style-type: none"> • Consider the risks that workers may be exposed to; • Establish who might be harmed by shift work; and • Consult safety representatives <i>"in good time"</i> and their members.
<p>Take action to reduce those risks</p>	<ul style="list-style-type: none"> • Assess how severe the risks identified are and identify where improvements need to be made: • Improve the shift work schedule; • Improve the working environment; and • Apply appropriate control procedures.
<p>Check and review your shift working arrangements regularly</p>	<ul style="list-style-type: none"> • Implement a system for early reporting of problems associated with shift work; • Monitor alterations to shift work schedules and/or conditions; • Periodically review the effectiveness of the shift working arrangements.

Consider the risks of shift work and the benefits of effective managerial control methods.

Research has shown that there can be undesirable consequences for those working shifts outside standard daylight hours particularly those covering the night or with early morning starts.⁵

For example shift work may result in:

- Disruption to the internal body clock;
- Fatigue;
- Sleeping difficulties;
- Disturbed appetite and digestion;
- Reliance on sedatives and/or stimulants; and
- Social and domestic problems, which can affect performance;
- Increase the likelihood of errors; and
- Accidents at work might have a negative effect on health.

Disruption of the internal body clock (cardiac rhythms)

By nature, humans are active and perform best during the day and need to sleep at night when performance is generally poorer. We follow this innate pattern because of an internal body clock, located within the brain which sets the daily cycle of biological activities, such as chemical and hormone release that influence body activity. For example, heart rate, blood pressure and body temperature are increased during the day. At night they are reduced and we slow down and feel sleepy.

The daily cycle is known as cardiac rhythm and explains why we eat and sleep at similar times each day⁶. External factors or cues such as daylight, meal times, clocks and working hours help to regulate this internal body clock, and play an important role in keeping our bodies in step with the world around us.

Our internal body clock can change gradually, but for most people it is resistant to the abrupt changes in the sleep/wake cycle that are required by shift work schedules or flying across time zones. This can cause our natural daily rhythms to become out of tune with the world around us. This is the reason why we can feel 'out of sorts' and less able to function to the best of our ability when we do not get enough recovery time from the end of one shift to the commencement of another.

However, our internal body clock will never fully adjust, even for workers on permanent night shifts. Those regular night workers who change back to daytime routines during rest days will continue to suffer the consequence of a disrupted internal clock, as it attempts to reset daytime rhythms during days off.

Sleep disturbance/loss

A consensus view by scientists who study human performance and safety is that sleep is a powerful and vital biological need. Insufficient and disturbed sleep, chronic sleep loss and being awake for prolonged periods, increases the risk of errors and accidents.⁷

Day sleep is usually lighter and shorter in duration and therefore less restorative than night sleep.⁸ It is more often disturbed because of warmer temperatures and daytime activities such as the telephone ringing, noisy children or domestic responsibilities. While we can rearrange some external cues, for example meal times, it is difficult to control all influential sleep/wake cues, particularly daylight. For example exposure to bright light at dawn after a night shift may make you less inclined to sleep.

People's adaptability means that we can, if we need to, resist our internal body clock and function for periods with either reduced sleep or even no sleep at all. The cost of resisting this need to sleep is known as 'sleep debt'. The desire to recover this debt can be hard to resist, particularly when external cues or our body's internal body clock are driving us to sleep.

Research reveals that when we are sleep deprived and/or fatigued, performance is affected and errors are more likely.⁹

This particularly applies to tasks that require:

- Vigilance and monitoring;
- Decision making;
- Awareness;
- Fast reaction time;
- Tracking ability; and
- Memory.

Fatigue

Fatigue is the decline in mental and/or physical performance that results from prolonged exertion or load, lack of quality sleep, insufficient recovery time or disruption of the internal body clock.¹⁰ The degree to which a worker is prone to fatigue is also related to workload. For example, work that requires constant attention, is machine paced, complex or monotonous will increase the risk of fatigue.¹¹

A poor balance between the demands of work and the time provided for rest and recovery, resulting for example, from poorly designed shift work schedules and long working hours is likely to result in chronic fatigue.

The consequences of fatigue include reduced alertness, poor and slow perception and sleepiness.¹² Chronic fatigue has also been associated with a number of long-term health problems.¹³

Errors, productivity and accidents

For shift working to be financially viable, employers need to maintain a suitable and satisfactory level of productivity, health, safety and welfare provision.

Fatigued shift workers may perform less well than those working standard daytime hours, especially during periods of low alertness. The consequence of this could range from relatively minor events to serious accidents. Employers need to look at both ends of the spectrum when assessing the cost-effectiveness of shift working as the social and financial cost of frequent minor events may equate over time to those associated with rarely occurring serious accidents.

The risk of errors, accidents and injuries have been found:

- To be higher on the night shift;
- To rise with increasing shift length over eight hours;
- To increase over successive shifts, especially if they are night shifts; and
- To increase when there are not enough breaks.¹⁴

Poorly designed work schedules causing fatigue-induced impairment of performance will increase the risks. For example, a long night shift without breaks after a succession of previous night shifts will increase the likelihood of errors, accidents and injuries.

It is important not to underestimate the potential risk for serious fatigue-related errors and accidents. Sleepiness is thought to be the cause of up to one in five accidents on major roads in the UK,¹⁵ contributing significantly to the approximate 3,400 road deaths recorded annually.¹⁶

After young men, shift workers are considered to be the category of drivers most at risk from accidents and, compared to day workers, night workers are more likely to be involved in accidents while driving home from work.¹⁷

Fatigue, night work and/or shift working arrangements have been cited as major contributory factors in numerous well-documented accidents and incidents including:

- Three Mile Island in 1979;
- Bhopal in 1984;
- Challenger Space Shuttle in 1986;
- Chernobyl in 1986;
- Clapham Junction in 1988; and
- Exxon Valdez in 1989.¹⁸

Health effects

As well as chronic fatigue, there is some evidence associating long-term exposure to shift work and the following health effects:¹⁹

- Gastrointestinal problems such as indigestion, abdominal pain, constipation, chronic gastritis and peptic ulcers;
- Cardiovascular problems such as hypertension, coronary heart disease; and
- Increased susceptibility to minor illnesses such as colds, flu and gastroenteritis.

Reproductive problems in female shift workers have also been reported.²⁰ While the association for reproductive effects is less strong, employers would be wise to consider shift work especially night shifts, as a potential risk to reproduction. Research into a possible link between shift work and breast cancer has been inconclusive.²¹

While the association for reproductive effects is less strong it would be sensible for employers and GMB safety representatives to consider shift work especially night shifts, as a potential risk to reproduction.

Shift workers, particularly those who work night, may be at risk of ill-health, because shift work can disrupt our body clock (by interfering with the production of hormones by the body), disturbed sleep which can cause fatigue. In recognition of the particular risks to night workers, the Working Time Regulations include a right for those workers to receive free health assessments.²²

Disruption of family and social life

A happy domestic and social life is an important foundation for health and well-being. The amount and quality of time spent with family and friend can, however, be affected by unusual patterns of work.²³ A worker who experiences a disrupted social and domestic life may feel isolated, moody or depressed, which can affect their health and performance at work.

A work schedule that clashes with domestic responsibilities can lead to a compromise between routines suited to work and those to less conflict at home. Shift-workers, especially those who spend more time with their family or fulfilling their domestic duties at the cost of sleep.²⁴ This will result in fatigue and it consequent implications for health, safety and welfare.

Individual susceptibility to the effects of shift work on health and well-being

Individual workers vary in their tolerance to shift work, because:

- Some find it easier to fall asleep, sleep for longer and adapt more easily to changes in sleep patterns;
- They may feel more alert at particular times of the day, for example some people are described as “*night owls*” while others are often described as “*larks*”;
- The ability to adapt to shift work decreases with age;
- They have differing degrees of health and fitness levels;
- They use different behaviours or coping strategies; and
- They have the ability to organise their domestic duties and social activities in line with their shifts.²⁵

While we do not have the ability to change our in-built characteristics or even halt the ageing process, it is possible to adopt coping strategies, alter behaviour and make lifestyle changes that improve sleep quality, increase alertness and reduce health risks.

Involvement and consultation with GMB Safety Representatives

By law, under the Safety Representatives and Safety Committee Regulations (SRSC) 1978 – Regulation 4A ²⁶ employers must consult with safety representatives ‘*in good time*’²⁷ with regard to any measure which may substantially affect the health, safety and welfare members the safety representative represents in the workplace.

So it is critical that employers consult with GMB safety reps in discussions about how the management of shift work might affect health, safety and welfare. The promotes a pro-active and open health and safety workplace culture, this will show a commitment that management are concerned and are willing to implement control measures that have the potential to eliminate or more often reduce the exposure of shift working hazards.

Effective management of the risk associated with shift work requires commitment from senior management, it is vitally important to make sure senior management (e.g. those who make the business decisions, allocate funds and create the drive for change) are included in the development of and/or, modification of, shift working arrangements.

Developing clear policies and procedures for managing shift work arrangements ensures that people throughout the organisation, no matter how large or small, are aware that eliminating or controlling the risks of shift working needs to be considered at all levels of planning.

Depending on the size of the organisation, it may be appropriate to appoint one or more individuals from the safety committee to take responsibility for managing the risks associated with shift working.

Broadening the scope and knowledge of shift working and their familiarisation with best practice guidance and health, safety and welfare policy and legislation will enable and help to develop a positive environment for dealing with shift working arrangements. This is a way of ensuring that different views, opinions and health, safety and welfare concerns are discussed.

Consider the risks that workers are exposed to

Employers, through their '*competent person or persons*'²⁸ need to carry out a '*suitable and sufficient*'²⁹ assessment of the risks associated with shift work as part of the company's health, safety and welfare management system. Employers should record and review the risk assessments periodically and whenever changes to shift working systems and arrangements are considered or made.

A risk assessment requires an employer to consider risk factors at work and those who might be harmed by them. The assessment should take full account of the hazards associated with fatigue, and the likelihood of fatigue occurring because of shift working. To achieve this employers need to gather and evaluate information about current shift work arrangements in their organisation. The risk assessment can then be used within the decision making process what protective and preventative managerial control measures are required to reduce the risks in consultation with GMB Safety Representatives.^{30 31 32}

There may, however, be other risk factors that only apply to your industry or sector; so it is important to think about any additional risk factors of shift work design in your organisation. For example, while all workers are potentially at risk from shift work, employers should consider certain groups who are more vulnerable than others.

These include:

- Young workers;³³
- Older workers;³⁴
- New and expectant mothers;³⁵
- Workers with pre-existing health conditions, which may be made worse by shift work, such as those with gastro-intestinal problems, coronary heart disease and sleeping problems;
- Workers taking time-dependency medication such as insulin;
- Temporary³⁶ or older workers, such as sub-contractors and maintenance workers, who may not be familiar with or be able to adhere to current shift work schedules, or who have been on a different schedule with a previous employer; and
- Workers, who following a standard day's work, have remained on call through the subsequent night or weekend.³⁷

Employers should also consider members of the public in their risk assessment, as there may be a risk they could be harmed as a result of an accident and catastrophes in which poor shift-work arrangements are a contributing factor.³⁸ To assess the risks, you will need to gather data regarding shift-work arrangements in the organisation and use it to identify areas where you can make improvements, if necessary.

Identifying issues associated with shift work can be difficult because there may be contributory factors that affect members. So it is advisable, to use a variety of information-gathering techniques to try to identify any common trends or patterns (for example, examining ill-health, accident, absence, productivity and overtime records).

Common patterns, such as increased accident rate or reduced production quality/quantity at certain times of day or over certain periods, may be symptoms of fatigue and poor shift-work designs, but also consider other factors such as work load and work activity, and employee numbers.

¹ Office of National Statistics Labour Force Survey 1992-2005

² McOrmond T 'Changes in working trends over the last decade' Labour Market trends 2004

³ Advisory, Conciliation and Arbitration Service (ACAS) Changing patterns of Work 2002

⁴ Successful Health and Safety Management HSG65 second edition

⁵ Monk TH and Folkard S Making shift work tolerable 1992

⁶ Minors DS and Waterhouse JM 'Cardiac rhythms in general' Occupational Medicine 1990 5(2)

⁷ Folkard S and Tucker P 'Shift work, safety and productivity' Occupational Medicine 2003 53(2)

⁸ Monk TH and Folkard S Making shift work tolerable 1992

⁹ Krueger GP 'Sustained work, fatigue, sleep loss and performance' 1989

¹⁰ Kroemer KEH and Grandjean E 'Fitting the task to the human' 1997

¹¹ Krueger GP 'Sustained work, fatigue, sleep loss and performance' 1989

¹² Krueger GP 'Sustained work, fatigue, sleep loss and performance' 1989

¹³ Kroemer KEH and Grandjean E 'Fitting the task to the human' 1997

¹⁴ Folkard S and Tucker P 'Shift work, safety and productivity' Occupational Medicine 2003 53(2)

¹⁵ Horne JA and Reyner LA 'Vehicle accidents related to sleep' Occupational and Environmental Medicine 1999

¹⁶ Department of Transport/Office of National statistics Road Casualties Great Britain 2004

¹⁷ Royal society for the Prevention of Accidents (ROSPA) Driver Fatigue And Road Accidents 2001

¹⁸ Mittler MM, Carskadon MA, Czeisler CA et al 'Catastrophes, Sleep and Public Policy 1995

¹⁹ Knutsson JM 'Health effects of shift workers' Occupational Medicine 2003 53(2)

²⁰ Nurminen T 'Shift work and reproductive health' Scandinavian Journal of Work, Environmental and Health 1998

²¹ Shift work and breast cancer: a critical review of the epidemiological evidence HSE 2003

²² The Working Time Regulations 1998 (as amended) ISBN 0110794109

²³ Harrington JM 'Health effects of shift work and extended hours of work' O and E Medicine 2001

²⁴ Loudon RJ and Bohie PL 'Work/non-work conflict and health in shift work' O and E Health 1997

²⁵ Costa G 'Shift work and Occupational Medicine' 2003

²⁶ Safety Representatives and Safety Committee Regulations 1978 'Regulations 4A'

²⁷ Safety Representatives and Safety Committee Regulations 1978 'Guidance notes 13(a)(b)(c)'

²⁸ Management of Health and Safety at Work Regulations 1999 'Guidance note 51'

²⁹ Management of Health and Safety at Work Regulations 1999 'Regulation 3'

³⁰ Safety Representatives and Safety Committee Regulations 1978 'Regulations 4A'

³¹ Management of Health and Safety at Work Regulations 1999 'Regulation 3 ACoP 15'

³² Management of Health and Safety at Work Regulations 1999 'Regulation 3 ACoP 34'

³³ Management of Health and Safety at Work Regulations 1999 'Regulation 19'

³⁴ Harma M 'Ageing, physical fitness and shift work tolerance' Applied Ergonomics 1996

³⁵ Management of Health and Safety at Work Regulations 1999 'Regulation 16'

³⁶ Management of Health and Safety at Work Regulations 1999 'Regulation 15'

³⁷ The Working Time Regulations 1998 (as amended) ISBN 0110794109

³⁸ Mittler MM, Carskadon MA, Czeisler CA et al 'Catastrophes, Sleep and Public Policy 1995