

Fitness for Work

Tripartite Guide

for Process and Terminal Operations Shift Personnel

in the Oil, Petrochemical and Chemical Industries

Foreword

Many companies in the oil, petrochemical and chemical industries have 24/7 process and terminal operations with personnel on shift work. Given the nature of the business and potential safety implications, these employees are required to be attentive to the task at hand. It is imperative that they maintain the required level of fitness in order to carry out their duties effectively and safely.

Ensuring fitness for work is therefore a shared responsibility between employers and employees. Companies need to allocate adequate resources to implement appropriate Fitness for Work programmes. Process and terminal operations shift personnel need to support these programmes and take ownership of their own physical and mental wellbeing.

This tripartite guide, jointly developed by the National Trade Union Congress (NTUC) and its unions under the OPEC cluster, the Singapore Chemical Industry Council (SCIC) and the Ministry of Manpower (MOM), is intended to provide general guiding principles for the oil, petrochemical and chemical industries in the management of fitness for work for process and terminal operations shift personnel.

While this guide focuses on process and terminal operations shift personnel, the principles could be applied for other roles in the oil, petrochemical and chemical industries which involve shift work, in consultation with Unions.

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1. Introduction

- 1.1 Process and terminal operations shift personnel in the oil, petrochemical and chemical industries are involved in a wide range of safety critical tasks. It is therefore crucial for these industries to take steps to ensure that personnel can perform their roles safely and effectively, with minimum risk to themselves and others.
- 1.2 A variety of interventions and programmes are needed to manage these risks, including fitness for work programmes and fatigue risk management.
- 1.3 This tripartite guide is developed to provide guidance to assist the oil, petrochemical and chemical industries in managing fitness for work for their personnel. The guide includes an approach for fitness for work and highlights measures that companies and personnel can adopt.

2. Process and Terminal Operations Shift Work in the Oil, Petrochemical and Chemical Industries

- 2.1 In the oil, petrochemical and chemical industries, job roles that involve shift work include shift supervisors, team leaders, field technicians, tanker loading and unloading technicians.
- 2.2 Fitness is often required for employees in these roles, as they need to operate equipment, climb access ladders, handle heavy loads and respond to emergencies. Mental alertness is also critical for response to process conditions and decision-making.
- 2.3 Fatigue¹ can compromise motor skills, alertness, judgement and decision-making. If fatigue risks are not well-managed, employees may have more difficulty in meeting the mental and physical demands of their tasks.
- 2.4 Personal circumstances could also affect mental and physical capacity, such as recent illness or injury. For example, recent strokes or epilepsy fits may impact an individual's ability to carry out his job.
- 2.5 As deterioration in mental or physical capacity could have various contributing factors, a combination of interventions will be needed to help personnel remain fit and healthy

¹ Shift work can disrupt a person's circadian rhythm and sleep quality as the body has to adjust to differing times. As such, shift personnel may be at greater risk of fatigue if shift work schedules are poorly managed, e.g. by having roster patterns with long shift durations or not allowing for adequate recovery between shifts.

for work. Consideration would also need to be given to whether impaired capacity for work is chronic or temporary as the solutions to each may differ.

3. Fitness for Work

- 3.1 Fitness for Work is a process that ensures that an individual can perform and complete a task safely without unacceptable risk to themselves or others. It is a part of an overall risk management system and should not be at the expense or in lieu of the operating systems and process control options to mitigate work risks to an acceptable level.
- 3.2 Being risk-based, Fitness for Work matches position requirements with reasonable health and capacity requirements. Therefore, the considerations for a field technician may differ from that of a panel technician or an individual who concurrently holds a role in the company emergency response team.
- 3.3 A typical Fitness for Work programme comprises the components depicted in Figure 1.



Figure 1: Fitness to Work

Fitness for Work Risk Assessment

- 3.4 First, list the process and terminal operations roles that have shift work. A risk assessment is then carried out to systematically identify job roles with specific physical and psychological demands. Using existing risk assessments that have been conducted for these roles, go through the risk assessments systematically to:
 - Identify the tasks that have specific physical and mental demands.
 - Identify the tasks that have direct safety implications if operator is incapacitated.

- Identify additional factors that add to the risk.
 - Evaluate whether system redesign or process-related controls could reduce the risk.
 - Evaluate whether fitness for work controls could further reduce the risk and they could be reasonably applied.
- 3.5 Employees and their immediate supervisors should be involved in this process as they are familiar with the job demands and are in the best position to propose feasible control options.

Identify Fitness for Work Assessments

- 3.6 After roles requiring fitness for work controls are identified, fitness assessments must be carefully selected. A list of health specialists should be developed, which could include occupational physicians, ergonomists and safety professionals. These specialists should be able to objectively advise on appropriate fitness assessments and the frequency of administration. The selection of fitness assessments and health specialists should be done in consultation with Unions.
- 3.7 As fitness could vary even within younger workers, assessments can be targeted but not based on age. For example, all field technicians could be assessed on their ability to carry out patrolling, climbing cat ladders or sample-taking etc.
- 3.8 To aid in the identification of fitness for work assessments, basic information could be gathered from pre-employment health screenings, annual health screenings and / or fitness for work questionnaires. Based on the information provided, clear cut cases may not need to undergo further assessment. For other cases, the information could be used as a basis for subsequent assessments, outlined in the following paragraph, that may be required to determine fitness for work.
- 3.9 Types of fitness assessments could include:
- (i) **Functional Capacity Evaluation**
Evaluates capacity to perform a task by simulating functional demands, e.g. aerobic fitness, strength tests, lifting tests.
 - (ii) **Trade Testing**
Requires individual to demonstrate capacity to complete a required task under controlled circumstances e.g. fire ground simulation tests, operator simulation training. Trade tests are typically conducted after any medical screening, to reduce the potential risk of harm resulting from the trade test.

(iii) **Medical Examinations**

Identifies physical or psychological limitations that may be incompatible with a specific task e.g. visual acuity tests, colour blindness tests, medical questionnaires, audiometric examinations, clinical assessments.

3.10 The identification of limitations in fitness assessments should only be restricted to those that materially impact capacity to complete tasks. In addition, fitness assessments should include recommendations on how to mitigate such limitations. To ensure that the assessments are fit for purpose, companies should work with the health specialists to ensure that they understand the job requirements and work factors.

3.11 When evaluating assessment outcomes, health specialists should have sufficient knowledge of the job to allow them to make specific recommendations on what tasks the person can or cannot do, without compromising medical confidentiality. They should propose interventions, assess whether work restrictions are temporary and whether a re-assessment is needed.

Consultation & Legal Review

3.12 Staff and unions should be consulted on the fitness assessments and approach selected. This allows employees' concerns to be addressed and ensures that the approach taken is fair and transparent to employees.

3.13 A legal review should be conducted to ensure that the Fitness for Work programme is in line with Singapore's legal requirements, including relevant employment and medical regulations.

Implementation

3.14 To ensure fairness and consistency, fitness for work assessments should be applied to all employees in the same role. There should be documented protocols and policies to guide the content, process and outcome of assessments.

3.15 A tiered approach could be taken with the implementation of a Fitness for Work programme. An initial assessment of functional capacity evaluation and / or trade testing could be adopted for all employees in the same role. Based on initial assessment outcomes, individuals who show a likelihood towards a higher risk may be selected for further tests or examinations.

3.16 As pre-employment and regular health screening processes are prevalent within the oil, petrochemical and chemical industries, it should be used as a basic assessment tool for any fitness for work programme.

3.17 Typically, trade tests are conducted after any medical screening process, to reduce the risk of harm that could possibly result from a trade test. Hence, it is suggested that workplaces leverage on the pre-employment and regular health screening processes before introducing functional capacity evaluations and/or trade tests. Further medical evaluations could be introduced when needed, based on results of functional capacity evaluations and/or trade tests. An example of a Fitness for Work Assessment for Process and Terminal Operations Shift Personnel in the Oil, Petrochemical and Chemical Industries can be found in the Appendix.

Frequency of Assessments

3.18 The frequency and content of assessments depend on the type of work tasks and inherent health risks. Companies should work with health specialists to determine a suitable frequency for fitness assessments.

3.19 Assessments should also be included as part of pre-employment examinations, to ensure that the recruited employee is matched to the requirements of his position. This also ensures that the new employee does not have any health-related condition that could be aggravated by job duties or which may affect the health and safety of co-workers. Furthermore, a pre-employment assessment establishes a baseline which facilitates subsequent management of employee well-being and safety. This helps employees understand the job requirements and appreciate the importance of regular fitness for work assessments.

3.20 The frequency of subsequent fitness for work assessments should be based on the latest outcomes. Assessments with acceptable outcomes could recur at a lower frequency while other outcomes may lead to further tests or examinations for confirmation, at a higher frequency of review.

3.21 For existing employees, transitional arrangements should be made when introducing fitness for work assessments to minimise stress and disruption. Assistance should be provided by companies to enable individuals to continue in their existing roles while they gradually acquire the required level of fitness.

3.22 Assessments may also need to be carried out on an ad-hoc basis, for example, after illness, injury, employee self-referrals, or referrals by supervisors following observed behaviour.

Managing Outcomes

- 3.23 Job Accommodations – For assessment outcomes that are not able to meet criteria, companies should consider job redesign or accommodations, such as physical modifications to the workplace or adjustments to the work schedule.
- 3.24 In some cases, the personnel may be evaluated to be ‘unfit’ only for some of the tasks required for his job. Employers should explore task redistribution between personnel with the same job roles (while maintaining workload equity), to allow the affected personnel to remain in his role without affecting safety or productivity.
- 3.25 In other cases, restrictions in carrying out certain tasks may be temporary. Arrangements should be made to relieve the person of some duties for a short period of time. A re-assessment is then administered after the restriction or recovery period and adjustments made to facilitate the person’s return to work, e.g. through a return-to-work programme.
- 3.26 Transfer to Alternative Work – Transfer to alternative work may be necessary if other interventions are not feasible. The company should use reasonable endeavours to facilitate the transition to a suitable position, including non-shift work roles. The company should also explore transfers to other companies within the oil, petrochemical and chemical industries, subject to agreement with the employee. As there may be limited roles for redeployment, it is critical to take preventive measures to minimise the likelihood of an ‘unfit’ assessment. These preventive measures are described further in Section 4 “Measures to Help Personnel Stay Fit for Work”.

Dispute Resolution

- 3.27 Mechanisms should be established to raise, manage and resolve disputes over fitness assessment outcomes. An independent medical review of the fitness to work assessments should be carried out to ensure that all recommendations are accurate and that all diagnoses and outcomes have been sufficiently explored. In addition, companies should consider establishing an appeals process which allows decisions made regarding fitness for work to be reviewed by a neutral third party.

Review

- 3.28 There should be a regular review of the Fitness for Work programme in consultation with stakeholders, including the Union, to ensure compliance. A review should ascertain whether the assessments remain suitable, valid and fair. The outcomes of fitness assessments and how they are managed should also be examined for their effectiveness.

3.29 Feedback mechanisms should also be put in place to facilitate employee engagement, which would provide helpful insights for programme improvement.

4. Measures to Help Process and Terminal Operations Shift Personnel Stay Fit for Work

4.1 Preventive measures are crucial to help personnel maintain their health and fitness for work including fatigue risk management systems, health promotion programmes and job redesign.

Implementing a Fatigue Risk Management System (FRMS)

4.2 Companies should identify the programmes and schedules that cause fatigue and interventions should be implemented to reduce the impact on employees.

4.3 One way of doing this is through a fatigue risk management system (FRMS), which is a structured manner of managing fatigue through preventive means. When properly implemented, physical and mental lapses arising as a result of fatigue can be minimised.

4.4 Companies should take reference from established fatigue guidelines such as API 755: Fatigue Risk Management Systems for Personnel in the Refining and Petrochemical Industries and the Workplace Safety & Health Council's Fatigue Management Guidelines.

4.5 A fatigue risk management system should include the following components:

4.5.1 Staff Workload Balance – Workload variability across shifts should be considered, taking into account start-ups, shut-downs, unplanned events, employee turnover and absentee issues. Companies should ensure that there is adequate manpower for their operations. Baseline manpower requirements for different operations should be developed based on a risk assessment of activities. To ensure that the requirements are reasonable, inputs from employees, including Union members or representatives, should be obtained. Companies should put in place measures to mitigate risks from insufficient manning, such as empowering personnel to adjust workload accordingly to focus on critical tasks and establishing processes to facilitate escalation to supervisors.

4.5.2 Appropriate Shift Scheduling – Shift schedules should allow for sufficient rest between shifts and working hours shall adhere to the provisions and conditions under the Employment Act. Also, employers should recognise that there are fatigue risks

associated with carrying out work at night and take steps to address those risks, including rescheduling the work to day shift, as far as reasonably practicable.

4.5.3 Training and Education – Training should be conducted to ensure that all employees are aware of shift work risks and coping strategies. Supervisors would need to understand how to identify and manage fatigued employees.

4.5.4 Appropriate Work Environment – Rest breaks should be encouraged with flexible break timings. Rest facilities should be provided to facilitate rest. The physical work environment should also be designed to enhance alertness. Examples include the provision of proper lighting, comfortable temperature and humidity and ergonomic workstations.

4.5.5 Individual Risk Assessment and Mitigation – Employees should be encouraged to take ownership of their health and get enough rest between shifts to maintain their alertness and fitness for duty. There should be mechanisms in place to allow employees to report to their supervisors when they are too fatigued to work, without fear of repercussions.

4.5.6 Provision of Medical Support – Companies should provide employees with access to medical services, such as medical consultation for temporary ailments, counselling, sleep disorder diagnosis and treatment etc.

4.5.7 Incident and Near-Miss Investigation – The contribution of fatigue to incidents should be considered. Some factors to examine include time of day, day of roster, hours of wakefulness and sleep length.

4.5.8 Periodic Review and Update of FRMS – The FRMS should be periodically assessed for effectiveness and opportunities for improvement, with inputs from stakeholders, including the Union. To facilitate the process, targets should be set for key parameters such as percentage overtime, number of extended shifts. Key outcomes such as absenteeism and healthcare costs should be monitored to assess the impact of the FRMS.

4.6 As mental and physical impairment may be due to reasons other than fatigue, other interventions will still be needed to ensure that employees are fit for work.

Health Promotion Programmes

4.7 Well-designed health promotion programmes can help companies improve health outcomes, personnel productivity and reduce medical expenditure and absenteeism.

- 4.8 Programmes should cover a range of areas including physical activity, healthy nutrition, sleep management and stress management. When properly executed, these programmes can enhance the health and well-being of employees, enabling them to stay fit for work.
- 4.9 Factors for a successful programme include:
- Regular and active participation with clear commitment from leaders
 - Strategies to encourage participation and achievement of targets
 - Customisation of health programmes to meet employees' shift patterns, interests and risk profiles
 - Provision of facilities and services to make being healthy easy e.g. onsite fitness centres, healthier cafeteria food choices, lunchtime health talks
 - Evaluation and review of health promotion programmes to assess effectiveness and identify improvements.

Job Redesign

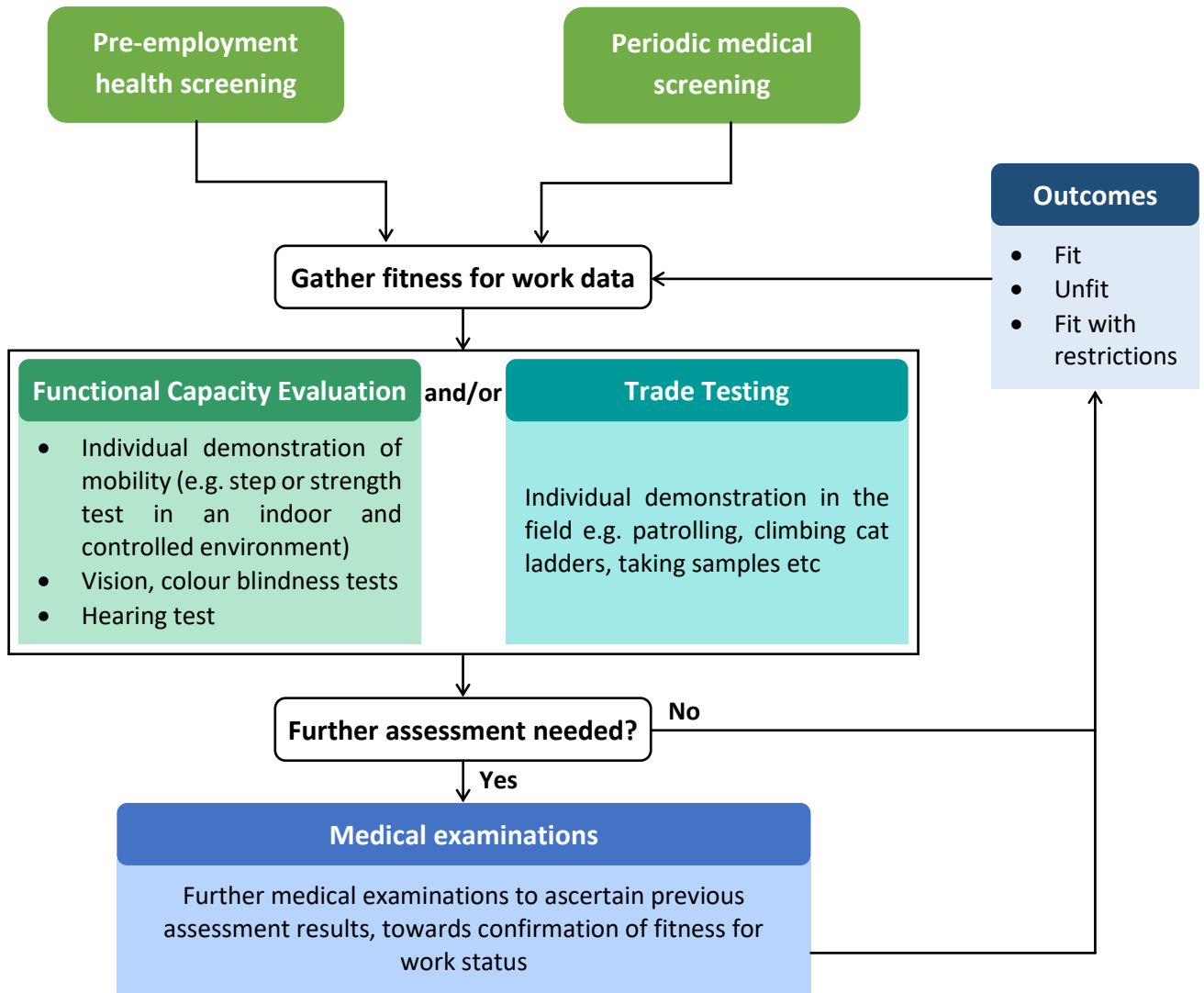
- 4.10 As far as possible, companies should plan for a work environment that helps personnel perform their tasks safely. For instance, systems design and process-related controls should be implemented to reduce the risks of a task and reduce the reliance on human intervention and manual operations. Work practices should also be redesigned to minimise routine administrative tasks. Consideration should also be given to ergonomic design of equipment and control rooms to make it easy for employees to execute their tasks correctly.

5. Successful Implementation of Fitness for Work Programmes

- 5.1 A risk-based approach to ensure fitness for work will allow appropriate and effective interventions to be implemented. These include fitness for work programmes, fatigue risk management, health promotion initiatives and job redesign. Regular reviews to assess their effectiveness are needed to drive improvements.
- 5.2 The success of fitness for work interventions is a shared responsibility and demands collaborative efforts from both the employer and the employee. Employers have a duty to provide a safe work environment while employees have a responsibility to practise self-care to maintain their fitness for work. In addition, mutual trust and open communications between employees and management are crucial – this can be done by establishing platforms for open dialogue and feedback from employees, as well as mechanisms for dispute resolution.

Appendix

An Example of a Fitness for Work Assessment for Process and Terminal Operations Shift Personnel in the Oil, Petrochemical and Chemical Industries



References

1. Fitness to Work: Guidance for company and contractor health, HSE and HR professionals, OGP Report Number 470, International Association of Oil & Gas Producers, 2011
2. Workplace Safety & Health Guidelines – Fatigue Management, Workplace Safety & Health Council, 2010
3. Managing Fatigue in the Workplace – A guide for oil and gas industry supervisors and occupational health practitioners, OGP Report Number 392, International Association of Oil & Gas Producers, 2007
4. From Evidence to Practice: Workplace Wellness that Works, Institute for Health and Productivity Studies John Hopkins Bloomberg School of Public Health In Collaboration with Transamerica Center for Health Studies, 2015
5. Principles of Good Work Design – A work health and safety handbook, Safe Work Australia
6. ANSI/API Recommended Practice 755: Fatigue Risk Management Systems for Personnel in the Refining and Petrochemical Industries
7. S.Folkard, P. Tucker. Shift work, safety and productivity. *Occupational Medicine* 2003;53:95–101
8. S.D. Balk, A. Fletcher, K.J. Kandelaars, D. Dawson, G.D. Roach. A field study of sleep and fatigue in a regular rotating 12-h shift system. *Applied Ergonomics* 40 (2009) 694–698