



## DRAFT TANZANIA STANDARD

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MEDC 9 (2038) CD2/ SADC SARA HT: 93: 2017 - Railway Safety Management – Human Factors Management.

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**TANZANIA BUREAU OF STANDARDS**

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**NATIONAL FOREWORD**

This Tanzania Standard has been prepared under Automotive Components Technical Committee (MEDC 09), under supervision of Mechanical Engineering Standards Divisional Committee.

It is identical to SADC SARA HT: 93: 2017, Railway Safety Management – Human Factors Management, published by SADC Cooperation in Standardization (SADCSTAN).

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**SADC HARMONISED TEXT**

**Railway Safety Management – Human Factors  
Management**

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## Foreword

The SADC Protocol on Trade was established under the SADC Treaty in 1996, to provide for the elimination of tariffs and non-tariff barriers to trade. One of the objectives of the Protocol on Trade under the Technical Barriers to Trade (TBT) Annex (No. 8) is to establish a common technical regulation framework, which is supported by seven (7) regional TBT Cooperation Structures. The TBT Annex places an obligation on Member states to pursue harmonization of standards and this is done through the SADC Cooperation in Standardisation (SADCSTAN) which is one of the 7 regional TBT Cooperation Structures.

Co-operation in standardisation is expected to result into having uniformly harmonised standards. Harmonisation of standards within the region is expected to reduce TBTs that are normally encountered when goods and services are exchanged among SADC Member States due to differences in technical requirements. Harmonized SADC Standards are also expected to result into benefits such as greater industrial productivity and competitiveness, increased agricultural production and food security, a more rational exploitation of natural resources among others.

Harmonized SADC Standards are developed by the SADC experts on standards through SADCSTAN Technical Committees representing the National Standards Bodies and other stakeholders. Further, SADCSTAN in certain instances collaborates with SADC Sector Associations in the harmonization of standards to address sector specific needs. In this regard, SADCSTAN collaborated with Southern African Railway Association (SARA) in the harmonization of this standard.

This SADC Harmonized Standards was prepared by the SADCSTAN Technical Committee on Automobile and Transportation (SADCSTAN TC 2) in collaboration with SARA.

SADC Harmonized Standards are drafted in accordance with the SADCSTAN Harmonization Procedures which are in line with international procedures and practices.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. SADCSTAN shall not be held responsible for identifying any or all such patent rights.

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## Railway Safety Management – Human Factors Management

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### 1 Scope

1.1 This standard provides minimum requirements to RA's for the management of HF for employees who undertake safety-related work. It is to read and implemented in conjunction with the relevant national legislation and applicable standards applicable in the country in which the RA operates as well as other SARA safety standards.

1.3 This standard applies to employees who undertake safety-related work as determined by the RA. The RA may expand the scope of HF management to include employees who do not undertake safety-related work.

1.4 HF management comprises the following:

a) human factors in design (human-system interface);

b) physical environmental factors:

- 1) noise;
- 2) vibration;
- 3) lighting;
- 4) thermal environment; and
- 5) hazardous substances and agents; and

c) organizational and psychological factors:

- 1) recruitment and selection;
- 2) training and development;
- 3) medical surveillance;
- 4) medication;
- 5) chronic diseases;
- 6) fitness for duty;
- 7) fatigue (shift work, night work and call-outs);
- 8) substance abuse;
- 9) pregnancy;

- 10) stress; and
- 11) employee wellness.

## 2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, the latest edition of the referenced document (including any amendments) applies. Information on currently valid national and international standards can be obtained from the relevant National Standards Body (NSB) or SARA.

The following standards or any other relevant national or international standard shall be referenced as required by each RA:

SADC SARA HT 89: Railway Safety Management – General

SADC SARA HT 90: Railway Safety Management – Technical requirements for engineering and operational standards - General

Relevant national legislation applicable to each RA has to be referenced as mentioned in the foreword

## 3 Terms, definitions and abbreviations

For the purposes of this document, the terms, definitions and abbreviations given in SARA 001 and the following apply.

### 3.1 Terms and definitions

#### 3.1.1

##### **action criteria**

measures used to determine the action to be taken when specific criteria related to fitness for duty are not met

#### 3.1.2

##### **acute**

having a rapid onset and following a short but severe course

#### 3.1.3

##### **anthropometric**

relating to human dimensional data that guide the most efficient design of equipment, tools, furniture, and clothing to ensure safety and comfort

#### 3.1.4

##### **biological monitoring**

a planned, ongoing programme of periodic collection and analysis of body fluid, tissues, excreta or exhaled air in order to detect and quantify the exposure to or absorption of any substance or organisms by employees

#### 3.1.5

##### **biomechanics**

application of mechanical principles to living organisms

**3.1.6**

**chronic disease**

disease that is long-lasting or recurrent

NOTE The term "chronic disease" is usually applied to a condition that lasts longer than six months

**3.1.7**

**circadian rhythm**

cycle of biological activity that is based on a 24-hour period and influenced by regular variations in the environment, such as the alternation of night and day

NOTE Circadian rhythms are generated by an internal clock that is synchronized to light-dark cycles and other cues in an organism's environment and include sleeping and waking up.

**3.1.8**

**competency profile**

list of competencies, qualifications, knowledge, skills, attitudes and capabilities required to perform a specific job successfully

**3.1.9**

**competent**

having the qualifications, knowledge, skills, attitudes and capabilities required to function successfully in a given job

**3.1.10**

**engineer**

person who uses scientific knowledge to solve practical problems and who is skilled in the principles and practice of any branch of engineering

**3.1.11**

**ergonomics**

scientific discipline concerned with the understanding of interactions among humans and other elements of a system, and the profession that applies theory, principles, data and other methods to design in order to optimize human well-being and overall system performance

**3.1.12**

**exclusion criteria**

criteria used to determine whether an employee is excluded from performing a specific job or task

**3.1.13**

**exposure time**

duration per day that a worker is exposed to an environmental stressor

**3.1.14**

**fatigue risk periods**

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periods during day or night, influenced largely by circadian rhythms and hours awake when a person is likely to either fall asleep or show signs of fatigue, which might lead to unsafe actions

### **3.1.15**

#### **health assessment**

evaluation of the health status of an employee and that includes the health history, a physical examination and special tests

NOTE Special tests may include various laboratory and functional tests to confirm a clinical impression or to screen for possible disease to determine fitness for duty.

### **3.1.16**

#### **health practitioner**

person (excluding a student) that practises in a health profession that is regulated by a responsible council/board

### **3.1.17**

#### **health risk assessment**

process of identifying health hazards and associated risks that employees are exposed to, and of determining the actions to be taken to mitigate, terminate or control such hazards

### **3.1.18**

#### **inherent job requirement**

core duty that is carried out to fulfil the purpose of a job

NOTE Job requirements refer to what is accomplished (i.e. results) by the job, rather than how or the means through which it is accomplished. Inherent job requirements are used to recruit and select appropriate persons and to assess fitness for duty.

### **3.1.19**

#### **job profile**

list of requirements for a specific job, including the required qualifications, skills and competencies, key performance indicators, and challenges and deliverables

### **3.1.20**

#### **medical condition**

abnormal state of the body associated with specific symptoms and signs

### **3.1.21**

#### **medical fitness for duty**

determination made by an occupational medicine practitioner, subject to any restrictions or requirements, that an employee has undergone the medical assessments required, and that the employee complies with all of the medical fitness for duty requirements for a specific job

### **3.1.22**

#### **medical surveillance**

a planned programme or periodic examination (which may include clinical examinations, biological monitoring or medical tests), of employees by an occupational health practitioner, or in prescribed cases by an occupational medicine practitioner

**3.1.23**

**medication**

substance intended for use in a medical diagnosis, cure, treatment or prevention of a disease

NOTE Medication is also referred to as medicine or medicament, treatment, pills and drugs.

**3.1.24**

**moonlighting**

work at another job, often at night, in addition to one's regular job

**3.1.25**

**occupational exposure limit**

**OEL**

limit value for a stress factor in the workplace as per relevant national legislation

**3.1.26**

**occupational health**

**OH**

promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations by preventing departures from health, controlling risks and the adaptation of work to people, and people to their jobs

[ILO/WHO 1950]

**3.1.27**

**occupational health practitioner**

**OHP**

An occupational medicine practitioner or a person who holds a qualification in occupational health as recognised by a relevant national health (medical, dental, nursing) council

**3.1.28**

**occupational hygiene**

the anticipation, recognition, evaluation and control of conditions arising in or from the workplace, which may cause illness or adverse health effects to persons

**3.1.29**

**occupational medicine practitioner**

**OMP**

a medical practitioner as defined in the relevant national professional health (medical and dental) council or who holds a qualification in occupational medicine or an equivalent qualification that is recognized by national professional health (medical and dental) council

**3.1.30**

**psychometric test**

series of questions, problems or practical tasks that provide a measurement of aspects of somebody's personality, knowledge, ability or experience, and that are divided into three main categories, namely ability or aptitude test, achievement test, and personality test

**3.1.31**

**rostering practices**

work time arrangements (work schedules or rosters) for all employees and shift patterns for shift workers

**3.1.32**

**safety critical work**

functions and activities related to the authorization and control of the movement of rolling stock

NOTE This includes the direct supervision of those functions and activities

**3.1.33**

**safety related work**

functions and activities that have an impact on safe railway operations

**3.1.34**

**selection criteria**

qualifications, knowledge, skills, qualities, experience, abilities and characteristics needed to fulfil the requirements of a job

**3.1.35**

**shift swapping**

changes in shifts or working on scheduled days off (or both), either requested by workers or by employers

**3.1.36**

**side effect**

secondary and usually adverse effect of a drug or therapy

**3.1.37**

**sleep hygiene**

behavioural and environmental factors that might impact on the quality of sleep

**3.1.38**

**staffing**

process whereby persons are recruited, selected, trained, deployed and retained for work

**3.1.39**

**whole-body vibration**

mechanical vibration that is transmitted to the whole body, usually through a seat or the feet, and that entails risks to the health and safety of workers, in particular lower-back morbidity and trauma of the spine

**3.1.40**

**workload**

number of tasks to be performed in a given time

**3.1.40**

**workload assessment**

evaluation of the amount of work assigned to a specific worker

### 3.2 Abbreviations

AIA	approved inspection authority
COP	code of practice
EAP	employee assistance programme
HF	human factors
HFID	human factors in design
NIHL	noise induced hearing loss
OHP	occupational health practitioner
OMP	occupational medicine practitioner
OHS	occupational health and safety
RA	railway administration
SARA	Southern African Railway Association

## 4 Human factors in design (human-system interface)

### 4.1 General

**4.1.1** Human Factors in Design (HFID) includes the matching of tools, equipment, machines, systems, tasks, jobs, work processes, work stations, and environments to the physical and psychological capabilities and limitations of people. In doing so it seeks to safeguard safety, health, and well-being whilst optimizing efficiency and performance.

NOTE Specialists such as ergonomists/HF specialists, engineers, physiologists, medical practitioners, psychologists, industrial designers, and occupational hygienists contribute to HF information.

**4.1.2** HFID should apply to tasks and the life cycle of tools, machines, equipment, and systems.

NOTE The life cycle includes a feasibility study, design, construction/manufacturing, commissioning, operations, monitoring and maintenance, modification, and decommissioning and disposal (see SARA 001 and SARA 002)

**4.1.3** HFID should take into account the 5<sup>th</sup> percentile of female and 95<sup>th</sup> percentile of male anthropometrics and biomechanics including variations of physical strength, reaching distance and body size. Thus it should account for the smallest female to the largest male.

**4.1.4** HFID should take into account the cognitive ability, short- and long-term memory, and the decision-making and problem-solving abilities of employees.

**4.1.5** Poor design might expose employees to hazards that could impact on safe railway operations. The results of poor design include the following:

- a) awkward body positions – stretching, bending and crouching;
- b) sustained body positions;
- c) excessive forces required to perform tasks – hand grip, lifting, pushing or pulling;
- d) excessive manual materials handling – holding, carrying, lifting or lowering, pushing or pulling;

- e) repetitive movements and strain – number, duration and frequency;
- f) unsafe work procedures; and
- g) environmental issues – excessive noise, vibration, and radiation, thermal discomfort, poor air quality, poor lighting and exposure to toxic substances.

**4.1.6** The effects of poor design that might impact on safe railway operations include the following:

- a) impaired cognitive functioning – reduced concentration and vigilance, irritability and confusion;
- b) impaired vision;
- c) changes in reaction time;
- d) burnout, stress and fatigue;
- e) drowsiness (even with proper rest);
- f) lower back pain;
- g) muscular-skeletal, vascular and neurological disorders;
- h) unsafe work practices; and
- i) noise induced hearing loss.

**4.1.7** RA's and employees have a mutual responsibility to ensure that HFID do not impact on safe railway operations.

**4.1.8** The employee shall report unsafe working conditions as a result of poor design.

## **4.2 Requirements for the management of human factors in design**

**4.2.1** The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures for the management of HFID in accordance with the relevant national legislation (see foreword).

**4.2.2** The requirements to manage HFID shall include the following:

- a) roles and responsibilities;
- b) education and training;
- c) risk assessments;
- d) controls; and
- e) monitoring, evaluation and review.

## **4.3 Roles and responsibilities**

**4.3.1** The RA shall

- a) appoint a person with the relevant authority and responsibility to manage HFID, and
- b) define the roles and responsibilities of the appointed person.

**4.3.2** The appointed person shall, where relevant, use the services of authorities and professionals, including the following:

- a) ergonomists/HF specialists;
- b) engineers;
- c) physiologists;
- d) occupational medicine practitioners (OMPs);
- e) psychologists;
- f) biokineticists;
- g) industrial designers; and
- h) occupational hygienists.

**4.3.3** The RA shall ensure that employees are subjected to risk-based medical surveillance (as defined in the relevant legislation (see foreword)) as specified in 6.3.

**4.4 Education and training**

The RA shall establish, develop or adopt, document, implement and maintain policies, processes, and procedures to educate and train management and employees in matters that relate to HFID, including the following:

- a) the relevant national legislation (see foreword), policies, processes and procedures;
- b) roles and responsibilities;
- c) health effects and safety risks at work and off the job;
- d) the purpose of risk assessments;
- e) the purpose of the medical surveillance programme; and
- f) controls.

**4.5 Risk assessments**

**4.5.1** The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures for conducting risk assessments that relate to HFID in accordance with the relevant national legislation (see foreword).

**4.5.2** Risk assessments shall include the following:

- a) identifying jobs/tasks/activities/tools/equipment and work environments where employees are exposed to hazards due to poor design as detailed in annex A;

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- b) identifying and listing of hazards related to specific jobs/tasks/activities/tools/equipment and the employees who are exposed;

EXAMPLE Hazards include poor layout of work environments, inconsistent control design and contradicting controls.

- c) determining the level of risk during the life cycle;

NOTE The risk assessment should consider the additive or synergistic effect of exposure to hazards.

- d) determining the HFID requirements for machines, systems, jobs/tasks/activities/tools/equipment and work environments in consultation with the relevant employees;
- e) evaluating control measures;
- f) determining the potential impact on health and safety; and
- g) summarizing findings and recommendations.

**4.5.3** The risk assessments shall be reviewed on a regular basis at intervals not exceeding 24 months or when

- a) evidence suggests that the risk assessments are no longer valid, or
- b) changes have been made to the machines, systems, jobs/tasks/activities/tools/equipment, work environment or existing controls.

## **4.6 Controls**

**4.6.1** The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures for the implementation of controls to manage HFID.

**4.6.2** Controls shall include the following:

- a) determining the HFID requirements of tools, equipment, machines and systems during the life cycle;
- b) ensuring that tools, equipment, machines and systems comply with HFID requirements;
- c) establishing standards for the procurement of tools, equipment, machines and systems to comply with HFID requirements;
- d) redesigning, modifying and refurbishing work processes, work stations, tools, equipment, machines and systems in accordance with HFID requirements;
- e) training in the correct implementation of controls; and
- f) managing employees who might be or who are adversely affected (see 6.3).

## **4.7 Monitoring, evaluation and review**

The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures to monitor, evaluate and review the management of HFID.

## **5 Physical environmental factors**

### **5.1 Noise**

#### **5.1.1 General**

**5.1.1.1** Noise refers to any unwanted or disturbing sound that interferes with the detection and hearing of wanted sounds.

NOTE Wanted sounds include warning signals and verbal commands.

**5.1.1.2** The effect of noise on employees that might impact on safe railway operations includes the following:

- a) noise-induced fatigue;
- b) temporary or permanent NIHL;
- c) impaired concentration;
- d) interference with communication, decision making and thought processes;
- e) the masking of wanted sounds essential for operational critical communication; and
- f) a negative impact on health and lifestyle.

**5.1.1.3** RA's and employees have a mutual responsibility to ensure that noise does not impact on safe railway operations.

#### **5.1.2 Requirements for the management of noise**

**5.1.2.1** The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures for the management of noise in accordance with the relevant national legislation (see foreword).

**5.1.2.2** The requirements to manage noise shall include the following:

- a) roles and responsibilities;
- b) education and training;
- c) risk assessments;
- d) controls; and
- e) monitoring, evaluation and review.

#### **5.1.3 Roles and responsibilities**

**5.1.3.1** The RA shall

- a) appoint a person with the relevant authority and responsibility to manage noise, and
- b) define the roles and responsibilities of the appointed person.

**5.1.3.2** The appointed person shall, where relevant, use the services of authorities and professionals, including

- a) an approved noise inspection authority in accordance with the relevant national legislation (see foreword),
- b) health practitioners,
- c) audiometrists, and
- d) acoustic (sound) engineers.

**5.1.3.3** The RA shall ensure that employees are subjected to risk-based medical surveillance as specified in 6.3.

#### **5.1.4 Education and training**

The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures to educate and train management and employees in matters that relate to noise, including the following:

- a) the relevant national legislation (see foreword), policies, processes and procedures;
- b) health and safety risks as detailed in 5.1.1.2 at work and off-the-job;
- c) roles and responsibilities;
- d) the purpose of noise surveys;
- e) the purpose of the medical surveillance programme; and
- f) controls.

#### **5.1.5 Risk assessments**

**5.1.5.1** The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures for conducting risk assessments that relate to noise, in accordance with the relevant national legislation (see foreword).

**5.1.5.2** Risk assessments shall include the following:

- a) identifying the jobs/tasks/activities/tools/equipment and work environments where noise might impact on safe railway operations as specified in 5.1.1.2;
- b) determining the inherent hearing requirements employees should meet to undertake specific safety-related jobs/tasks/activities;

NOTE Requirements in respect of ability to hear are specified in 6.3.

- c) describing the nature and level (extent) of interference as a result of noise;

NOTE This describes the way in which employees subjectively experience interference as a result of noise in their working environments.

- d) identifying noise sources;
- e) determining noise levels;

- f) determining the frequency of exposure; and
- g) evaluating control measures.

**5.1.5.3** Risk assessments shall be reviewed on a regular basis at intervals not exceeding 24 months or, when

- a) evidence suggests that the risk assessment is no longer valid, or
- b) changes have been made to the jobs/tasks/activities/tools/equipment, work environment or existing controls.

#### **5.1.6 Controls**

**5.1.6.1** The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures for the implementation of controls to manage noise in accordance with the relevant national legislation (see foreword).

NOTE The management of noise includes implementing controls during the design phase of equipment and work environments to minimize noise, prevent NIHL and to ensure accurate and effective communication.

**5.1.6.2** Controls shall include the following:

- a) implementing recommendations of relevant specialists to prevent the effect of noise that might impact on safe railway operations in accordance with 5.1.1.2;
- b) implementing engineering control measures during the design phase of the life cycle (see SADC SARA HT 89 and SADC SARA HT 90) to achieve ambient noise levels to below an equivalent continuous rating level ( $L_{Req,T}$ ) of 75 dB in order to ensure accurate and effective operational critical communication in relevant work environments;
- c) implementing a hearing conservation programme;
- d) ensuring that all employees working in noise zones are subjected to audiometric testing at pre-employment-, during transfer, periodic- and at exit medical examinations in accordance with 6.3; and
- e) providing appropriate hearing protective equipment, taking the following factors into consideration:
  - 1) suitability for the work being carried out;
  - 2) the noise attenuation offered by the equipment;
  - 3) operational critical communication and the hearing of warning sounds that are not compromised;
  - 4) compatibility with other safety equipment; and
  - 5) the pattern of the noise exposure.

#### **5.1.7 Monitoring, evaluation and review**

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The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures to monitor evaluate and review the management of noise.

### **5.2 Vibration**

#### **5.2.1 General**

**5.2.1.1** In the context of this clause vibration refers to whole-body vibration and hand-arm vibration.

**5.2.1.2** The physiological effects as a result of vibration on employees that might impact on safe railway operations include

- a) blurred vision,
- b) reduced coordination,
- c) drowsiness (even with proper rest),
- d) lower back pain,
- e) insomnia,
- f) headaches, and
- g) neurological, musculo-skeletal and vascular disorders.

NOTE Vibration might impact on pregnancy outcomes (see 6.7).

**5.2.1.3** The physiological effects of vibration might be delayed between 1 to 16 years. This period is referred to as the latency period.

**5.2.1.4** RA's and employees have a mutual responsibility to ensure that vibration does not impact on safe railway operations.

#### **5.2.2 Requirements for the management of vibration**

**5.2.2.1** The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures for the management of vibration in accordance with the relevant national legislation (see foreword).

**5.2.2.2** The requirements to manage vibration shall include the following:

- a) roles and responsibilities;
- b) education and training;
- c) risk assessments;
- d) controls; and
- e) monitoring, evaluation and review.

### **5.2.3 Roles and responsibilities**

#### **5.2.3.1** The RA shall

- a) appoint a person with the relevant authority and responsibility to manage vibration, and
- b) define the roles and responsibilities of the appointed person.

#### **5.2.3.2** The appointed person shall use, where relevant, the services of authorities and professionals, including:

- a) an AIA in accordance with the relevant national legislation (see foreword);
- b) occupational health practitioners (OHPs); and
- c) engineers.

#### **5.2.3.3** The RA shall ensure that employees are subjected to risk-based medical surveillance as specified in 6.3.

### **5.2.4 Education and training**

The RA shall establish, develop or adopt, document, implement and maintain policies, processes, and procedures to educate and train management and employees in matters that relate to vibration, including the following:

- a) the relevant national legislation (see foreword), policies, processes and procedures;
- b) health and safety risks at work and off-the-job;
- c) roles and responsibilities;
- d) safe working practices;
- e) possible sources of vibration;
- f) the purpose of a medical surveillance programme; and
- g) controls.

### **5.2.5 Risk assessments**

#### **5.2.5.1** The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures for conducting risk assessments that relate to vibration in accordance with the relevant national legislation (see foreword).

#### **5.2.5.2** risk assessments shall include the following:

- a) identifying jobs/tasks/activities/tools/equipment and work environments where employees are exposed to vibration;
- b) identifying the type of vibration and the number of employees exposed;
- c) evaluating vibration hazards and risk levels;
- d) determining the potential impact on health and safety; and

e) evaluating control measures.

**5.2.5.3** Risk assessments shall be reviewed on a regular basis at intervals not exceeding 24 months, or when

- a) evidence suggests that the risk assessment is no longer valid, or
- b) changes have been made to the jobs/tasks/activities/tools/equipment, work environment or existing controls.

## **5.2.6 Controls**

**5.2.6.1** The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures for the implementation of controls to manage vibration in accordance with the relevant national legislation (see foreword).

**5.2.6.2** Controls shall include

- a) recommendations from relevant professionals,
- b) the management of employees who are or who might be affected in accordance with 6.3; and
- c) measures that comply with the relevant national legislation (see foreword).

**5.2.6.3** The RA shall ensure that vibration levels are managed during the life cycle of tools, machinery and equipment.

NOTE The life cycle includes a feasibility study, design, construction/manufacturing, commissioning, operations, monitoring and maintenance, modification, decommissioning and disposal as specified in SARA 001 and SARA 002)

## **5.2.7 Monitoring, evaluation and review**

The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures to monitor, evaluate and review the management of vibration.

## **5.3 Lighting**

### **5.3.1 General**

**5.3.1.1** In the context of this clause lighting from natural or artificial sources (or both) is included.

**5.3.1.2** Good lighting, in terms of quantity and quality, plays an important role in contributing to a healthy and safe work environment through

- a) enabling employees to see hazards,
- b) reducing the likelihood of occurrences, and
- c) reducing visual fatigue and discomfort.

**5.3.1.3** RA's and employees have a mutual responsibility to ensure that poor lighting does not impact on safe railway operations.

**5.3.1.4** The RA has the responsibility to ensure good lighting of the work environment whereas the employee's responsibility includes reporting of poor lighting that leads to unsafe working environments.

### **5.3.2 Requirements for the management of lighting**

**5.3.2.1** The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures for the management of lighting in accordance with the relevant national legislation (see foreword).

**5.3.2.2** The requirements to manage lighting shall include the following:

- a) roles and responsibilities;
- b) education and training;
- c) risk assessments;
- d) controls; and
- e) monitoring, evaluation and review.

### **5.3.3 Roles and responsibilities**

**5.3.3.1** The RA shall

- a) appoint a person with the relevant authority and responsibility to manage lighting, and
- b) define the roles and responsibilities of the appointed person.

**5.3.3.2** The appointed person shall use, where relevant, the services of experts and specialists.

### **5.3.4 Education and training**

The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures to educate and train management and employees in matters that relate to lighting, including the following:

- a) the relevant national legislation (see foreword), policies, processes and procedures;
- b) potential risks of poor lighting at work and off-the-job;
- c) roles and responsibilities;
- d) the purpose of lighting surveys; and
- e) the purpose of implementing a scheduled maintenance programme.

### **5.3.5 Risk assessments**

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**5.3.5.1** The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures for conducting risk assessments that relate to lighting in accordance with the relevant national legislation (see foreword).

**5.3.5.2** Risk assessments shall include the following:

- a) identifying safety-related jobs/tasks/activities, and the environments in which these will be undertaken;
- b) determining the inherent lighting requirements for employees to see adequately to perform their jobs; and
- c) evaluating the existing lighting for each job/task/activity and environment.

NOTE Lighting refers to the nature of light sources, as well as the quantity and quality of light.

**5.3.5.3** In cases where the relevant national legislation (see foreword) or relevant national standards do not specify requirements

- a) the RA shall use the services of relevant experts such as lighting specialists to assess jobs/tasks/activities and work environments and to make recommendations, and

NOTE 1 Relevant experts should determine specialized lighting requirements where safety-related work is undertaken owing to the dynamic technical and environmental conditions encountered during railway operations.

NOTE 2 People are deemed lighting specialists if they have been graded as “members” by the relevant national authority.

- b) recommendations made by the lighting specialist should be accepted as requirements for the specific jobs/tasks/activities and work environments.

**5.3.5.4** Risk assessments shall be conducted by a competent person.

**5.3.5.5** Risk assessments shall be reviewed on a regular basis at intervals not exceeding 24 months or, when

- a) evidence suggests that the risk assessment is no longer valid, or
- b) changes have been made to the jobs/tasks/activities, work environment or existing controls.

### **5.3.6 Controls**

**5.3.6.1** The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures for the implementation of controls to provide and ensure good quality and quantity lighting in accordance with the relevant national legislation (see foreword).

**5.3.6.2** Controls shall include the following:

- a) a maintenance programme for the
  - 1) regular inspection of luminaires and lamps,
  - 2) scheduled replacement of lamps,

- 3) prompt replacement of broken or defective luminaires and lamps, and
  - 4) regular cleaning of windows, luminaires and lamps; and
- b) engineering measures, such as
- 1) correct spacing and mounting height,
  - 2) uniform lighting in terms of quantity and quality,
  - 3) prevention of large lighting differences between adjacent work areas,
  - 4) fitting of luminaires in such a way that the light emanating from them is not obscured, and
  - 5) prevention of glare, stroboscopic effects and flickering.

### **5.3.7 Monitoring, evaluation and review**

The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures to monitor, evaluate and review the lighting management programme.

## **5.4 Thermal environment**

### **5.4.1 General**

**5.4.1.1** In the context of this clause the thermal environment refers to thermal stress and thermal comfort.

**5.4.1.2** Thermal stress focuses on the physiological and psychological response of a person when his/her coping mechanism cannot cope with temperature extremes.

**5.4.1.3** Thermal comfort focuses on the psychological state of mind in terms of the person's perception of his/her environment. The person might experience discomfort if the personal and environmental factors that influence the thermal environment fall outside the person's comfort zone.

NOTE Annex B provides details of measures to provide thermal comfort in enclosed spaces.

**5.4.1.4** The effects of thermal stress and discomfort that might impact on safe railway operations include the following:

- a) impaired cognitive functioning – reduced concentration and vigilance;
- b) impaired vision;
- c) dehydration, exhaustion and fatigue;
- d) a reduced work rate;
- e) changes in reaction time;
- f) irritability and confusion;

- g) shivering;
- h) hyperthermia; and

NOTE Hyperthermia includes heat-related conditions such as heat stroke, heat cramps, heat stress and heat syncope.

- i) hypothermia.

**5.4.1.5** RA's and employees have a mutual responsibility to ensure that the thermal environment does not impact on safe railway operations.

#### **5.4.2 Requirements for the management of the thermal environment**

**5.4.2.1** The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures for the management of the thermal environment in accordance with the relevant national legislation (see foreword).

**5.4.2.2** The requirements to manage the thermal environment shall include the following:

- a) roles and responsibilities;
- b) education and training;
- c) risk assessments;
- d) controls; and
- e) monitoring, evaluation and review.

#### **5.4.3 Roles and responsibilities**

**5.4.3.1** The RA shall

- a) appoint a person with the relevant authority and responsibility to manage the thermal environment, and
- b) define the roles and responsibilities of the appointed person.

**5.4.3.2** The appointed person shall use, where relevant, the services of authorities and professionals, including the following:

- a) an AIA in accordance with the relevant national legislation (see foreword);
- b) OHPs;
- c) engineers; and
- d) physiologists.

**5.4.3.3** The RA shall ensure that employees are subjected to risk-based medical surveillance as specified in 6.3.

#### **5.4.4 Education and training**

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The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures to educate and train management and employees in matters that relate to the thermal environment, including the following:

- a) the relevant national legislation (see foreword), policies, processes and procedures;
- b) health and safety risks at work and off-the-job;
- c) roles and responsibilities;
- d) safe working practices;
- e) emergency procedures;
- f) the purpose of monitoring the thermal environment; and
- g) controls.

### **5.4.5 Risk assessments**

**5.4.5.1** The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures for conducting risk assessments that relate to the thermal environment in accordance with the relevant national legislation (see foreword).

**5.4.5.2** Risk assessments shall include the following:

- a) identifying jobs/tasks/activities and work environments where thermal stress and discomfort might impact on employees;
- b) identifying thermal environmental stressors and the number of employees exposed;
- c) determining levels of exposure;
- d) determining the frequency of exposure;
- e) determining the potential adverse health effects; and
- f) evaluating control measures.

**5.4.5.3** Risk assessments shall be reviewed on a regular basis at intervals not exceeding 24 months, or when

- a) evidence suggests that the risk assessment is no longer valid, or
- b) changes have been made to the jobs/tasks/activities/tools/equipment, work environment or existing controls.

### **5.4.6 Controls**

**5.4.6.1** The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures for the implementation of controls to manage the thermal environment in accordance with the relevant national legislation (see foreword).

**5.4.6.2** Controls shall include the following:

- a) management of employees who might be or who are affected;
- b) implementing recommendations from relevant professionals;
- c) implementing measures that comply with the relevant national legislation (see foreword); and
- d) implementing measures to ensure thermal comfort.

**5.4.7 Monitoring, evaluation and review**

The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures to monitor evaluate and review the management of the thermal environment.

**5.5 Hazardous substances and agents**

**5.5.1 General**

**5.5.1.1** In the context of this clause hazardous substances and agents that might impact on safe railway operations include the following:

- a) toxic or hazardous chemical substances; and

EXAMPLES Asbestos, silica, lead, benzene, manganese and grain dust.

- b) hazardous biological agents.

NOTE Hazardous biological agents cause diseases such as hepatitis A and B, malaria and tuberculosis.

**5.5.1.2** Exposure to hazardous substances and agents might cause adverse health effects in employees who undertake safety-related work, which could impact on safe railway operations.

**5.5.1.3** Adverse health effects might be immediate or delayed. Immediate health effects can result in sudden incapacitation with an immediate impact on safe railway operations.

EXAMPLE 1 Immediate effects such as asphyxiation, severe allergic reaction (anaphylactic shock) or drowsiness.

EXAMPLE 2 Delayed effects such as nervous system toxicity, cancer of the lungs or chemically-induced hearing loss.

**5.5.1.4** RA's and employees have a mutual responsibility to ensure that hazardous substances and agents do not impact on safe railway operations.

**5.5.2 Requirements for the management of hazardous substances and agents**

**5.5.2.1** The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures for the management of hazardous substances

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and agents, impacting on safe railway operations, in accordance with the relevant national legislation (see foreword).

**5.5.2.2** The requirements to manage hazardous substances and agents shall include the following:

- a) roles and responsibilities;
- b) education and training;
- c) risk assessments;
- d) controls; and
- e) monitoring, evaluation and review.

### **5.5.3 Roles and responsibilities**

**5.5.3.1** The RA shall

- a) appoint a person with the relevant authority and responsibility to manage hazardous substances and agents, and
- b) define the roles and responsibilities of the appointed person.

**5.5.3.2** The appointed person shall, where relevant, use the services of authorities and professionals, including the following:

- a) an AIA in accordance with the relevant national legislation (see foreword);
- b) an OHP; and
- c) engineers.

**5.5.3.3** The RA shall ensure that employees are subjected to risk-based medical surveillance as specified in 6.3.

### **5.5.4 Education and training**

The RA shall establish, develop or adopt, document, implement and maintain policies, processes, and procedures to educate and train management and employees in matters that relate to hazardous substances and agents, including the following:

- a) the relevant national legislation (see foreword), policies, processes and procedures;
- b) health effects and safety risks at work and off-the-job;
- c) roles and responsibilities;
- d) the purpose of hygiene surveys;
- e) the purpose of medical surveillance and biological monitoring programmes; and
- f) controls.

### 5.5.5 Risk assessments

**5.5.5.1** The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures for conducting risk assessments that relate to hazardous substances and agents in accordance with the relevant national legislation (see foreword).

**5.5.5.2** Risk assessments shall include the following:

- a) identifying safety-related jobs/tasks/activities and work environments where employees are exposed to hazardous substances and agents;
- b) identifying the hazardous substances and agents related to specific jobs/tasks/activities and the number of employees exposed;
- c) identifying the source of hazardous substances and agents;
- d) evaluating hazardous substances and agents in terms of their nature, form and routes of entry;
- e) determining exposure levels;
- f) determining frequency and duration of exposure;
- g) determining the potential adverse health effects; and
- h) evaluating control measures.

**5.5.5.3** Risk assessments shall be reviewed on a regular basis at intervals not exceeding 24 months, or when

- a) evidence suggests that the risk assessment is no longer valid, or
- b) changes have been made to the jobs/tasks/activities, work environment or existing controls.

### 5.5.6 Controls

**5.5.6.1** The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures for the implementation of controls to prevent, eliminate or mitigate the negative health effects of hazardous substances and agents in accordance with the relevant national legislation (see foreword).

**5.5.6.2** Controls shall include the following:

- a) management of employees who are adversely affected; and
- b) implementation of measures that comply with the relevant national legislation (see foreword).

### 5.5.7 Monitoring, evaluation and review

The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures to monitor, evaluate and review the management of hazardous substances and agents.

## **6 Organizational and psychological factors**

### **6.1 Recruitment and selection**

#### **6.1.1 General**

**6.1.1.1** The recruitment and selection of employees with appropriate safety competencies are essential requirements for safe railway operations.

**6.1.1.2** In the context of this clause staffing means the process from recruitment to placement.

**6.1.1.3** The staffing process shall be well designed and reviewed

- a) on a regular basis at intervals not exceeding 36 months,
- b) when human factors caused the RA's' safety performance to deteriorate or remain stagnant, and

**6.1.1.4** Recruitment and selection shall form part of the skills development programme.

**6.1.1.5** The prospective employee (applicant) shall provide honest, relevant, and accurate information. The RA shall follow transparent processes and make unbiased, fair decisions.

#### **6.1.2 Requirements for the management of recruitment and selection**

**6.1.2.1** The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures for the management of recruitment and selection of employees in accordance with the relevant national legislation (see foreword).

**6.1.2.2** The requirements to manage recruitment and selection shall include the following:

- a) recruitment and selection principles;
- b) recruitment and selection criteria;
- c) a sourcing strategy;
- d) selection methods;
- e) assessment procedures;
- f) appointment and placement procedures; and
- g) monitoring, evaluation and review.

#### **6.1.3 Recruitment and selection principles**

**6.1.3.1** The RA shall establish, develop or adopt, document, implement and maintain policies, processes, and procedures to reflect staffing requirements within the different organizational structures.

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**6.1.3.2** Staffing requirements within the different organizational structures shall be calculated using established methods, taking current and expected operational requirements, including absences due to leave and training, into account.

**6.1.3.3** The RA shall

- a) manage vacancy rates to ensure that operational safety is not compromised,
- b) identify natural and possible career paths with minimum movement time frames, minimum competency requirements, and training periods,

**NOTE** A natural career path is the movement from an entry grade to a next higher grade (vertical movement on the organogram) whilst a possible career path can be a horizontal movement to be able to move to the next higher grade.

- c) have a recruitment strategy based on staffing needs and minimum job requirements,
- d) be transparent in the recruitment process regarding minimum job requirements, selection criteria, and working conditions,
- e) maintain all records in a safe and confidential manner, and

**NOTE** Documented data relating to an individual applicant should include the date, time of test, assessor, type and result of tests, and decisions taken based on results.

- f) manage the selection procedures that include
  - 1) a panel consisting of at least two competent persons to ensure that all procedures are followed fairly and consistently, and
  - 2) restrictions that prevent the same test from being used within a 12-month period for candidates who apply for the same position.

### **6.1.4 Development of recruitment and selection criteria**

**6.1.4.1** The RA shall perform structured and documented job analyses to develop job profiles.

**6.1.4.2** A job analysis shall include the following:

- a) the determination of the job title;
- b) a description of all tasks and activities linked to the job title;
- c) a description of the working environment;
- d) the determination of the complexity, intensity and frequency of tasks;

**NOTE** The task complexity refers to the degree of difficulty in performing the task whilst intensity refers to the rate at which tasks are performed and the level of concentration required.

- e) a description of the equipment and tools used to perform tasks;

f) identification and description of physical and psychological demands of tasks;

NOTE 1 Physical demands might include actions such as awkward body positions, lifting, stretching and strength required to use the pantograph hook stick, operation of hand-operated points, coupling and uncoupling of vacuum hoses or air hoses (or both), opening and closing of high tension doors and end doors, able to reach equipment that is placed in high and confined spaces (driving cabs and corridors), alignment of couplers, carrying of a fully equipped "kit box" or coupler over a distance, and climbing and descending from the "foot plate".

NOTE 2 Psychological demands might include the level of concentration, ability to tolerate frustration and fatigue, ability to make decisions, and dealing with difficult passengers (tolerate externally exerted pressures).

g) identification of human factor hazards and associated risks; and

h) the competencies, and physical and psychological requirements to perform the job successfully.

**6.1.4.3** The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures for selection criteria.

**6.1.4.4** Recruitment and selection criteria shall be valid and based on the following:

a) competency profiles;

b) inherent physical job requirements, including anatomical, anthropometrical, biomechanical and physiological abilities, to perform tasks;

c) inherent psycho-social requirements, including an absence of current substance abuse, sleep disorders and disturbed sleeping patterns;

d) core mental and behavioural criteria necessary for adequate job performance, including the following:

1) cognitive: vigilance, attention and concentration, memory, perception, reasoning and judgment, communication and literacy;

2) psychomotor: reaction time and coordination; and

3) behavioural: emotional stability and self-control, reliability and conscientiousness; and

NOTE There are other criteria that may be included in terms of importance to job outputs which might differ between the grades.

e) minimum entry requirements, which shall be based on qualifications, certification and required experience, where applicable.

NOTE Minimum requirements may be the age requirement of 18 years, matriculation, or equivalent with a pass in mathematics and science, and a valid driver's licence.

### **6.1.5 Sourcing strategy**

**6.1.5.1** The RA shall establish, develop or adopt, document, implement and maintain policies, processes, and procedures to source staff.

**6.1.5.2** Advertisements shall stipulate required information to be submitted for consideration and include the

- a) minimum requirements of the job,
- b) selection criteria, and
- c) working conditions.

**6.1.5.3** Job application forms shall be designed to include the following information:

- a) relevant skills programmes, qualifications and credits for unit standards;
- b) medical and psychological conditions;
- c) any criminal records;
- d) safety-related experience;
- e) other railway work experience;
- f) previous applications within the last year for similar position (including other rail RA's or other organizations);
- g) the safety record (accidents and injuries);
- h) the employment history; and
- i) contact details of references.

NOTE 1 The RA may design application forms specific for internal and external applicants.

NOTE 2 The RA may decide at what stage in the selection process the application form is completed.

**6.1.5.4** Applicants shall be requested to give written consent for verification purposes.

### **6.1.6 Selection methods**

**6.1.6.1** The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures for selection methods.

**6.1.6.2** The RA shall appoint a person with the relevant responsibility, authority, and accountability to manage the selection process.

**6.1.6.3** The choice or development (or both) of selection methods shall be undertaken by competent persons in accordance with the relevant national legislation (see foreword).

NOTE The competent persons may include registered psychologists, OMPs or any other person or professional deemed necessary by the appointed person.

**6.1.6.4** The appointed person shall ensure that the selection methods are reliable, valid and fair.

NOTE The term "reliable" refers to consistency of results, "valid" refers to the accurate measurement of criteria, and "fair" refers to the absence of bias.

**6.1.6.5** Selection methods shall be standardized for each safety-related position and shall be based on

- a) selection criteria as specified in 6.1.4,
- b) appropriate selection technology, and
- c) the ability to predict safety performance.

NOTE Selection methods for employees who undertake safety-related work may include psychometric tests, biomechanical ability and physical strength tests, simulation exercises (such as report writing, role plays, in-basket, and electronic simulators), job samples, knowledge tests, competency-based interviews, and medical and mental fitness examinations.

### **6.1.7 Assessment procedures**

#### **6.1.7.1 General**

**6.1.7.1.1** The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures to assess candidates.

**6.1.7.1.2** During pre-screening the following shall apply:

- a) applications shall be assessed against minimum requirements as advertised; and
- b) short-listed applications shall be assessed against the requirements as specified in 6.1.4.

NOTE Internal candidates who apply for promotion or lateral movement should be considered based on work performance, which includes attendance, discipline, and safety records.

#### **6.1.7.2 Testing**

**6.1.7.2.1** The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures to test candidates as part of the assessment process in accordance with the relevant national legislation (see foreword).

**6.1.7.2.2** The following principles shall apply:

- a) the administration of tests and interpretation of results shall comply with the relevant national legislation (see foreword);
- b) standardized administration procedures shall apply during all testing;
- c) all tests administered shall be directly linked to selection criteria; and

- d) the final selection of candidates shall not be exclusively based on the results of any single psychometric test.

**6.1.7.2.3** The following tests shall be administered at entry level:

- a) psychometric tests, which may include cognitive functioning tests (vigilance, concentration, attention, memory and reasoning), ability or aptitude tests (reading, mechanical and numerical), psychomotor tests (reaction speed and coordination), and personality tests; and

NOTE Computer-based reaction tests should be included to test psychomotor performance, vigilance, concentration, performance under pressure, perception, etc.

- b) biomechanical and physical strength tests on candidates who apply for positions where these tests have been identified as inherent job requirements.

**6.1.7.2.4** The following testing shall apply at the next higher level:

- a) screening of core selection criteria in accordance with 6.5.4.2;

NOTE Where entry level test results are not available, the applicable entry level battery of tests or part thereof may be administered.

- b) knowledge tests, including tests on subject matter, safety and applicable organizational procedures; and

- c) simulation exercises or job samples (or both).

NOTE 1 Simulation exercises or job samples may include report writing or communication (or both) or conflict handling role plays.

NOTE 2 Simulation exercises or job samples for supervisory grades should include assessment centre technology such as in-baskets, performance interviewing and analytical problem reports.

NOTE 3 Training and assessment should be included in simulation exercises.

### **6.1.7.3 Interviewing**

The RA shall use competent employees to conduct competency based interviews with candidates who passed preceding tests to

- a) confirm whether the results obtained from preceding tests provide a true reflection of the candidate, and

- b) gain additional information that could not be measured by other selection methods.

NOTE 1 Competency based interviews are structured interviews that measure specific knowledge, skills and attitudes identified as important criteria for success in a specific job. Scoring criteria are predetermined as part of the design process.

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NOTE 2 Where high volumes of candidates are subjected to interviews, at least three versions of any specific interview should be available for each specific grade in order to minimize the learning of interview questions.

### **6.1.7.4 Medical and psychological fitness examinations**

**6.1.7.4.1** Candidates shall be subjected to a physical health assessment to determine fitness for duty in accordance with 6.3 and 6.4.

**6.1.7.4.2** Candidates shall be subjected to an assessment to determine mental fitness for duty in accordance with 6.3 and 6.4.

NOTE Apart from assessing psycho-social functioning, emphasis should also be on the screening of core criteria as confirmation to other assessment tools used, or where these criteria are not adequately included in the tests of especially mid and supervisory level candidates.

### **6.1.7.5 Verification**

**6.1.7.5.1** Applicants shall be requested to give written consent for verification purposes.

**6.1.7.5.2** Short-listed applicants shall undergo reference checks that incorporate the verification of qualifications, work experience, and criminal records.

NOTE 1 Reference checks can be done at any stage in the recruitment and selection process.

NOTE 2 There should be cooperation between RA's, where relevant, to provide information regarding the performance history of candidates who apply for safety-related positions. The performance history may include attendance records, disciplinary records, safety-related occurrences and unproductive work behaviour (sexual harassment, verbal abuse, bullying).

### **6.1.8 Appointment and placement**

Successful candidates shall be appointed and placed.

### **6.1.9 Monitoring, evaluation and review**

The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures to monitor, evaluate and review the recruitment and selection programme.

## **6.2 Training and development**

### **6.2.1 General**

**6.2.1.1** Training and development are implemented and managed subsequent to the recruitment, selection; appointment and placement of a person (see 6.1).

**6.2.1.2** Training and development, including education and experience, are essential requirements to achieve and maintain competence to undertake safety-related work.

**6.2.1.3** Training and development shall be a continual process and aligned with the safety-related functional competency requirements of the job/task.

NOTE Functional competency refers to applied competence that consists of foundational and practical competence.

**6.2.1.4** Training and development shall address the following:

a) safety-related functional competency requirements through

- 1) training that is accredited by a national education and training quality assurance body (if relevant),
- 2) equipment-specific training based on accreditation principles and agreed standards,
- 3) refresher courses based on accreditation principles and agreed standards,
- 4) on-the-job observation and corrective action,
- 5) scheduled safety briefings, and
- 6) ad hoc training.

NOTE Computer-based and simulation technology should be considered where relevant.

b) relevant non-functional job-related competencies; and

NOTE Relevant non-functional job-related competencies should be determined by the RA, and these should include communication skills, leadership development, decision making, conflict handling and negotiation skills.

c) relevant education and training related to other clauses in this standard, relevant national legislation and standards and other SARA standards.

**6.2.1.5** Training and development shall be a dynamic and risk-driven process.

**6.2.1.6** Training, assessment, moderation, evaluation or certification may be provided by an external provider.

**6.2.1.7** RA's and employees have a mutual responsibility to ensure that training and development requirements for employees who undertake safety-related work are met.

## **6.2.2 Requirements for the management of training and development**

The RA shall establish, develop or adopt, document, implement and maintain policies, processes procedures, and plans for the management of training and development, which shall include the following:

- a) roles and responsibilities;
- b) training and development elements, such as

- 1) safety-related functional competency,
  - 2) relevant education and training related to other clauses in this part of SARA 004, relevant national legislation and standards, and
  - 3) relevant non-functional job-related competencies;
- c) assessment and moderation;
- d) certification and licensing;
- e) management information systems; and
- f) monitoring, evaluation and review.

### **6.2.3 Roles and responsibilities**

#### **6.2.3.1** The RA shall

- a) appoint a person (for example. a skills development facilitator) with the relevant authority and responsibility to manage training and development, and
- b) define the roles and responsibilities of the appointed person.

NOTE The RA may combine responsibilities to coordinate the training and development requirements as detailed in 6.2.1.4.

#### **6.2.3.2** The appointed person shall ensure that, where relevant, accredited training and development complies with the requirements of a

- a) relevant national qualification framework, which includes
  - 1) identification of existing unit standards,
  - 2) identification of unit standards for review, and
  - 3) development of new unit standards as required, and
- b) relevant education and training quality assurance body, which includes
  - 1) learning programmes aligned with unit standards,
  - 2) accreditation of training providers, based on their learning programmes, quality management system and resources for financial, equipment and human requirements.

NOTE Human resources include qualified trainers, registered assessors, and registered moderators.

#### **6.2.3.3** The appointed person shall ensure that training and development be undertaken by subject matter experts in respect of 6.2.1.4(a)(2) to (5), 6.2.1.4(b) and 6.2.1.4(c).

#### **6.2.3.4** The appointed person shall manage, where relevant, the licensing of employees who undertake safety-related work.

## 6.2.4 Training and development elements

6.2.4.1 The RA shall ensure that trainers are

- a) subject matter experts, and
- b) appropriately qualified.

6.2.4.2 On-the-job trainers shall be employees who can transfer practical skills.

6.2.4.3 Formal selection processes should be followed to select on-the-job trainers and criteria shall include

- a) experience,
- b) competence,
- c) a safety profile, and
- d) disciplinary and attendance records.

6.2.4.4 Training and development shall be aligned with task analyses and identified competencies for each job category to achieve desired outcomes, and shall include the following:

- a) theoretical and practical training to enable the employee to perform the specific safety-related jobs/tasks;
- b) equipment-specific training, in addition to 6.2.4.3(a), related to area/depot specific operations to ensure competence to perform multiple tasks;
- c) compulsory refresher courses based on accreditation principles and agreed standards related to area/depot specific operations at intervals not exceeding 24 months;
- d) ad hoc training resulting from
  - 1) an occurrence,
  - 2) a recommendation from a board of inquiry, and
  - 3) the absence from operational duty for a period exceeding six months in accordance with 6.4;
- e) on-the-job observations at intervals not exceeding 30 days, with immediate corrective action in the case of any transgressions;
- f) scheduled safety briefings to be done at intervals not exceeding 30 days and that include
  - 1) case study discussions of occurrences (incident recalls),
  - 2) risk issues resulting from on-the-job observations,
  - 3) discussions of important rules, and

- 4) anticipated system/equipment changes;
- g) daily safety briefings (green-area talks) done at sign-on or sign-off (or both) to inform employees of operational issues;
- h) ad hoc safety briefings and incident awareness;
- i) education and training to ensure fitness for duty and that promote safe working practices, including
  - 1) HFID,
  - 2) physical environmental factors, and
  - 3) organizational and psychological factors; and
- j) education and training relevant to non-functional job-related competencies.
- k) education and training of relevant national legislation and standards

#### **6.2.5 Assessment and moderation**

**6.2.5.1** The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures for assessment and moderation, where relevant, in accordance with the relevant national legislation (see foreword).

##### **6.2.5.2** Assessors shall

- a) be appropriately qualified and registered as assessors where required,
- b) be registered, where required against the specific unit standards for which they can demonstrate proof of subject matter expertise,
- c) where required have valid certificates of competence for areas of assessment, and
- d) be independent to prevent conflict of interest and contamination.

##### **6.2.5.3** Moderators shall

- a) be appropriately qualified and registered as moderators where required,
- b) have adequate working knowledge (i.e. field expertise), where relevant, of the discipline being moderated, and
- c) be independent to prevent conflict of interest and contamination.

##### **6.2.5.4** Employees involved in training and development shall be

- a) subjected to assessments on theoretical knowledge and practical skills,
- b) allowed a maximum of three attempts to be deemed competent in all forms of training and development required for certification,

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NOTE Certification refers to obtaining a qualification or skills programme from a national educational and training quality authority or relevant body, as well as being declared competent and authorized to undertake safety-related work.

- c) required to comply with the minimum and maximum timeframes applicable to the relevant training modules/programmes, and
- d) responsible for keeping evidence of assessments and qualification.

**6.2.5.5** Employees involved in training and development shall be required to achieve

- a) 80% in theoretical assessments, on the understanding that the RA ensures that the knowledge gap be closed, and

NOTE RA determined critical elements should be addressed during the closing of the knowledge gap.

- b) competence (100%) in all practical assessments based on predetermined criteria.

**6.2.5.6** The RA shall ensure that

- a) desired outcomes for each employee involved in training and development are communicated to the training provider for the purpose of feedback, and
- b) processes are in place to manage employees who are involved in training and development and who are declared not yet competent, as specified in 6.2.5.4(b).

## **6.2.6 Certification and licensing**

**6.2.6.1** The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures to manage certification and licensing.

**6.2.6.2** The RA shall ensure that employees who undertake safety-related work are in possession of a

- a) valid certificate of competence,
- b) qualification, where relevant, and
- c) valid license, where relevant.

**6.2.6.3** The education and training quality assurance body or relevant body may issue a qualification or skills programme for accredited training to employees

- a) who successfully completed basic theoretical safety-related functional training, and
- b) for whom the RA has submitted, where relevant, the final formative or summative (or both) assessment of practical knowledge.

**6.2.6.4** The RA shall certify persons competent to undertake safety-related work and, where appropriate, for specific safety-related tasks.

**6.2.6.5** The RA shall, where appropriate, periodically certify a person as competent.

**6.2.6.6** A certificate of competence shall be valid for a period not exceeding 24 months.

**6.2.6.7** A certificate of competence shall lapse if the employee has not performed operational duties for a period exceeding six months.

**6.2.6.8** The RA shall not allow employees younger than 21 years of age to undertake train driver or train control duties.

**6.2.6.9** A licensing authority may issue a licence on condition that the employee complies with pre determined criteria.

### **6.2.7 Management information system**

**6.2.7.1** The RA shall implement and maintain a management information system that shall include the following:

- a) training and development data as described in 6.2.1.4;
- b) safety (risk) profile data that contain
  - 1) occurrences,
  - 2) operational restrictions,
  - 3) findings from investigations and boards of inquiry,
  - 4) work attendance records, and
  - 5) fitness-for-duty outcomes; and
- c) certification and licensing data that include
  - 1) systems or types of equipment (or both), and
  - 2) areas and routes.

**6.2.7.2** The RA shall maintain a portfolio of evidence in the management information system for each employee involved in training and development. This portfolio shall include the following:

- a) dates and venues of training, assessments and moderations;
- b) names of trainers, assessors and moderators;
- c) assessment questionnaires, results obtained, log books and feedback given; and
- d) expiry dates of certificates and due dates for refresher courses.

NOTE Data should be maintained in accordance with the document and data control requirements as specified in SARA 001

### **6.2.8 Monitoring, evaluation and review**

**6.2.8.1** The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures to monitor, evaluate and review the elements of training and development, including the following:

- a) needs analyses;
- b) learning material;
- c) assessments;
- d) moderations;
- e) certifications; and
- f) evaluations.

**6.2.8.2** The RA shall ensure that education and training quality standards are met in accordance with the relevant national legislation (see foreword).

### **6.3 Medical surveillance**

#### **6.3.1 General**

**6.3.1.1** In the context of this clause medical surveillance refers to the planned programme that may include health assessments, clinical examinations, biological monitoring and medical tests performed by OHPs.

**6.3.1.2** Workplace health and safety have a direct relationship with safe railway operations.

**6.3.1.3** Medical surveillance is used to determine, monitor and manage employees' health, which might impact on safe railway operations.

**6.3.1.4** The RA has a duty of care under the relevant national legislation (see foreword) to provide a workplace that is safe and without risks thereby ensuring the health and safety of employees and the public.

**6.3.1.5** Health assessments may provide information on the

- a) physical and psychological health status of employees,
- b) effect of work on the health of employees, and
- c) fitness of employees to perform safety-related work.

**6.3.1.6** The RA shall include medical surveillance as an integral component of the railway safety management system.

**6.3.1.7** RA's and employees have a mutual responsibility to ensure that the requirements for medical surveillance are adhered to.

### **6.3.2 Requirements for the management of medical surveillance**

**6.3.2.1** The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures for the management of medical surveillance in accordance with the relevant national legislation (see foreword).

**6.3.2.2** The medical surveillance programme shall include the following:

- a) a Code of Practice (COP);
- b) a declaration;
- c) education and training of management and employees;
- d) health assessments;
- e) roles and responsibilities;
- f) communication of health-related information; and
- g) monitoring, evaluation and review.

### **6.3.3 Code of practice**

**6.3.3.1** The RA shall establish, develop or adopt, document, implement and maintain a COP to manage medical surveillance (see annex C).

**6.3.3.2** The COP shall include the following:

- a) types of health assessment;
- b) frequency of health assessments; and
- c) action and exclusion criteria as detailed in annex D.

NOTE The action and exclusion criteria are guidelines that assist the OHP to determine fitness for duty in relation to specific medical conditions.

### **6.3.4 Declaration**

**6.3.4.1** The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures for employees to declare medical matters that might impact on safe railway operations.

**6.3.4.2** The employee shall declare during medical surveillance

- a) the existence of a medical condition,
- b) the use of medication, and
- c) any unwanted or undesirable effects caused by a medical condition or medication.

**6.3.4.3** The confidentiality of personal information shall be maintained in accordance with the relevant national legislation (see foreword)

**6.3.4.4** The employee shall be required to divulge the nature of the medical condition to the appointed OHP.

### 6.3.5 Education and training

The RA shall establish, develop or adopt, document, implement and maintain policies, processes, and procedures to educate and train management and employees in matters that relate to medical surveillance, including the following:

- a) the relevant national legislation (see foreword), policies, processes and procedures;
- b) roles and responsibilities;
- c) the purpose of the medical surveillance programme and health assessments;
- d) requirements to declare to line management the existence of a medical condition or any unwanted or undesirable effects of the use of medication (or both) that they are experiencing;
- e) the potential impact of medical conditions and the use of medication and substances on safety-related work;
- f) the confidentiality of personal information; and
- g) the importance of providing the appointed OHP with
  - 1) the nature of the existing medical conditions,
  - 2) the contact details of the employee's health practitioner,
  - 3) the names, doses and dosing schedules of all medication, and
  - 4) any unwanted or undesirable effects caused by a medical condition or medication.

### 6.3.6 Health assessments

**6.3.6.1** The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures for conducting health assessments in accordance with the relevant national legislation (see foreword).

**6.3.6.2** The outcomes of health assessments shall

- a) confirm whether employees are physically and psychologically fit to perform safety-related work, and
- b) enable timely responses by the RA to deal with health concerns of individual employees or groups of employees, and be based on the
  - 1) inherent physical and psychological requirements of the jobs/tasks/activities,

NOTE Inherent physical and psychological requirements should be defined as part of the recruitment and selection process (see 6.1).

- 2) hazards to health inherent to a job/task/activity, and

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NOTE Hazards to health should be determined and documented as part of the health risk assessment process.

3) medical surveillance matrix.

NOTE The medical surveillance matrix is a guide for the type, frequency and content of risk-based health assessments that are based on the findings of the health risk assessment

### 6.3.6.3 Health assessments shall be scheduled and conducted

- a) at pre-employment,
- b) periodically, at intervals not exceeding one year,
- c) on promotion or transfer,
- d) on termination of employment (exit health assessment),
- e) post railway occurrences,
- f) on return to work following sick absenteeism,

NOTE The return to work process is part of the attendance management strategy and should include the period after which interventions are implemented for health assessments.

- g) subsequent to changes in the nature of the work, work environment, work processes and control measures,
- h) on suspicion that the worker might have a medical condition that could impact on safe railway operations,
- i) on confirmation or suspicion that a worker might be pregnant as specified in 6.7.7;
- j) on confirmation that a worker is taking medication or is experiencing side effects of medication as specified in 6.6.1.4 and 6.6.1.5,
- k) on the voluntary request of a worker, and
- l) on recommendation by the appointed OHP.

NOTE The appointed OHP may recommend more frequent assessments or monitoring where a worker has or might have a medical condition that could impact on safe railway operations.

**6.3.6.4** The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures for the selection of medical and psychological tests in accordance with the relevant national legislation (see foreword).

These tests may include questionnaires, diagnostic tests, functional measurements and biological monitoring, and shall

- a) be valid,

- b) have high sensitivity, specificity, reliability and predictive value,
- c) be relevant for their intended purpose,
- d) be acceptable to employees, and
- e) comply with ethical guidelines and standards.

### **6.3.7 Roles and responsibilities**

**6.3.7.1** The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures for the use of suitably qualified health professionals to conduct health assessments in accordance with the relevant national legislation (see foreword).

**6.3.7.2** Health professionals shall include

- a) OHPs, and
- b) psychologists to perform accredited and registered psychological tests in accordance with the relevant national legislation (see foreword).

**6.3.7.3** The roles and responsibilities of the appointed OHP shall include the following:

- a) assuming and retaining overall responsibility of the medical surveillance programme;
- b) developing a COP (see annex C);
- c) developing and designing the medical surveillance programme;
- d) implementing and managing the medical surveillance programme;
- e) communicating relevant health-related information;
- f) maintaining professional independence and integrity; and
- g) maintaining the competence and skills necessary for performing duties in accordance with the relevant national legislation (see foreword).

### **6.3.8 Communication of health-related information**

**6.3.8.1** Communication of health-related information by health professionals shall include the following:

- a) providing the employee with the outcome of the health assessment;
- b) counselling the employee about the fitness for duty recommendation;
- c) providing the RA with a medical certificate of fitness for the employee;

**NOTE** The medical certificate of fitness should only report on the employee's fitness to perform safety- related work.

- d) providing group reports on health trends, outcomes and recommendations; and

e) protecting the confidentiality of personal health information.

NOTE 1 The health professional should only report on relevant information. Medical information of a personal nature should not be divulged without the informed written consent of the employee concerned.

NOTE 2 Employees have the right of access to their own medical records.

NOTE 3 Third parties may have access to medical information with the informed written consent of the employee concerned.

**6.3.8.2** Medical records shall, in accordance with the relevant national legislation (see foreword),

- a) be maintained and managed,
- b) remain the responsibility and property of the appointed OHP,
- c) be kept for a period not less than 40 years or an agreed appropriate period, in the case of medical surveillance records, and
- d) be kept for a period not less than five years or an agreed appropriate period in the case of primary healthcare records.

#### **6.3.9 Monitoring, evaluation and review**

The RA shall establish, develop or adopt, document, implement and maintain processes and procedures to monitor, evaluate and review the medical surveillance programme.

### **6.4 Fitness for duty**

#### **6.4.1 General**

**6.4.1.1** In the context of this clause, duty and work have the same meaning and fitness for duty means that the employee complies with specific job requirements, including the following:

- a) inherent psychological and physical requirements;
- b) training and development requirements; and
- c) absence of operational restrictions.

NOTE 1 The employee should report for work well rested, sober, healthy and competent.

NOTE 2 The RA should determine the operational restrictions that would exclude an employee from undertaking safety-related work.

**6.4.1.2** Fitness for duty is crucial for safe railway operations.

**6.4.1.3** The RA shall ensure that employees who undertake safety-related work are fit for duty.

**6.4.1.4** Many factors such as the following might impact on fitness for duty and safe railway operations:

- a) medical conditions – psychological and physical;
- b) fatigue;
- c) substance abuse;
- d) medication;
- e) pregnancy;
- f) training and development; and
- g) employee wellness.

NOTE This clause should be read in conjunction with the relevant clauses in this standard.

**6.4.1.5** RA's and employees have a mutual responsibility to ensure fitness for duty of employees who undertake safety-related work.

#### **6.4.2 Requirements for the management of fitness for duty**

**6.4.2.1** The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures for the management of fitness for duty in accordance with the relevant national legislation (see foreword).

**6.4.2.2** The management of fitness for duty shall be dynamic and risk driven.

**6.4.2.3** The programme shall include the following:

- a) roles and responsibilities;
- b) a declaration;
- c) education and training;
- d) health assessments;
- e) training and development;
- f) readiness for duty;
- g) fitness on duty;
- h) return to work; and
- i) monitoring, evaluation and review.

#### **6.4.3 Roles and responsibilities**

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**6.4.3.1** The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures to appoint a competent person to manage fitness for duty.

**6.4.3.2** The RA shall ensure that employees are fit for duty

- a) before placement (see 6.1),
- b) at the time of rostering,

NOTE Fitness for duty at the time of rostering should consider competency requirements, medical requirements and rostering criteria.

- c) before starting duty (readiness for duty on a daily basis),

NOTE Readiness for duty means that an employee complies with the minimum requirements to be scheduled or rostered.

- d) whilst on duty (fitness on duty),
- e) before resuming duty following a period of absence (return to work), and
- f) periodically as detailed in 6.2 and 6.3.

NOTE Periodically refers to the scheduled training and development and health assessments during medical surveillance.

**6.4.3.3** The RA shall define roles and responsibilities of

- a) line management – first level supervisor,
- b) health professionals, including psychologists and social workers, and
- c) any other professionals as required to manage fitness for duty.

**6.4.3.4** The employee shall comply with any instruction or rule (or both) issued by the RA in the interest of safe railway operations.

**6.4.3.5** The employee shall take personal responsibility to achieve and maintain fitness for duty.

### **6.4.4 Declaration**

**6.4.4.1** The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures for employees to declare any problem that might impact on fitness for duty.

**6.4.4.2** The declaration shall be made

- a) immediately, whilst on duty, or
- b) before commencement of duty.

NOTE The RA should determine how long before commencement of duty the declaration should be made.

**6.4.4.3** The RA shall ensure that the confidentiality of personal information is maintained.

**6.4.4.4** The RA shall not allow any employee who has a problem that might impact on fitness for duty to undertake safety-related work until such employee has been declared fit for duty by the relevant competent person.

#### **6.4.5 Education and training**

The RA shall establish, develop or adopt, document, implement and maintain policies, processes, and procedures to educate management and employees in fitness for duty, including the following:

- a) the relevant national legislation (see foreword), policies, processes and procedures;
- b) a declaration;
- c) fitness for duty assessments – competency, health and operational restrictions;
- d) confidentiality of personal information; and
- e) readiness for duty, fitness on duty, and return to work.

#### **6.4.6 Health assessments**

**6.4.6.1** The RA shall establish, develop or adopt, document, implement and maintain policies and procedures for health assessments in accordance with 6.3.

**6.4.6.2** The RA shall ensure that in matters of dispute on medical fitness for duty, the final recommendation of the appointed OMP will take precedence. The appointed OMP's recommendation will be based on all relevant information, including reports and recommendations from health practitioners.

NOTE A medical certificate of fitness should be issued by the OHP (see table D.1).

#### **6.4.7 Training and development**

The RA shall establish, develop or adopt, document, implement and maintain policies, processes, and procedures to manage the training and development of employees in accordance with 6.2.

#### **6.4.8 Readiness for duty**

**6.4.8.1** The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures to manage readiness for duty in accordance with the relevant national legislation (see foreword).

**6.4.8.2** Management of readiness for duty shall include the following:

- a) evaluation of readiness for duty when
  - 1) employees are scheduled or rostered, and

NOTE Fitness for duty at the time of rostering will consider competency requirements, medical requirements and rostering criteria.

2) employees sign on and sign off; and

NOTE RA's should make use of a checklist, which is to be signed by both the employee and supervisor.

b) procedures and processes when an employee is not allowed to continue with normal duties.

**6.4.8.3** The assessment of readiness for duty shall include the following:

- a) verifying competencies against the requirements for the specific duty;
- b) checking compliance with the rostering rules;
- c) confirming whether any formal operational restrictions apply;
- d) observing unusual behaviour or moods, and signs or symptoms of any impairment that might affect safe railway operations;
- e) arranging for substance abuse testing in accordance with the RA's policies; and
- f) obtaining a written declaration of readiness for duty in respect of fatigue, medication, a chronic medical condition, pregnancy and stress experienced by the employee.

#### **6.4.9 Fitness on duty**

**6.4.9.1** The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures to manage employees who, whilst on duty, experience problems that might impact on fitness for duty, in accordance with the relevant national legislation (see foreword).

**6.4.9.2** Management of fitness on duty shall include the following:

- a) substance abuse testing;
- b) direct behavioural observation;
- c) monitoring of train handling and speed;
- d) monitoring of radio communication;
- e) immediate post-occurrence investigations or tests; and
- f) adherence to rules pertaining to workload limits.

#### **6.4.10 Return to work**

**6.4.10.1** The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures to manage employees who return to work after a period of absence, in accordance with the relevant national legislation (see foreword). These shall include the following:

- a) injury or sick absence;
- b) annual leave;
- c) unauthorized absence;
- d) maternity leave;
- e) other absences; and
- f) operational restrictions.

NOTE The RA should determine the period of absence after which an assessment of return to work is required.

**6.4.10.2** Employees returning to work after more than six months absence shall be subjected to compulsory refresher training and assessment in accordance with 6.2.

#### **6.4.11 Monitoring, evaluation and review**

The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures to monitor evaluate and review the management of fitness for duty.

### **6.5 Chronic medical conditions**

#### **6.5.1 General**

**6.5.1.1** In the context of this clause, chronic diseases or chronic medical conditions refer to medical conditions that are present for at least six months.

**6.5.1.2** Chronic medical conditions might be incompatible or potentially incompatible with safety-related work owing to their effects particularly on the central nervous system, cardiovascular system, sensory organs and the musculo-skeletal system (see annex D).

NOTE 1 Incompatible chronic medical conditions refer to chronic medical conditions that prohibit the employee from undertaking safety-related work.

NOTE 2 Potentially incompatible chronic medical conditions refer to chronic medical conditions that may be controlled where the level of control determine fitness to undertake safety-related work.

**6.5.1.3** RA's and employees have a mutual responsibility to mitigate the unwanted and undesirable effects of chronic medical conditions to ensure safe railway operations.

#### **6.5.2 Requirements for the management of chronic medical conditions**

**6.5.2.1** The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures for the management of employees with chronic medical conditions in accordance with the relevant national legislation (see foreword).

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**6.5.2.2** Management of chronic medical conditions shall form part of the medical surveillance programme and shall include the following:

- a) a COP (see annex C);
- b) action and exclusion criteria (see annex D);
- c) a declaration;
- d) education and training of management and employees;
- e) health assessments; and
- f) monitoring, evaluation and review.

**6.5.2.3** The chronic medical condition management programme shall be dynamic and risk driven.

### **6.5.3 Code of practice**

**6.5.3.1** The RA shall adopt, document, implement and maintain a COP to manage chronic medical conditions in accordance with the relevant national legislation (see foreword). (See annexes C, D and E.)

**6.5.3.2** The COP shall include the following:

- a) the type of assessments;
- b) the frequency of assessments; and
- c) action and exclusion criteria (see annex D).

**6.5.3.3** The action and exclusion criteria shall serve as guidelines for the appointed OHP to determine fitness for duty (see annex D).

### **6.5.4 Declaration**

**6.5.4.1** The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures for employees to declare whether they have a chronic medical condition and any side effects related thereto.

**6.5.4.2** The employee shall declare before the commencement of duty

- a) any existing chronic medical condition if it has not been declared before,
- b) a newly diagnosed chronic medical condition, and
- c) any side effects that he/she is experiencing.

NOTE The RA should determine how long before commencement of duty the declaration should be made.

**6.5.4.3** The confidentiality of personal information shall be maintained in accordance with the relevant national legislation (see foreword).

**6.5.4.4** The employee shall only be required to divulge the nature of the chronic medical condition to the appointed OHP.

### **6.5.5 Education and training**

The RA shall establish, develop or adopt, document, implement and maintain policies, processes, and procedures to educate and train management and employees in matters that relate to chronic medical conditions, including the following:

- a) the relevant national legislation (see foreword), policies, processes and procedures;
- b) requirements to declare to line management any existing chronic medical condition, a newly diagnosed chronic medical condition, and any side effects that employees are experiencing;
- c) the potential impact of chronic medical conditions on the employee's ability to undertake safety-related work;
- d) the purpose of health assessments;

NOTE See 6.3, 6.4, 6.5.6, 6.6, 6.7, 6.8, 6.9, 6.10 and 6.11.

- e) the importance of discussing with the employee's health practitioner the impact of the chronic medical condition on safety-related work;
- f) the importance of requesting information from the employee's health practitioner about any potential effects of a chronic medical condition;
- g) the confidentiality of personal information; and
- h) the importance of the employee providing the appointed OHP with
  - 1) the nature of the existing chronic medical condition,
  - 2) the contact details of the employee's health practitioner,
  - 3) the names, doses and dosing schedules of all medications, and
  - 4) any side effects that he/she is experiencing.

### **6.5.6 Health assessments**

**6.5.6.1** The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures for the health assessments of employees with chronic medical conditions in accordance with the relevant national legislation (see foreword) to determine fitness for duty. (See 6.3 and 6.4.)

**6.5.6.2** The RA shall ensure that no employee is allowed to perform safety-related work unless he/she has been declared fit for duty by the appointed OMP subsequent to health assessments, when the employee

- a) has a chronic medical condition,
- b) is on medication with potentially unwanted or undesirable effects, and

- b) is experiencing unwanted or undesirable effects caused by medical conditions or medication (see annex E).

**6.5.6.3 Health assessments shall determine**

- a) the nature and level of control of the chronic medical condition,
- b) the efficacy of medication and compliance with the treatment regime,
- c) the frequency of follow-up assessments, and
- d) whether the employee is physically and psychologically fit to undertake safety-related work.

**6.5.6.4** The RA shall ensure that in matters of dispute on safety and fitness for work, the final decision of the appointed OMP takes precedence.

**6.5.6.5** The ongoing treatment and management of chronic medical conditions should be the responsibility of the employee's health practitioner.

**6.5.6.6** The appointed OMP shall communicate and consult with the employee's own health practitioner to ensure the effective management of the chronic medical condition.

**6.5.6.7** The appointed OHP shall provide the RA with a medical certificate of fitness for duty for employees (see table D.1 for an example of such a certificate).

**6.5.7 Monitoring, evaluation and review**

The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures to monitor evaluate and review the management programme of chronic medical conditions.

**6.6 Medication**

**6.6.1 General**

**6.6.1.1** In the context of this clause, medication, substances, and medicine have the same meaning.

**6.6.1.2** Medication taken by individual employees for the prevention, treatment or cure of medical conditions might have unwanted and undesirable effects, which could affect work performance and impact on safe railway operations (see annex E).

**6.6.1.3** Medication includes medicines that are

- a) taken by the employee as prescribed by a health practitioner, and
- b) bought over the counter.

**6.6.1.4** Effects of medication include the following:

- a) effects that are predictable and usually dose related;

- b) effects that are unpredictable and not dose related; and
- c) effects that might result from interaction with other medication, alcohol and other chemical substances.

**6.6.1.5** The unwanted and undesirable effects of medication on organ systems including the central nervous system, cardiovascular system, sensory organs and the musculo-skeletal system are of particular concern.

NOTE Potential side effects of certain medication are detailed in annex E.

**6.6.1.6** RA's and employees have a mutual responsibility to mitigate the unwanted or undesirable effects of medication to ensure safe railway operations.

### **6.6.2 Requirements for the management of employees on medication**

**6.6.2.1** The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures for the management of employees who are on medication, in accordance with the relevant national legislation (see foreword). (See 6.3, 6.4 and 6.5.)

**6.6.2.2** The policies, processes, and procedures shall include the following:

- a) a declaration;
- b) education and training of management and employees;
- c) health assessments; and
- d) monitoring, evaluation and review.

### **6.6.3 Declaration**

**6.6.3.1** The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures for employees to declare the use of medication and any unwanted or undesirable effects that they are experiencing.

**6.6.3.2** The employee shall declare before the commencement of duty

- a) the possession of, intent to use, or use of, medication,
- b) any unwanted or undesirable effects that he/she is experiencing, and
- c) any changes that have been made to the treatment regime.

NOTE The RA should determine how long before commencement of duty the declaration should be made.

**6.6.3.3** The confidentiality of personal information shall be maintained in accordance with the relevant national legislation (see foreword).

**6.6.3.4** The employee shall be required to divulge the names of the medication or the nature of the medical condition being treated only to the appointed OHP.

#### 6.6.4 Education and training

The RA shall establish, develop or adopt, document, implement and maintain policies, processes, and procedures to educate and train management and employees in matters that relate to medication, including the following:

- a) the relevant national legislation (see foreword), policies, processes and procedures;
- b) requirements to declare to line management the possession of, intent to use or use of medication, and any unwanted or undesirable effects that employees are experiencing;
- c) any unwanted or undesirable effects of medication and the impact thereof on the employee's ability to undertake safety-related work;
- d) the purpose of health assessments;
- e) the importance of discussing with the employee's health practitioner the impact of medication on safety-related work;
- f) the importance of requesting information from the employee's health practitioner about any unwanted or undesirable effects of medication;
- g) the confidentiality of personal information; and
- h) the importance of the employee providing the appointed OHP with
  - 1) the contact details of the employee's health practitioner,
  - 2) the names, doses and dosing schedules of all medications, and
  - 3) any unwanted or undesirable effects that he/she is experiencing.

#### 6.6.5 Health assessments

**6.6.5.1** The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures for the referral of employees to the appointed OHP to determine fitness for duty (see 6.3 and 6.4).

**6.6.5.2** The RA shall ensure that no employee is allowed to perform safety-related work unless he/she has been declared fit for duty by the appointed OMP subsequent to a health assessment when the employee is

- a) on medication with potential unwanted or undesirable effects, and
- b) experiencing unwanted or undesirable effects.

**6.6.5.3** The RA shall ensure that in matters of dispute on safety and fitness for duty, the final decision of the OMP takes precedence.

**6.6.5.4** The treatment and management of employees on medication shall be the responsibility of the employee's health practitioner.

**6.6.5.5** The appointed OHP shall communicate and consult with the employee's health practitioner to ensure the effective management of the employee on medication.

**6.6.5.6** The appointed OHP shall provide the RA with a medical certificate of fitness for employees.

#### **6.6.6 Monitoring, evaluation and review**

The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures to monitor, evaluate and review the management of employees who are on medication.

### **6.7 Pregnancy**

#### **6.7.1 General**

**6.7.1.1** In the context of this clause

- a) a suspected and confirmed pregnancy shall be treated the same, and
- b) breastfeeding is not specifically addressed as it does not directly impact on safe railway operations.

**6.7.1.2** Pregnancy might have a direct impact on the ability of an employee to undertake safety-related work. See the relevant national legislation, (see foreword) for the aspects of pregnancy that might affect work.

**6.7.1.3** Safety-related work might have an impact on the outcome of a pregnancy. See the relevant national legislation (see foreword) for the aspects of work that might affect pregnancy.

**6.7.1.4** RA's and employees have a mutual responsibility to

- a) mitigate the impact of pregnancy on safe railway operations, and
- b) protect the health and safety of the pregnant employee and the foetus in accordance with the relevant national legislation (see foreword).

#### **6.7.2 Requirements for the programme to manage pregnant employees**

**6.7.2.1** The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures for the management of pregnant employees in accordance with the relevant national legislation (see foreword) and regulations.

**6.7.2.2** The programme to manage pregnant employees shall include the following:

- a) recruitment and selection;
- b) risk management;
- c) a declaration;
- d) education and training;
- e) health assessments;

- f) deployment;
- g) workplace arrangements; and
- h) monitoring, evaluation and review.

### **6.7.3 Recruitment and selection**

The RA shall ensure that recruitment and selection procedures do not unfairly discriminate against pregnant employees in accordance with the relevant national legislation (see foreword) and as specified in 6.1.

### **6.7.4 Risk management**

The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures to manage pregnant employees in accordance with the relevant national legislation (see foreword), including the following:

- a) identification of hazards in safety-related jobs/tasks/activities/tools/equipment and working conditions that might be unsuitable for pregnant employees;
- b) education and training of management and employees in the hazards and risks that might impact on pregnancy;
- c) the elimination or mitigation of exposure to hazards (or both) that might impact on the health and safety of pregnant employees; and
- d) identification of alternative work that might be suitable for employees who are temporarily unable to undertake safety-related work during pregnancy.

### **6.7.5 Declaration**

**6.7.5.1** The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures

- a) for employees to declare pregnancy and suspected pregnancy as early as possible, and
- b) to maintain a list of all pregnancy notifications.

**6.7.5.2** The confidentiality of personal information shall be maintained in accordance with the relevant national legislation (see foreword).

### **6.7.6 Education and training**

The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures to educate and train management and employees in the following:

- a) the relevant national legislation (see foreword), policies and procedures;
- b) requirements to declare as early as possible pregnancy and suspected pregnancy;
- c) the purpose of health assessments;

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- d) the importance of discussing with the employee's health practitioner the impact of pregnancy on safety-related work and vice versa;
- e) confidentiality of personal information; and
- f) the importance of providing the appointed OHP with the contact details of the employee's health practitioner.

### **6.7.7 Health assessments**

**6.7.7.1** The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures for health assessments to

- a) confirm pregnancy, and

**NOTE** Tests to confirm pregnancy may be performed by the employee's health practitioner or the appointed OHP.

- b) determine whether the pregnant employee is physically and psychologically fit to undertake safety-related work.

**6.7.7.2** Health assessments shall be done

- a) before placement in the case where a pregnant woman is recruited or selected,

**NOTE** The health assessment should be performed subsequent to recruitment, when a decision about the employment of an employee has been taken in principle, subject to the result of the health assessment.

- b) as soon as is reasonably practicable from the date of the declaration or notification in the case of pregnant employees who are currently employed,
- c) at intervals stipulated by the appointed OHP for follow-up assessment,
- d) on return to work following maternity leave,
- e) at any time during pregnancy when the employee is presented with a pregnancy related condition or problem that might affect her ability to undertake safety-related work, and
- f) by the appointed OHP as detailed in 6.3.

**6.7.7.3** The RA shall ensure that in matters of dispute on safety and fitness for work, the final decision of the OHP takes precedence.

**6.7.7.4** The ongoing treatment and management of pregnancy shall be the responsibility of the employee's health practitioner.

### **6.7.8 Deployment**

**6.7.8.1** The RA shall ensure that no employee is allowed to undertake safety-related work unless she has been declared fit for duty by the appointed OHP, subsequent to a health assessment in accordance with the relevant national legislation (see foreword), when the employee

- a) is pregnant, or

- b) suspects pregnancy.

**6.7.8.2** The RA shall, in accordance with the relevant national legislation (see foreword)

- a) temporarily deploy employees into suitable alternative work when employees are declared at risk to continue safety-related work; and
- b) redeploy employees into safety-related work when employees are declared fit to return to work.

### **6.7.9 Workplace arrangements**

The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures for workplace arrangements in accordance with the relevant national legislation (see foreword) to

- a) accommodate pregnant employees, and
- b) ensure that these arrangements do not impact negatively on safe railway operations.

### **6.7.10 Monitoring, evaluation and review**

The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures to monitor, evaluate and review the management of pregnant employees.

## **6.8 Employee wellness**

### **6.8.1 General**

**6.8.1.1** An integrated and comprehensive approach to workplace wellness is a powerful strategy for promoting positive and healthy lifestyles, which will contribute to safe railway operations (see annex F).

**6.8.1.2** The management of employee wellness requires understanding, commitment and participation at all levels within railway operations.

**6.8.1.3** Employees have the responsibility to manage their own well-being, including participating in workplace programmes. RA's have the responsibility to create and maintain a safe and healthy workplace in accordance with the relevant national legislation (see foreword).

### **6.8.2 Requirements to manage employee wellness**

**6.8.2.1** The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures for the management of employee wellness.

**6.8.2.2** The employee wellness management programme shall be dynamic and risk-driven and shall include the following:

- a) roles and responsibilities;
- b) education and training;

- c) interventions; and
- d) monitoring, evaluation and review.

### **6.8.3 Roles and responsibilities**

#### **6.8.3.1** The RA shall

- a) appoint a person with the relevant authority and responsibility to manage employee wellness, and
- b) define the roles and responsibilities of the appointed person.

#### **6.8.3.2** The appointed person shall, where relevant, use the services of

- a) health professionals, including psychologists and social workers, and
- b) any other professionals as needed for the workplace wellness programme.

### **6.8.4 Education and training**

The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures to educate and train management and employees in matters that relate to employee wellness, including the following:

- a) relevant policies, processes and procedures;
- b) roles and responsibilities; and
- c) hazards to employee wellness, including
  - 1) unhealthy lifestyles – inadequate rest, smoking, substance abuse, lack of exercise; unhealthy eating habits,
  - 2) chronic diseases – high blood pressure, diabetes, epilepsy, obesity, depression, HIV infection, tuberculosis,
  - 3) fatigue as specified in 6.10, and
  - 4) stress as specified in 6.11.

### **6.8.5 Interventions**

The RA shall establish, develop or adopt, document, implement and maintain policies, processes, and procedures to provide interventions, including the following:

- a) health promotion to encourage a healthy lifestyle;
- b) absenteeism and attendance management;
- c) wellness assessments such as screening for lifestyle risk factors, chronic diseases and health assessments as specified in 6.3;
- d) employee assistance, support and rehabilitation relating to substance abuse, and emotional, financial and legal issues; and

- e) appropriate referral of employees with identified problems or conditions.

#### **6.8.6 Monitoring, evaluation and review**

The RA shall establish, develop, adopt, document, implement, and maintain policies, processes and procedures to monitor, evaluate and review the employee wellness management programme.

#### **6.9 Substance abuse**

##### **6.9.1 General**

**6.9.1.1** Substance abuse in the context of this clause refers to the use of illegal drugs as defined in the relevant national legislation (see foreword) and the sustained, inappropriate, or sporadic excessive use of alcohol and legal drugs.

**6.9.1.2** The term "substance abuse" refers to any substance that

- a) is misused for purposes other than intended,
- b) has an undesirable effect on the central nervous system,
- c) has the potential to create social problems through physical or psychological addiction, and
- d) is restricted by law in accordance with the relevant national legislation (see foreword).

**6.9.1.3** The effects of substance abuse on employees, which might impact on safe railway operations, include the following:

- a) increased risk taking;
- b) carelessness;
- c) inadequate attention to detail or not paying attention to detail;
- d) acting without thinking about consequences;
- e) decreased concentration;
- f) reaction-time increase resulting in slower reactions;
- g) forgetfulness;
- h) poor judgement of distance and speed of moving objects;
- i) impaired coordination;
- j) impaired sensory perception;

**EXAMPLES**      Less sensitivity in fingertips, affected hearing, blurred vision, loss of balance.

- k) violent and aggressive behaviour;

- l) sleep deprivation; and
- m) impaired communication due to slurred speech.

**6.9.1.4** RA's and employees have a mutual responsibility to contribute to safe railway operations by

- a) striving to eliminate substance abuse, and
- b) mitigating the impact of substance abuse.

## **6.9.2 Requirements for the management of substance abuse**

**6.9.2.1** The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures for the management of substance abuse in compliance with the relevant national legislation (see foreword).

**6.9.2.2** The RA shall adopt a zero-tolerance approach to substance abuse by ensuring that

- a) any employee who contravenes policies or procedures (or both) faces a predetermined disciplinary process, irrespective of the employee's title, position or status in the organization;
- b) no employee has in his/her possession, or partakes of, or offers any other employee, a substance of abuse;
- c) no employee hands over his/her duties to another employee if such employee is or is suspected of being under the influence of, in possession of, partaking of, or offering any other employee, a substance of abuse while in the workplace;
- d) no employee who is, or appears to be, under the influence of any substance of abuse as detailed in table 1 enters the workplace; and
- e) no person is allowed entry into the workplace or to remain in the workplace if such a person is, or appears to be, under the influence of, in possession of, partaking in the use of, or offering any employee, a substance of abuse in accordance with the relevant national legislation (see foreword).

**6.9.2.3** The following criteria shall require action by the RA in terms of the substance abuse programme:

- a) a blood alcohol concentration exceeding 0,02% (milligram per hundred millilitres of blood);
- b) any positive screening test for an illegal drug followed by a positive confirmatory test; and
- c) any positive screening test for a legal drug followed by a positive confirmatory test.

**NOTE 1** A screening test is a rapid test performed to check for the presence of the substance at the time of testing. Screening tests should be specific and sensitive. The confirmatory test is used to confirm the screening test. The confirmatory test should be a laboratory test (i.e. a different test from the first or screening test). Confirmatory tests can also test for evidence of long-term use.

NOTE 2 Legal drugs include prescription and over-the-counter drugs, which impair the ability of the employee to undertake safety-related work.

**6.9.2.4** The substance abuse programme shall be dynamic and risk driven.

**6.9.2.5** The substance abuse programme shall include the following:

- a) roles and responsibilities;
- b) education and training;
- c) testing;
- d) treatment and rehabilitation; and
- e) monitoring, evaluation and review.

### **6.9.3 Roles and responsibilities**

**6.9.3.1** The RA shall

- a) appoint a person with the relevant responsibility and authority to manage substance abuse, and
- b) define the roles and responsibilities of the appointed person.

**6.9.3.2** Employees shall

- a) not enter the workplace when under the influence of a substance of abuse,
- b) not have in their possession, or partake of, or offer any other employee, a substance of abuse while in the workplace,
- c) be responsible for declaring the undertaking of safety-related work to, and to discuss possible effects of prescribed medication with, the health practitioner, and
- d) notify the RA if safe railway operations might be affected because they or other employees are or are suspected of being under the influence of, in possession of, partaking of, or offering any other employee, a substance of abuse while in the workplace.

NOTE See 6.3, 6.4 and 6.5.

### **6.9.4 Education and training**

The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures to educate and train management and employees in the substance abuse programme, including the following:

- a) the relevant national legislation (see foreword), policies, processes and procedures;
- b) health risks at work and off the job, such as

- 1) the physical, psychological and social effects of substance abuse, and
  - 2) the signs and symptoms of intoxication, potential substance abuse and related problems;
- c) roles and responsibilities; and
- d) commonly used substances of abuse.

### **6.9.5 Testing**

**6.9.5.1** The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures to manage the testing of substance abuse in accordance with the relevant national legislation (see foreword).

**6.9.5.2** Testing for substance abuse shall include screening for evidence of the following:

- a) illegal drugs;
- b) legal drugs;
- c) alcohol; and
- d) chronic substance abuse.

NOTE Screening for chronic substance abuse refers to laboratory testing to identify the use of substances over a period of time irrespective of whether the person is, at the time of testing, under the influence of the substance.

**6.9.5.3** Testing shall be performed under the following circumstances:

- a) post occurrence, including an incident;
- b) based on cause for suspicion (see table 1);
- c) on voluntary request by an employee;
- d) testing scheduled before re-certification and during health assessments in accordance with 6.2 and 6.3;
- e) random testing; and

NOTE The RA should define the approach to random testing and include the statistical method of determining the percentage of employees to be tested and the time of testing.

- f) routine testing.

NOTE The RA should define the approach to routine testing.

**6.9.5.4** The RA shall ensure that testing is performed by a competent person.

NOTE Only a health practitioner may test for chronic substance abuse.

6.9.5.5 The RA shall ensure that

- a) equipment is used and maintained according to the manufacturer's specifications,
- b) records of testing are maintained in a safe and confidential manner,
- c) the confidentiality of personal information be maintained, and
- d) only the test result (screening and confirmatory) be divulged.

NOTE The report on substance abuse testing may include the type of substance, and value – positive or negative.

**Table 1 — Observations of causes for reasonable suspicion**

1	2
Aspect	Observation
Breath	Smell of intoxicating liquor/alcohol
Skin colour	Pale, flushed
Attitude	Uncooperative, talkative, anxious, excited, dreamy, relaxed, sedated, antagonistic, hostile, irritable, cocky, unable to follow instructions, depressed, aggressive, has difficulty staying awake, restless, alert, unresponsive, vague, argumentative, agitated
Actions	Swearing, hiccupping, belching, vomiting, fighting, drooling, restless, runny nose, loss of emotional control, itching, scratching, repetitive behaviours, disorganized
Eyes	Watery, glazed, bloodshot, eyelids drooping, pupils pinpointed, pupils wider than normal, glassy
Breathing	Normal, short, jerky, shallow, slow
Speech	Incoherent, slurred, confused, fast, slow, repetitious, difficulty with pronunciation or forming sentences
Balance	Unsteady, swaying, sagging, falling, staggering, needing support, stumbling
Movements	Clumsy, jerky, sluggish, tremor, running or jumping around, slow, fidgeting
Level of sobriety	Slightly affected/moderately affected/extremely affected by alcohol or other substances
Additional indicators	Presence of drug paraphernalia (such as syringes, swabs, tourniquets and devices for smoking drugs) Admission of consumption of alcohol or drug-taking Clinical dehydration

### 6.9.6 Treatment and rehabilitation interventions

The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures to provide access to treatment and rehabilitation for employees with substance abuse related problems. Access to treatment and rehabilitation shall be in compliance with the relevant national legislation (see foreword) and in accordance with 6.8.

### 6.9.7 Monitoring, evaluation and review

The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures to monitor, evaluate and review the substance abuse programme.

### 6.10 Fatigue management

#### 6.10.1 General

**6.10.1.1** In the context of this clause fatigue refers to the accumulated physical and psychological conditions when the employee's maximum physical and mental limits have been exceeded.

**6.10.1.2** The major factors that might contribute to fatigue include the following:

a) individual factors;

EXAMPLES Age, personality, body clock (circadian rhythms), diet, fitness and general health.

b) social factors;

EXAMPLES Travel arrangements (i.e. mode, duration, time of day, distance) to and from work, lifestyle, stress, marital status, children, leisure interests and moonlighting.

c) job factors; and

EXAMPLES Workload, including over and under workload, and rostering practices.

d) organizational factors.

EXAMPLES Job design, management practises and supervision, policies and procedures.

**6.10.1.3** The major effects of fatigue on the employee that might impact on safe railway operations include the following:

a) impaired cognitive functioning;

EXAMPLES Impaired vigilance, alertness, memory and concentration.

b) impaired affective functioning;

EXAMPLES Irritability, lethargy, apathy and depressed mood and state.

c) changes in behavioural functioning; and

EXAMPLES Drowsiness, increased errors, reduced reaction time, paralysis, automatic behaviour and impaired decision-making.

d) changes in physical functioning.

EXAMPLES Reduced reaction time, for example speed, head/neck bobbing/"micro sleeps", reduced hand-eye coordination, digestive problems, giddiness, restless leg syndrome, increased or decreased blood pressure.

**6.10.1.4** The effects of fatigue are cumulative and might impact on the employee's health.

**6.10.1.5** RA's and employees have a mutual responsibility to ensure that fatigue is understood and managed.

### **6.10.2 Requirements to manage fatigue**

**6.10.2.1** The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures to manage fatigue in accordance with the relevant national legislation (see foreword).

**6.10.2.2** The fatigue management programme shall be a dynamic and risk-driven process and shall include the following:

- a) roles and responsibilities;
- b) education and training;
- c) RAs;
- d) controls; and
- e) monitoring, evaluation and review.

### **6.10.3 Roles and responsibilities**

**6.10.3.1** The RA shall

- a) appoint a person with the relevant authority and responsibility to manage the fatigue management programme, and
- b) define the roles and responsibilities of the appointed person.

**6.10.3.2** The appointed person shall use, where relevant, resources, including the following:

- a) employees and their representative structures;
- b) line management;
- c) OHPs;
- d) social workers;
- e) psychologists; and
- f) human factor specialists/ergonomists.

#### 6.10.4 Education and training

The RA shall establish, develop or adopt, document, implement and maintain policies, processes, and procedures to educate and train management and employees in fatigue management, including the following:

- a) the relevant national legislation (see foreword), policies, processes and procedures;
- b) health effects and safety risks at work and off-the-job, such as
  - 1) causes and effects of fatigue,
  - 2) circadian rhythms,
  - 3) sleep hygiene, sleep physiology and sleep disorders, and
  - 4) lifestyle management,
- c) roles and responsibilities;
- d) the purpose of workload assessments, health assessments and risk assessments;
- e) shift work;
- f) rostering – principles and best practices;
- g) fatigue monitoring; and
- h) controls.

#### 6.10.5 Risk management

The RA shall establish, develop or adopt, document, implement and maintain policies, processes, and procedures to identify fatigue risk factors, including the following:

- a) identifying jobs/tasks/activities and work environments where factors that might contribute to fatigue are prevalent (see 6.10.1.2);
- b) conducting workload assessments to determine
  - 1) a worker's capability and limitations to meet the physical and psychological demands of his/her jobs/tasks/activities,
  - 2) capacity or potential to take on additional tasks,
  - 3) ability to cope with emergency situations, and
  - 4) whether tasks, equipment or environment can be altered to achieve optimal performance;
- c) determining the level of risk; and
- d) evaluating control measures.

## 6.10.6 Controls

**6.10.6.1** The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures for the implementation of controls to manage fatigue that comply with the relevant national legislation (see foreword).

**6.10.6.2** Controls shall include the following:

- a) rostering practices;
- b) fatigue monitoring; and
- c) fatigue-counter strategies.

**6.10.6.3** Rostering practices shall aim to

- a) minimize the cumulative effects of fatigue by restricting the number of consecutive night or early morning shifts,
- b) prevent undue fatigue of employees whose work time exceeds normal daily and weekly shift limits owing to abnormal circumstances,
- c) ensure adequate rest periods between shifts – work-to-rest ratio,

NOTE A shift diagram may be used to illustrate the pattern of consecutive shifts.

- d) minimize interruption of rest periods,

NOTE Organized labour may negotiate the duration of the book-off system rest period.

- e) allow workers returning from a period of absence that exceeds three days (72 h) to start with a day shift commencing before midday, and
- f) allow line management to assess readiness for work in accordance with 6.4.8 at the start of the shift, especially for employees who undertake permanent night duty.

**6.10.6.4** Rostering principles shall include strategies to

- a) obtain input from employees and their representative structures,
- b) prevent deviations from working time (shifts) requirements,
- c) monitor staff availability,
- d) prevent shift swapping,
- e) provide for abnormal working conditions, and
- f) assess and manage fatigue risk periods in work schedules.

**6.10.6.5** Rostering policies shall specify the

- a) maximum length of shift or period on duty,
- b) minimum rest intervals between shifts or periods on duty,

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- c) maximum number of hours to be worked in seven consecutive days,
- d) minimum frequency and number of rest days,
- e) maximum number of consecutive day shifts,
- f) maximum number of consecutive night shifts and early morning shifts, and
- g) number and duration of rest periods during the shift according to the workload.

**6.10.6.6** Fatigue monitoring methods shall include the following:

- a) behavioural observation for signs and symptoms of fatigue while performing tasks;
- b) qualitative techniques;

EXAMPLES Questionnaires and interviews.

- c) quantitative techniques; and

EXAMPLE Occurrences data analysis.

- d) a fatigue reporting process.

NOTE The RA should establish a system to report fatigue.

**6.10.6.7** Fatigue-counter strategies shall include the following:

- a) optimizing workload management with respect to

- 1) the staff complement,
- 2) task allocation (frequency and duration),
- 3) rostering practices,
- 4) working time,
- 5) rest periods,
- 6) physical environmental factors, and
- 7) HFID;

- b) providing education and training; and

- c) conducting health assessments to determine fitness for duty as described in 6.3 and 6.4.

### **6.10.7 Monitoring, evaluation and review**

The RA shall establish, develop or adopt, document, implement and maintain policies processes and procedures to monitor, evaluate and review the fatigue management programme.

NOTE In order to assess the effectiveness of the fatigue management programme, an adequate data base reflecting fatigue-related incidents and near misses should be established for trend analysis.

## **6.11 Stress management**

### **6.11.1 General**

**6.11.1.1** Stress is a person's adverse physical, physiological, and psychological reaction to pressure or other types of demand that a person is unable to cope with or control.

**6.11.1.2** The dynamics of work stress are illustrated in figure 1. The model in figure 1 provides some examples of hazards, symptoms, and outcomes.

**6.11.1.3** Major factors that might contribute to stress include the following:

a) demands on the employees;

EXAMPLES Work caused by abnormal working conditions, under and over workload, specific task induced stress, night work, shift rostering, deadlines, resource availability or lack thereof, conflicting priorities, technology.

b) the employees' level of control with regard to carrying out the work;

EXAMPLE Organizational processes or bureaucracy.

c) the level of support (encouragement) and resources provided to the employees;

EXAMPLE The organization, line management and colleagues may provide or withhold support and resources.

d) the level of conflict that the employees experience;

EXAMPLE Conflict might be related to work, family and social relationships.

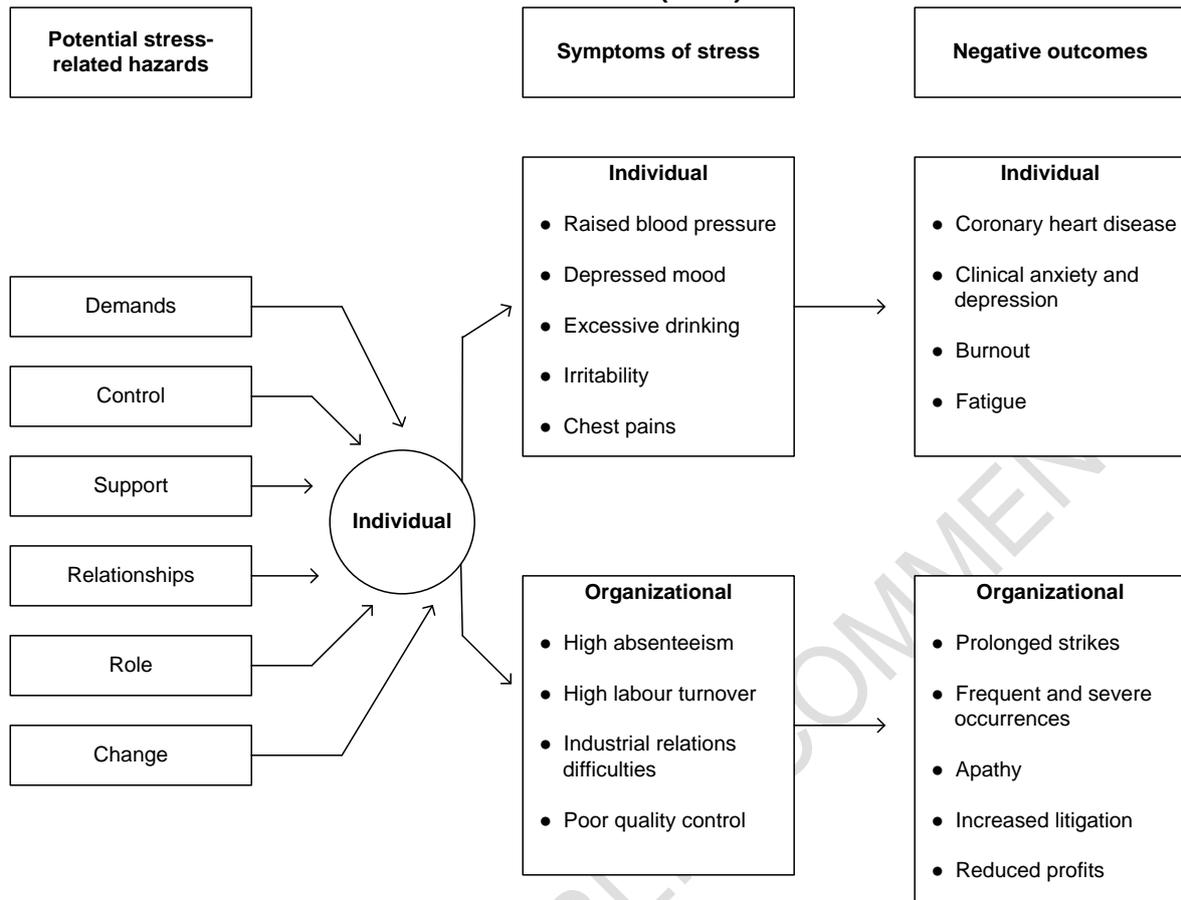
e) the employees' ability to understand and manage their roles and responsibilities; and

f) the level of organizational change that the employees experience and their perception of how well the change is managed.

**6.11.1.4** The effect of stress on employees' work performance might impact on safe railway operations as described in annex G.

**6.11.1.5** Stress might have negative outcomes on the individual and the organization as illustrated in figure 1.

**6.11.1.6** RA's and employees have a mutual responsibility to anticipate, identify and manage stress.



NOTE This model was adapted from *A Model of Work Stress* to underpin the health and safety executive advice for tackling work-related stress and stress risk assessments.

**Figure 1 — The dynamics of work stress**

### 6.11.2 Requirements to manage stress

**6.11.2.1** The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures to manage stress.

**6.11.2.2** The stress management programme shall include the following:

- roles and responsibilities;
- education and training;
- risk assessments;
- controls; and
- monitoring, evaluation and review.

### 6.11.3 Roles and responsibilities

#### 6.11.3.1 The RA shall

- a) appoint a person with the relevant authority and responsibility to manage the stress management programme, and
- b) define the roles and responsibilities of the appointed person.

6.11.3.2 The appointed person shall, where relevant, use the services of professionals, such as

- a) OHPs,
- b) social workers, and
- c) psychologists.

#### 6.11.4 Education and training

The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures to educate and train management and employees in matters that relate to stress, including the following:

- a) the relevant national legislation (see foreword), policies, processes and procedures;
- b) health effects and safety risks at work and off-the-job;
- c) roles and responsibilities;
- d) the purpose of risk assessments;
- e) the purpose of the medical surveillance programme; and
- f) controls.

#### 6.11.5 Risk management

The RA shall establish, develop or adopt, document, implement and maintain policies, processes, and procedures to identify stress by using

- a) quantitative methods, and

**EXAMPLES** Data on productivity and performance, individual risk profiles, absenteeism, employee wellness, staff turnover, stress audits, health assessments, and questionnaires.

- b) qualitative methods.

**EXAMPLES** Focus groups, performance appraisals, informal discussions with employees, return-to-work interviews, questionnaires, exit interviews.

### 6.11.6 Controls

The RA shall establish, develop or adopt, document, implement and maintain policies, processes, and procedures for the implementation of controls to manage stress, including the following:

- a) the organizational development to implement improved work and management systems;
- b) the application of HFID principles to improve or replace equipment;
- c) the development of strategies to ensure continual and active communication with all stakeholders on the stress management programme; and
- d) the management of adversely affected employees through
  - 1) conducting health assessments,
  - 2) referring employees to specialists such as psychologists and social workers, and
  - 3) developing appropriate rehabilitation and return-to-work programmes.

NOTE See 6.3, 6.5 and 6.8.

### 6.11.7 Monitoring, evaluation and review

The RA shall establish, develop or adopt, document, implement and maintain policies, processes and procedures to monitor evaluate and review the stress management programme.

#### Annex A (informative)

#### General human-factors-in-design checklists

Tables A.1 to A.3 provide examples of checklists regarding HFID, train cabin design and office design, which may be used during risk assessments to identify hazards due to poor design.

**Table A.1— Checklist for human factors in design**

Area:			
Number of workers:			
1 Manual material handling	Yes	No	Comments
1.1 Is there lifting of loads, tools or equipment?	<input type="checkbox"/>	<input type="checkbox"/>	
1.2 Is there lowering of loads, tools or equipment?	<input type="checkbox"/>	<input type="checkbox"/>	
1.3 Is there overhead reaching for loads, tools or equipment?	<input type="checkbox"/>	<input type="checkbox"/>	
1.4 Is there bending at the waist to handle loads, tools or equipment?	<input type="checkbox"/>	<input type="checkbox"/>	
1.5 Is there twisting at the waist to handle loads, tools or equipment?	<input type="checkbox"/>	<input type="checkbox"/>	

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<b>2 Physical energy demands</b>	<b>Yes</b>	<b>No</b>	<b>Comments</b>
2.1 Do tools and equipment used weigh more than 25 kg?			
2.2 Is reaching more than 55 cm?			
2.3 Is bending, stooping or squatting a primary task/activity?			
2.4 Is lifting or lowering loads a primary task/activity?			
2.5 Is walking or carrying loads a primary task/activity?			
2.6 Is stair or ladder climbing with loads a primary task/activity?			
2.7 Is pushing or pulling of loads a primary task/activity?			
2.8 Is reaching overhead a primary task/activity?			
2.9 Is operating equipment or tools above shoulder height a primary task/activity?			
<b>3 Other musculo-skeletal demands</b>	<b>Yes</b>	<b>No</b>	<b>Comments</b>
3.1 Do manual tasks require frequent, repetitive motions?			
3.2 Does work posture require frequent bending of neck, shoulder, elbow, wrist or finger joints?			
3.3 Does the worker kneel (on one or both knees)?			
3.4 Is the worker unable to change body position often?			
3.5 Does the work involve forceful, quick or sudden motions?			
3.6 Does the work involve whole-hand grasping with straight elbows?			
3.7 Does job posture involve sustained muscle contraction of any limb for periods of more than 30 min?			
3.8 Does the worker stand continuously for periods of more than 30 min?			
<b>4 Environment</b>	<b>Yes</b>	<b>No</b>	<b>Comments</b>
4.1 Is the temperature too hot or too cold?			
4.2 Is there dust?			
4.3 Is the workplace poorly lit?			
4.4 Is the environment noisy?			
4.5 Is the worker working with vibrating hand tools or equipment?			
4.6 Is the worker working with hazardous chemicals?			
4.7 Is the worker subjected to whole-body vibration?			
<b>5 General workplace</b>	<b>Yes</b>	<b>No</b>	<b>Comments</b>
5.1 Are the walkways uneven?			
5.2 Is the floor surface flat and free of obstacles?			

5.3 Is the workplace at a gradient?			
5.4 Is the ceiling height less than 2, 4 m?			
5.5 Is there adequate accessibility for performing the task?			
5.6 Is housekeeping poor?			

**Table A.2 — Checklist for train cabin design**

<b>Area:</b>			
<b>Number of workers:</b>			
<b>Area for consideration</b>	<b>Yes</b>	<b>No</b>	<b>Comments</b>
1 Is the seat height adjustable?			
2 Can the seat be adjusted horizontally?			
3 Is the seat set at the proper height?			
4 Does the seat have proper back support?			
5 Does the seat have a lumbar support?			
6 Are there armrests available?			
7 Are the armrests adjustable?			
8 Are the armrests set at the proper height?			
9 Do you feel any vibration from the equipment through the seat?			
10 Do you feel any vibration from the equipment through the floor?			
11 Do you feel any vibration from the equipment through the controls?			
12 Is the seat mounted to the floor of the cab?			
13 Can the seat be tilted backwards?			
14 Can the seat swivel?			
15 Is the location of the controls or levers adjustable?			
16 Can you easily reach the levers or controls?			
17 Can you easily operate the levers or controls?			
18 Can you easily operate the pedals?			
19 Is the cabin area large enough (i.e. is the area uncramped) for you?			
20 Do you have sufficient upward visibility?			
21 Is your view of the operation obstructed (e.g. by cabin guards, pipes/hoses)?			
22 Do you feel the cabin is noisy?			
23 Can you control the temperature of the cabin?			
24 Does the equipment have steps?			
25 Does the equipment have handrails?			

26 Can you easily open/close the cabin doors?			
27 Does the equipment have proper means for entering the cabin?			
28 Does the equipment have proper means for exiting the cabin?			
29 Do you have a good general view of the ground?			
30 Are the cabin windows free from distracting reflections?			

**Table A.3 — Checklist for office design**

<b>1 Desk/Workstation</b>	<b>Yes</b>	<b>No</b>	<b>Comments</b>
1.1 Do you have enough room on your work surface for all your computer accessories?			
1.2 Is your desk surface deep enough to provide at least 45 cm between your eyes and the computer screen?			
1.3 Are your most frequently accessed items (e.g. phone and manuals) easy to reach?			
1.4 If your desk has a fixed height, is the keyboard tray adjustable?			
1.5 Have you removed all under-desk obstructions?			
1.6 Do you have a document holder to hold paper for prolonged computer inputting?			
1.7 Do your arms rest on, or contact any sharp or square edges on your work surfaces?			
1.8 If a large percentage of your time involves using a phone, do you use a phone headset?			
1.9 Is your source light out of your line of sight?			
<b>2 Chair</b>	<b>Yes</b>	<b>No</b>	<b>Comments</b>
2.1 Is your chair height adjustable?			
2.2 Is your chair back adjustable up and down?			
2.3 Is your chair back contoured to support the lower back?			
2.4 Is your backrest large enough to support your entire back, without interfering with the use of your arms?			
2.5 Is your lumbar support a minimum of 30 cm wide?			
2.6 Is there room (5 cm to 10 cm) between the front edge of the seat pan and the back of your knees?			
2.7 If your feet do not rest flat on the floor when your chair is properly adjusted, do you use a footrest?			
2.8 Is the top of your footrest covered with non-skid material to reduce slippage?			

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2.9 Do your armrests interfere with your getting close to your work?			
2.10 Do your armrests allow you to sit with your shoulders relaxed and not elevated?			
2.11 Does your chair have removable armrests?			
2.12 Is the distance between your armrests adjustable?			
2.13 Are your knees bent forming approximately a 90° or greater angle?			
2.14 Does the chair have a stable base supported by five legs with castors?			
<b>3 Monitor</b>	<b>Yes</b>	<b>No</b>	<b>Comments</b>
3.1 Is the viewing distance to your computer monitor between 45 cm to 75 cm?			
3.2 Is the top of your computer screen at or just below eye level?			
3.3 If you wear bifocals or trifocals, can you see the computer monitor without having to tilt your head back to read the screen or other items in your work area?			
3.4 Is your computer monitor free of glare or reflections?			
3.5 Is the monitor screen clean?			
3.6 Is the character size easy to read?			
3.7 Do you have blinds on the windows near your computer?			
3.8 Do you use a glare screen to reduce glare on your monitor?			
<b>4 Keyboard</b>	<b>Yes</b>	<b>No</b>	<b>Comments</b>
4.1 With your chair adjusted properly is your work surface at approximately elbow level?			
4.2 Are your shoulders relaxed and not elevated when you work at your work surface?			
4.3 Is the height of your keyboard low enough so that your arms are relaxed at your side?			
4.4 When you type or write on your work surface, is there an angle of approximately 90° between your forearms and upper arms and are your elbows close to your body?			
4.5 When you type, are your wrists in line with your forearms and not bent upwards, downwards or side to side?			
4.6 Do you have a wrist rest to support your wrists in a straight and neutral position?			
<b>5 Mouse, trackball or other input device</b>	<b>Yes</b>	<b>No</b>	<b>Comments</b>
5.1 Is your mouse, trackball or other input device (e.g.			

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touch-pad) located directly in your immediate reach zone?			
5.2 Is your mouse or trackball positioned next to your keyboard?			
5.3 Is your mouse or trackball placed together with your keyboard on an adjustable work surface or tray?			
5.4 Is your mouse work surface stable?			
5.5 Is the mouse or trackball at the same level as your keyboard?			
<b>6 Work habits</b>	<b>Yes</b>	<b>No</b>	<b>Comments</b>
6.1 Do you take short and frequent breaks every 20 min to 30 min?			
6.2 Do you frequently change body positions while working?			
6.3 Do you provide your eyes with vision breaks every half hour?			
6.4 Are you free from experiencing any pain or discomfort while working?			

**Annex B**  
(informative)

**Thermal environmental conditions for enclosed spaces**

**B.1** In enclosed spaces the following conditions will contribute to thermal comfort:

- a) in summer a dry-bulb temperature range of 23 °C to 28 °C at a relative humidity of between 40% and 70%; and
- b) in winter a temperature range of 20 °C to 25, 5 °C at a relative humidity of above 30%.

**B.2** Thermal environmental parameters in enclosed working environments may be maintained by using the following:

- a) air-conditioning units that do not discharge directly onto occupants;
- b) thermally insulated floors; and
- c) windows provided with movable visors and tinted shades.

**Annex C**  
(normative)

**Essential guidelines for the development of a code of practice for medical surveillance**

**C.1** A COP shall

- a) provide minimum standards of occupational health and is designed to assist the RA in meeting its legal obligations,

- b) provide practical guidance on consistent occupational health practices by describing the preferred methods or courses of actions,
- c) assist the RA in implementing a risk-based medical surveillance programme,
- d) provide a framework for consistency in fitness for duty certification, and
- e) reflect contemporary medical knowledge, which keeps pace with the current understanding of the impact of certain conditions on the ability of employees to undertake safety-related work.

**C.2** The following shall be considered when drafting the COP:

- a) the relevant national legislation (see foreword);
- b) relevant international and national standards and guidelines;
- c) health risk assessments;
- d) occupational hygiene reports and measurements;
- e) man-job-specifications; and
- f) an occupational health matrix.

**C.3** The COP shall include the following:

- a) roles and responsibilities;
- b) information on employees who require health assessments;
- c) types and frequency of health assessments – pre-employment, transfer, periodic and exit health assessments;
- d) action and exclusion criteria;
- e) fitness for duty classifications;
- f) case management procedures;
- g) RA's' relevant occupational health policies, processes and procedures;
- h) document and data control; and
- i) monitoring, evaluation and review.

**Annex D**  
(normative)

**Medical action and exclusion criteria for employees  
who undertake safety-related-work**

**D.1 General**

**D.1.1** The medical action and exclusion criteria for

- a) cancer,
- b) cardiovascular diseases,
- c) diabetes,
- d) drugs,
- e) epilepsy,
- f) gastrointestinal and hepatic disorders,
- g) hearing,
- h) musculo-skeletal disorders,
- i) neurological disorders,
- j) psychiatric disorders,
- k) renal failure,
- l) respiratory and speech disorders,
- m) syncope/blackouts,
- n) vestibular disorders, and
- o) vision and eye disorders

are detailed in tables D.2 to D.16, respectively. Tables D.2 to D.17 form an integral part of the fitness-for-duty adjudication. This annex provides essential guidance on the more important clinical issues that might impact on the ability of employees to undertake safety-related work. Employees shall be referred for further assessments, where relevant, to assist clinical judgement on fitness for duty on a case-by-case basis.

**D.1.2** Health assessments will be based on the following critical factors:

- a) a review of occupational risk profile;
- b) the history – family, medical and occupational;
- c) a physical examination;
- d) completing (where relevant) questionnaires;
- e) special tests and investigations; and
- f) reports from specialists.

The OHP's experience, knowledge of the working environment and the nature of the work are still the best deciding factors. Where action and exclusion criteria are not explicit or where specialists' opinions differ, it might be advisable to seek an opinion from a third party.

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After the health assessment, the OHP shall make a recommendation on the fitness for duty of the employee. A medical certificate is then issued by an OHP and is valid for one year. The medical certificate of fitness shall be forwarded to the RA and a copy thereof kept in the employee's medical file. Employees who are not fit for duty may be considered for redeployment into a non-safety-related job. See table D.1 for an example of a medical certificate of fitness.

### **D.2 Fitness-for-duty classifications**

#### **D.2.1 General**

The employee's fitness for duty is determined for a specific job description at the time of the health assessment and may be classified as one of the following:

- a) fit for duty,
- b) fit for duty subject to specific conditions,
- c) temporarily unfit for duty, or
- d) unfit for duty.

#### **D.2.2 Fit for duty**

Fit for duty indicates that the employee has complied with the applicable criteria. The employee shall be subjected to periodic reviews as determined in the medical surveillance programme.

#### **D.2.3 Fit for duty subject to specific conditions**

Fit for duty subject to specific conditions indicates that the employee has complied with the applicable criteria, but with specific conditions, including exclusions. The OMP shall recommend the conditions that, where reasonably practicable, allow the employee to continue to undertake the current safety-related job/task/activity. The employee shall be subjected to periodic reviews as determined by the OMP.

#### **D.2.4 Temporarily unfit (fit for duty pending review)**

Temporarily unfit for duty indicates that the employee has not complied with the applicable criteria and is temporarily unfit to undertake safety-related work. The employee shall be subjected to periodic reviews as determined by the OMP.

#### **D.2.5 Unfit for duty**

Unfit for duty indicates that the employee has not complied with the applicable criteria to undertake safety-related work.

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Table D.1 — Medical certificate of fitness**

<b>Medical certificate of fitness</b>			
Medical centre		Date	
Name		Pension/ID No.	
Surname		SAP No.	
Job description		Company	
Safety-critical	Safety-related	Department	
<b>Fitness for duty recommendation (according to the available information)</b>			
<b>Classification (select one)</b>		<b>Comments</b>	
Fit for duty			
Fit for duty subject to specific conditions			
Temporarily unfit for duty			
Unfit for duty			
<b>Referral</b>			
Employee's healthcare practitioner		Hospital/Municipal Clinic	
Specialist		Social worker/EAP/Psychologist	
Optometrist/Ophthalmologist		X-ray/Radiologist	
Audiologist		Other	
<b>Special tests performed</b>		<b>Comments</b>	
<b>Exclusions</b>			
None		Driving – trains	
Noise zones		Driving – road vehicles	
Respiratory risk zone		Safety-related work	
Heat stress zone		Other	
<p align="center"><b>I herewith give permission that the above information may be forwarded to my supervisor/manager and acknowledge that this certificate of fitness has been handed to me to take to my employer/line manager</b></p>			
<p align="center">_____ Signature of employee</p>		<p align="center">_____ Signature of OHP</p>	
<b>If exposed to sound levels above 105 dB, the employee shall return within 6 (six) months from date of signature for audiometry testing</b>			
Retest/Return date			

**Table D.2 — Medical action and exclusion criteria for cancer and intracranial tumours**

1	2
Exclusion criteria	Action criteria
<b>Cancer<sup>a</sup></b>	
Unfit for duty if diagnosed with cancer.	Fit for duty subject to specific conditions, which may include the following: <ul style="list-style-type: none"> <li>a) the employee has been assessed by a specialist;</li> <li>b) the condition is under control;</li> <li>c) the prognosis is favourable;</li> <li>d) the employee is compliant in terms of follow-up assessments and treatment; and</li> <li>e) at any stage of the disease it is determined by the OHP that there is no functional impairment to work.</li> </ul>
<b>Intracranial tumours</b>	
Unfit for duty if the employee has evidence of primary or secondary cancer within the brain.	Fit for duty subject to specific conditions, which may include: <ul style="list-style-type: none"> <li>a) the employee has been assessed by a specialist;</li> <li>b) it is three months after successful treatment of the tumour; and</li> <li>c) the employee is likely to remain stable and physical and mental abilities are judged by the treating specialist to be adequate to undertake work.</li> </ul>
<sup>a</sup> The site and degree of advancement of the cancer is a prime consideration because the cancer might affect various bodily functions. Cases shall be assessed on an individual basis regarding the site of the cancer, the response to chemotherapy and radiotherapy and any side effects of these treatments. This will also involve assessing the employee's functional capacity and what medication the patient is taking.	
NOTE Neuro-psychologist and driver trainer assessment might be helpful.	

**Table D.3 — Medical action and exclusion criteria for cardiovascular diseases**

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1	2	3			
<b>Cardiovascular disease</b>	<b>Exclusion criteria</b>	<b>Action criteria</b>			
<p><b>1 Cardiac risk score</b></p> <p>The cardiac risk score is calculated by using table C.17 and is associated with the probability of a cardiovascular event in the next 5 to 10 years. The higher the score the higher the probability. The management of employees is determined by their cardiac risk score (as calculated) and the overall cardiac RA.</p>	<p>≥ 32 (probability ≥ 25% in five years)</p>	<p>≥ 32 (probability ≥ 25% in five years)</p>	<p>22-31 (probability 11% to 24% in five years)</p>	<p>15-21 (probability 5% to 9% in five years)</p>	<p>&lt; 15 (probability &lt; 5% in five years)</p>
	<p>Unfit for duty.</p>	<p>Should be referred for a stress ECG and reassessed following a report from a specialist.</p> <p>Fit for duty, subject to specific conditions:</p> <p>a) no evidence of ischaemia;</p> <p>b) with adequate modification and control of risk factors.</p>	<p>Fit for duty, subject to specific conditions depending on an overall cardiac RA</p>	<p>Fit for duty subject to specific conditions depending on an overall cardiac RA. The employee may be managed by referral to a specialist for a risk factor modification or a stress ECG or other tests (or any combination of these) as clinically appropriate, which should be reviewed annually.</p>	<p>Fit for duty subject to specific conditions depending on an overall cardiac RA.</p>
<p><b>2 Acute myocardial infarction (AMI)</b></p> <p>See also angioplasty, coronary artery and bypass grafting (CABG)</p>	<p>a) Unfit for duty if the employee has had an AMI.</p> <p>b) Should not perform safety-related work for at least three months after an AMI.</p>	<p>Temporarily unfit for duty if</p> <p>a) in myocardial ischaemia a coronary angiogram shows lumen diameter:</p> <p>1) reduction of equal to or greater than 70% in a major coronary branch; and</p> <p>2) less than 50% in the left main coronary artery, and</p> <p>b) in myocardial ischaemia a coronary angiogram is not conducted and there is</p> <p>1) an exercise tolerance of = 90% of the age/sex predicted exercise capacity on the Bruce Treadmill Test (or equivalent protocol),</p> <p>2) no evidence of severe ischaemia, that is less than 2 mm ST segment depression on an exercise ECG and absence of a large defect on a stress perfusion scan, and</p> <p>3) an ejection fraction of 40%.</p> <p>Fit for duty subject to specific conditions<sup>a</sup> if</p> <p>a) it is at least three months after an uncomplicated acute myocardial infarction if</p>			

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1	2	3
<b>Cardiovascular disease</b>	<b>Exclusion criteria</b>	<b>Action criteria</b>
		1) the clinical history is one of minimal symptoms, 2) assessments show no evidence of myocardial ischaemia, and 3) there is an ejection fraction of 40% or over. b) in myocardial ischaemia a coronary angiogram shows lumen diameter 1) reduction of less than 70% in a major coronary branch, and 2) less than 50% in the left main coronary artery.
<p><sup>a</sup> This action may be recommended, taking into account the opinion of a cardiologist and the nature of the work.</p> <p><sup>b</sup> This action may be recommended, taking into account the opinion of an appropriate specialist and the nature of the work.</p> <p><sup>c</sup> This action may be recommended, taking into account the opinion of a cardiologist or haematologist and the nature of the work.</p> <p><sup>d</sup> This action may be recommended, taking into account the opinion of a transplant cardiologist and the nature of the work.</p>		
<b>3 Pulmonary embolism</b>  The non-working period following a pulmonary embolism shall be determined by the treating specialist.	Temporarily unfit for duty if the employee has suffered a pulmonary embolism.	Fit for duty subject to specific conditions <sup>d</sup> a) following an appropriate non-working period, and b) depending on the cause of the embolus and the response to treatment.
<b>4 Syncope due to hypotension (vasovagal and autonomic dysfunction)</b>	a) Unfit for duty. b) The employee shall not perform safety-related work for at least three months after syncope.	Temporarily unfit for duty <sup>d</sup> depending on a) identification of the underlying cause, or b) institution of satisfactory treatment (or both).
<b>5 Aneurysms: abdominal and thoracic</b>	Unfit for duty if the employee has aortic, thoracic or abdominal aneurysm. The employee shall not perform safety-related work for at least three months post repair.	Temporarily unfit for duty <sup>a</sup> at least three months after recovery.  Fit for duty subject to specific conditions if a) the condition is minor, or b) the condition has been adequately treated.
<b>6 Anticoagulant therapy</b>		Fit for duty subject to specific conditions <sup>c</sup> if a) the therapy is managed, and b) the therapy is controlled.
<b>7 Angioplasty</b>	a) Unfit for duty if the employee	Temporarily unfit for duty <sup>a</sup> for at least four weeks after the angioplasty.

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1	2	3
<b>Cardiovascular disease</b>	<b>Exclusion criteria</b>	<b>Action criteria</b>
	<p>has had coronary angioplasty.</p> <p>b) The employee shall not perform safety-related work for at least four weeks after the angioplasty.</p>	<p>Fit for duty subject to specific conditions<sup>a</sup> if</p> <p>a) the clinical history is one of minimal symptoms,</p> <p>b) there is an exercise tolerance of = 90% of the age/sex predicted exercise capacity on the Bruce Treadmill Test (or equivalent protocol),</p> <p>c) there is no evidence of severe ischaemia, and</p> <p>d) there is an ejection fraction of 40% or over.</p>
<p><sup>a</sup> This action may be recommended, taking into account the opinion of a cardiologist and the nature of the work.</p> <p><sup>b</sup> This action may be recommended, taking into account the opinion of an appropriate specialist and the nature of the work.</p> <p><sup>c</sup> This action may be recommended, taking into account the opinion of a cardiologist or haematologist and the nature of the work.</p> <p><sup>d</sup> This action may be recommended, taking into account the opinion of a transplant cardiologist and the nature of the work.</p>		
<p><b>8 Angina</b></p> <p>The presence of other risk factors shall be considered. Where surgery or angioplasty is undertaken to relieve the angina, the criteria listed in the cardiac risk score in table C.17 apply.</p>		<p>Fit for duty subject to specific conditions<sup>a</sup> if</p> <p>a) there is no evidence of severe ischaemia,</p> <p>b) there is an ejection fraction of 40% or over,</p> <p>c) a Bruce Treadmill Test (or equivalent protocol) is = 90% of the age/sex predicted exercise capacity, and</p> <p>d) a thallium or sestamibi scan shows no evidence of myocardial ischaemia.</p>
<p><b>9 Cardiac arrest</b></p> <p>The non-working period following a cardiac arrest shall</p>	<p>Unfit for duty if the employee has suffered a cardiac arrest.</p>	<p>Temporarily unfit for duty<sup>a</sup></p> <p>a) following an appropriate non-working period,</p> <p>b) depending on the cause of the cardiac arrest, and</p> <p>c) depending on the response to treatment.</p>

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1	2	3
<b>Cardiovascular disease</b>	<b>Exclusion criteria</b>	<b>Action criteria</b>
be determined by the treating specialist.		
<b>10 Arrhythmia</b>  If the employee is taking anticoagulants see item 6.	Unfit for duty if the employee has a history of recurrent or persistent arrhythmia, which might result in syncope or incapacitating symptoms.	Fit for duty subject to specific conditions <sup>a</sup> if  a) the condition has been cured surgically (e.g. Wolff-Parkinson-White syndrome), or  b) the condition has been successfully treated medically for at least three months.
<b>11 Cardiac defibrillator (AICD)</b>	Unfit for duty if the employee has a cardiac defibrillator implanted for ventricular arrhythmias.	
<p><sup>a</sup> This action may be recommended, taking into account the opinion of a cardiologist and the nature of the work.</p> <p><sup>b</sup> This action may be recommended, taking into account the opinion of an appropriate specialist and the nature of the work.</p> <p><sup>c</sup> This action may be recommended, taking into account the opinion of a cardiologist or haematologist and the nature of the work.</p> <p><sup>d</sup> This action may be recommended, taking into account the opinion of a transplant cardiologist and the nature of the work.</p>		

Table D.3 (continued)

1	2	3
Cardiovascular disease	Exclusion criteria	Action criteria
<p><b>12 Coronary artery bypass grafting (CABG)</b></p>	<p>Unfit for duty following CABG.</p> <p>The employee should not undertake safety-related work for at least three months after CABG.</p>	<p>Temporarily unfit for duty<sup>a</sup> for at least three months after CABG.</p> <p>Fit for duty subject to specific conditions:</p> <ul style="list-style-type: none"> <li>a) if there is minimal residual musculo-skeletal pain after the chest surgery;</li> <li>b) if the clinical history is one of minimal symptoms;</li> <li>c) if there is an exercise tolerance of =90% of the age/sex predicted exercise capacity on the Bruce Treadmill Test (or equivalent protocol);</li> <li>d) if there is no evidence of severe ischaemia;</li> <li>e) if there is an ejection fraction of 40% or over; and</li> <li>f) the presence of other risk factors shall also be considered.</li> </ul>
<p><b>13 Deep vein thrombosis (DVT)</b></p> <p>The non-working period following DVT shall be determined by the treating specialist. See also item 6.</p>	<p>Unfit for duty if the employee suffers DVT, which is liable to recur or to cause an embolus</p>	<p>Temporarily unfit for duty<sup>b</sup></p> <ul style="list-style-type: none"> <li>a) following an appropriate non-working period, and</li> <li>b) depending on the cause of the thrombosis and the response to treatment.</li> </ul>
<p><b>14 Heart failure</b></p>	<p>Unfit for duty if the employee has had heart failure.</p>	<p>Fit for duty subject to specific conditions<sup>a</sup> if</p> <ul style="list-style-type: none"> <li>a) there is an exercise tolerance of = 90% of the age/sex predicted exercise capacity on the Bruce Treadmill Test (or equivalent protocol),</li> <li>b) there is an ejection fraction of 40% or over,</li> <li>c) there is a satisfactory response to treatment, and</li> <li>d) the underlying cause of the heart failure is considered.</li> </ul>
<p><b>15 Heart/lung transplant</b></p>	<p>Unfit for duty if the employee has had a heart or heart/lung transplant.</p>	<p>Temporarily unfit for duty<sup>d</sup> at least three months after the transplant.</p>

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1	2	3
<b>Cardiovascular disease</b>	<b>Exclusion criteria</b>	<b>Action criteria</b>
	The employee shall not undertake safety-related work for at least three months after the transplant.	
<p><sup>a</sup> This action may be recommended, taking into account the opinion of a cardiologist and the nature of the work.</p> <p><sup>b</sup> This action may be recommended, taking into account the opinion of an appropriate specialist and the nature of the work.</p> <p><sup>c</sup> This action may be recommended, taking into account the opinion of a cardiologist or haematologist and the nature of the work.</p> <p><sup>d</sup> This action may be recommended, taking into account the opinion of a transplant cardiologist and the nature of the work.</p>		

Table D.3 (concluded)

1	2	3
<b>Cardiovascular disease</b>	<b>Exclusion criteria</b>	<b>Action criteria</b>
<p><b>16 Hypertension</b></p> <p>The presence of other risk factors shall also be considered.</p>	<p>Unfit for duty if</p> <p>a) the employee's sitting blood pressure is consistently 160/110 mm HG or greater (treated or untreated),</p> <p>b) there is end organ damage (cardiac, cerebral or retinal), which will impair the employee's ability to undertake safety-related work, and</p> <p>c) treatment results in marked postural hypotension or impaired alertness.</p>	<p>Fit for duty subject to specific conditions if</p> <p>a) treatment is satisfactory with blood pressure controlled at 140 systolic pressure or less and 90 diastolic pressure or less, and</p> <p>b) treatment does not cause side effects that impact on functional ability.</p>
<p><b>17 Valvular heart disease</b></p>	<p>Unfit for duty if</p> <p>a) the employee has any history or evidence of valve disease, with or without surgical repair or replacement, associated with symptoms or a history of embolism, arrhythmia,</p>	<p>Fit for duty subject to specific conditions<sup>a</sup></p> <p>a) if the employee's cardiological assessment shows mild valvular disease of no hemodynamic significance;</p> <p>b) for three months following successful surgery, or</p> <p>c) if there is no other cardiac condition that would render the employee unfit to undertake safety-related work.</p>

1	2	3
<b>Cardiovascular disease</b>	<b>Exclusion criteria</b>	<b>Action criteria</b>
	cardiac enlargement abnormal ECG, high blood pressure, and b) the employee is taking anticoagulants.	
<p><sup>a</sup> This action may be recommended, taking into account the opinion of a cardiologist and the nature of the work.</p> <p><sup>b</sup> This action may be recommended, taking into account the opinion of an appropriate specialist and the nature of the work.</p> <p><sup>c</sup> This action may be recommended, taking into account the opinion of a cardiologist or haematologist and the nature of the work.</p> <p><sup>d</sup> This action may be recommended, taking into account the opinion of a transplant cardiologist and the nature of the work.</p>		

**Table D.4 — Medical action and exclusion criteria for diabetes mellitus**

1	2
<b>Exclusion criteria</b>	<b>Action criteria</b>
<b>1 Diabetes controlled by diet alone</b>	
	Fit for duty (including the undertaking of safety-related work)  a) if there are no severe complications, and  b) if the employee is reviewed periodically regarding progression of the illness.
<b>2 Non-insulin-dependent type 2 diabetes mellitus</b>	
Unfit for duty if the employee has uncontrolled non-insulin-dependent diabetes mellitus with or without treatment.	Fit for duty subject to specific conditions <sup>a</sup> if  a) the condition is well controlled and the employee is compliant with treatment,  b) there is an absence of defined hypoglycaemic episodes as assessed by the specialist,  c) the employee has an awareness (sensation) of hypoglycaemia,  d) the employee is taking agents that provide the minimum risk of hypoglycaemia,  e) there is an absence of end organ damage that might affect functional capacity, and

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	f) there is an absence of side effects from medication that might impact on functional capacity.
<b>3 Insulin-dependent diabetes mellitus (types 1 and 2)</b>	
Unfit for duty if the employee has insulin-dependent diabetes mellitus.	<p>Temporarily unfit for duty in the event of a defined hypoglycaemic episode occurring in an employee with previously well-controlled diabetes. The employee shall not perform safety-related work for a period determined by a specialist. Avoidance of collapse is particularly important in safety-related work.</p> <p>Fit for duty subject to specific conditions<sup>a</sup> if</p> <p>a) the condition is well controlled and the employee is compliant with treatment,</p> <p>b) there is an absence of defined hypoglycaemic episodes as assessed by the specialist,</p> <p>c) the employee has an awareness (sensation) of hypoglycaemia,</p> <p>d) the employee is taking agents that provide the minimum risk of hypoglycaemia, and</p> <p>e) there is an absence of end organ damage that might affect functional capacity.</p>
<sup>a</sup> This action may be recommended, taking into account the opinion of a specialist in diabetes or endocrinology and the nature of the work.	

**Table D.5 — Medical action and exclusion criteria for drugs**

1	2
<b>Exclusion criteria</b>	<b>Action criteria</b>
<b>Drugs</b>	
Drugs include prescription and over-the-counter medication (see annex E for side effects of medication), illicit drugs and alcohol. Impairment due to the effects of drugs results in employees being unfit for duty. Avoidance of sudden incapacity is particularly important.	
Unfit for duty if there is evidence of drug and alcohol use or dependence.	<p>Fit for duty subject to specific conditions<sup>a</sup> if</p> <p>a) employees are compliant with treatment for drug and alcohol addiction, and</p> <p>b) the severity of the addiction(s), the response to treatment and the working requirements are taken into account.</p>

<sup>a</sup> This action may be recommended, taking into account the opinion of an appropriate specialist and the nature of the work.

**Table D.6 — Medical action and exclusion criteria for epilepsy and seizures**

1	2
Exclusion criteria	Action criteria
<b>1 Initial or isolated seizures</b>	
An isolated seizure is not synonymous with epilepsy. Avoidance of collapse is particularly important. Withdrawal of anti-epileptic medication is not compatible with continued safety-related work (unless advised by a specialist).	
Unfit for duty if the employee has had a seizure due to any cause.	Fit for duty subject to specific conditions <sup>a</sup> if <ul style="list-style-type: none"> <li>a) the employee has had a single provoked seizure event,</li> <li>b) provocative factors can be avoided reliably,</li> <li>c) the employee has been seizure-free for one year,</li> <li>d) the employee takes no anti-epileptic medication, and</li> <li>e) the employee's EEG shows no epileptiform activity.</li> </ul>
<b>2 Epilepsy</b>	
Unfit for duty if the employee has epilepsy.	Fit for duty subject to specific conditions <sup>a</sup> if the employee <ul style="list-style-type: none"> <li>a) has a history of febrile seizures or of benign childhood epilepsy,</li> <li>b) does not take anti-epileptic medication, and</li> <li>c) undergoes an EEG that shows no epileptiform activity,</li> </ul> or <ul style="list-style-type: none"> <li>d) has a history of a single seizure event or of seizures occurring only under provocative circumstances that can be avoided reliably,</li> <li>e) has been seizure-free for five years,</li> <li>f) takes no anti-epileptic medication, and</li> <li>g) undergoes an EEG that shows no epileptiform activity,</li> </ul> or <ul style="list-style-type: none"> <li>h) has epilepsy and is taking anti-epileptic medication,</li> <li>i) maintains at least an annual review and compliance,</li> <li>j) has been seizure-free for five years,</li> </ul>

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	<p>k) has had no more than three seizures in the preceding ten years, and</p> <p>l) undergoes an EEG that shows no epileptiform activity,</p> <p>or</p> <p>m) has epilepsy and has had surgical treatment,</p> <p>n) maintains at least an annual review,</p> <p>o) has been seizure-free for five years, and</p> <p>p) undergoes an EEG that shows no epileptiform activity.</p>
<p><sup>a</sup> This action may be recommended, taking into account the opinion of a specialist in epilepsy and the nature of the work.</p>	

**Table D.7 — Medical action and exclusion criteria for gastrointestinal and hepatic disorders**

1	2
Exclusion criteria	Action criteria
<p><b>1 Hepatic failure</b></p> <p>If an employee has chronic liver disease and if there is no overt evidence of hepatic encephalopathy, he/she might still have impaired cognitive and motor skills and will need to be assessed by a specialist.</p>	
<p>Unfit for duty if the employee has chronic liver disease and clinical evidence of hepatic encephalopathy.</p>	
<p><b>2 Liver transplants</b></p>	
<p>Unfit for duty after a liver transplant.</p>	<p>Fit for duty subject to specific conditions<sup>a</sup> if noting</p> <p>a) the reason for the transplant,</p> <p>b) the stability of the transplant, and</p> <p>c) the biochemical and hemodynamic response.</p>
<p><sup>a</sup> This action may be recommended, taking into account the opinion of an appropriate specialist and the nature of the work.</p>	

**Table D.8 — Medical action and exclusion criteria for hearing**

1	2
Exclusion criteria	Action criteria
<p><b>Hearing</b></p> <p>No employee shall be required to work in a noise zone while wearing hearing aids or after a cochlear implant. Where relevant, a field test may be performed to assess the worker's ability to hear warning signals/alarms or verbal communication (or both) under operational conditions.</p>	
<p>Unfit for duty</p> <p>Pre-employment if the employee has an unaided average hearing threshold level worse than 40 dB measured in a diagnostic audiogram over frequencies of 500, 1 000 and 2 000 in the better ear.</p> <p>Periodic assessments if</p> <p>a) the employee has an unaided average hearing threshold level of worse than 40 dB measured in a diagnostic audiogram over frequencies of 500, 1 000 and 2 000 in the better ear, and</p> <p>b) there is deterioration in hearing threshold of &gt; 15 dB in any/all frequencies from 3 000 Hz, 4 000 Hz and 6 000 Hz from test to test</p> <p>Unfit for duty if</p> <p>a) the employee is wearing/using hearing aids, and</p> <p>b) the employee had a cochlear implant.</p>	<p>Fit for duty subject to specific conditions may be considered taking into account</p> <p>a) the nature of the duties of the employee who undertakes safety-related work, including efficient and reliable use of communication devices, such as mobile phones and radio-communication devices, and the need to reliably detect emergency alarms against background noise, and</p> <p>b) the nature of the relevant background occupational noise.</p>

**Table D.9 — Medical action and exclusion criteria for musculo-skeletal disorders**

1	2
Exclusion criteria	Action criteria
<b>Musculo-skeletal disorders</b>	
The musculo-skeletal activities that are required for employees who undertake safety-related work as identified in the task analysis for the specific/relevant job shall be carefully considered.	
Unfit for duty if the ability to perform the activities required for safety-related work is inadequate.	Fit for duty subject to specific conditions <sup>a</sup> . A practical assessment might be helpful.
<sup>a</sup> This action may be recommended, taking into account the opinion of an appropriate specialist or therapist and the nature of the work.	

**Table D.10 — Medical action and exclusion criteria for neurological disorders (excluding epilepsy and syncope)**

1	2
Exclusion criteria	Action criteria
<b>1 Berry aneurysms and other vascular malformations of the brain</b>	
Unfit for duty if the employee has a berry aneurysm or other vascular malformation.	Fit for duty subject to specific conditions <sup>a</sup> after consideration of the risks and the benefits of any treatment.
<b>2 Cerebral palsy</b>	
See also cognitive and neuromuscular disorders in items 3 and 5, respectively.	
Unfit for duty if the capacity to perform safety-related work is impaired due to musculo-skeletal or cognitive or neurological causes.	Temporarily unfit for duty <sup>a</sup> and taking into account the <ul style="list-style-type: none"> <li>a) the severity of the disabilities,</li> <li>b) the interaction between multiple disabilities,</li> <li>c) the response to treatments,</li> <li>d) suitable job modifications, where practical, and</li> <li>e) the result of a field test.</li> </ul>
<b>3 Dementia and other cognitive impairments</b>	
Unfit for duty if the employee's dementia or cognitive impairment is confirmed.	Fit for duty subject to specific conditions <sup>a</sup> and shall depend on <ul style="list-style-type: none"> <li>a) the cause of the condition and likely response to treatment,</li> <li>b) any appropriate neuropsychological tests, and</li> </ul>

1	2
Exclusion criteria	Action criteria
	c) the result of a field test.
<b>4 Head injury/brain injury</b>	
Unfit for duty if the employee has had a head injury causing chronic functional disturbances.	Fit for duty subject to specific conditions <sup>a</sup> and shall depend on a) the result of neuropsychological testing, b) the result of a field test (see also cognitive impairment), and c) other disabilities that might impair safety-related work.
<b>5 Neuromuscular conditions</b>	
Multiple sclerosis (MS), Parkinson's disease, peripheral neuropathy	
Unfit for duty if the employee has Parkinsonism, MS, degenerative peripheral neuropathy, Parkinson's progressive muscular dystrophy or any other severe neuromuscular disorder.	Fit for duty subject to specific conditions <sup>b</sup> and shall depend on a) the response to treatments, and b) the result of a field test.
<sup>a</sup> This action may be recommended, taking into account the opinion of an appropriate specialist and the nature of the work. <sup>b</sup> This action may be recommended, taking into account the opinion of a neurologist or rehabilitation specialist and the nature of the work.	
<b>6 Stroke</b>	
Unfit for duty if the employee has had a stroke.	Fit for duty subject to specific conditions <sup>a</sup> if a) the stroke was caused by a condition that has subsequently been satisfactorily treated, and b) the employee has recovered satisfactorily from the stroke (including perceptual deficits) and this has been demonstrated.
<b>7 Transient ischemic attacks (TIAs)</b>	
Unfit for duty if the employee has had two or more TIAs.	Fit for duty subject to specific conditions <sup>a</sup> if a) the aetiology of the attacks has been identified, b) the underlying cause has been removed, and c) the employee has had a six-month period free of attacks.
<sup>a</sup> This action may be recommended, taking into account the opinion of an appropriate specialist and the nature of the work.	

**Table D.11 — Medical action and exclusion criteria for psychiatric disorders**

1	2
Exclusion criteria	Action criteria
<p><b>Psychiatric disorders</b></p> <p>See also alcohol dependence and impairment, drugs and neurological disorders in tables D.5 and D.10, respectively.</p>	
<p>Unfit for duty if</p> <p>a) the employee has an acute or chronic psychosis, whether schizophrenic, bipolar (manic or depressive phase) or other depressive psychosis,</p> <p>b) the employee has a reality or psychiatric disorder with features such as aggression or violence, which are hazardous to safety-related work,</p> <p>c) the employee is taking psychoactive drugs that will impair safety-related work performance on a long-term basis,</p> <p>d) the employee's judgement or perceptual, cognitive or motor function is affected by a mental disorder (e.g. ADHD), or</p> <p>e) the examining health professional believes that there is a significant risk of previous psychotic condition relapsing.</p>	<p>Fit for duty subject to specific conditions<sup>a</sup> if</p> <p>a) the condition is well controlled and the employee is compliant with treatment over a substantial period,</p> <p>b) the employee is taking medication that minimizes the risk to cognitive functions or other side effects of medication that might affect safety-related work,</p> <p>c) the results of any appropriate neuropsychological tests are considered, and</p> <p>d) the result of a field test is considered.</p>
<p><sup>a</sup> This action may be recommended, taking into account the opinion of a psychiatrist and the nature of the work.</p>	

**Table D.12 — Medical action and exclusion criteria for renal failure**

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1	2
Exclusion criteria	Action criteria
<b>Renal failure</b>	
Unfit for duty if the employee has end-stage renal failure (that requires dialysis) or advanced renal failure (GFR < 20% of normal).	Fit for duty subject to specific conditions <sup>a</sup> if the employee's condition is stable with limited comorbidities.
<sup>a</sup> This action may be recommended, taking into account the opinion of a renal specialist and the nature of the work.	

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**Table D.13 — Medical action and exclusion criteria for respiratory and speech disorders**

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1	2
Exclusion criteria	Action criteria
<b>1 Laryngectomy and tracheotomy</b>	
Unfit for duty if the employee has had a laryngectomy or tracheotomy.	Fit for duty subject to specific conditions may be recommended after practical assessment such as with phones or radio-communication devices.
<b>2 Long-term oxygen therapy</b>	
Unfit for duty if the employee has an unstable disease that requires oxygen therapy.	
<b>3 Respiratory failure</b>	
Unfit for duty if the employee has severe respiratory failure.	Temporarily unfit for duty <sup>a</sup> after consideration of the severity of the employee's condition and the likelihood of control of the failure.
<b>4 Thoracotomy</b>	
Unfit for duty for at least four weeks after a thoracotomy as determined by the treating surgeon.	
<b>5 Sleep apnoea</b>	
<p>Unfit for duty if</p> <p>a) the employee has established sleep apnoea syndrome (sleep apnoea on a diagnostic sleep study and excessive daytime sleepiness) with moderate to severe sleepiness, until treatment is effective, and</p> <p>b) there is a history suggestive of sleep apnoea in association with severe daytime sleepiness, until investigated and treated.</p>	Fit for duty subject to specific conditions <sup>b</sup> .
<b>6 Narcolepsy</b>	
Unfit for duty if narcolepsy is confirmed.	<p>Fit for duty subject to specific conditions<sup>b</sup> if</p> <p>a) a clinical assessment has been made by a sleep physician or neurologist,</p> <p>b) cataplexy has not been a feature in the past,</p> <p>c) medication is taken regularly,</p> <p>d) there has been an absence of symptoms for six months, and</p> <p>e) normal sleep latency is present.</p>

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| <p><sup>a</sup> This action may be recommended, taking into account the opinion of a respiratory physician and the nature of the work.</p> <p><sup>b</sup> This action may be recommended, taking into account the opinion of a specialist in sleep disorders and the nature of the work.</p> |
|---|

**Table D.14 — Medical action and exclusion criteria for syncope/blackouts**

1	2
Exclusion criteria	Action criteria
<b>Syncope/blackouts</b>	
The employee shall not perform safety-related work for six months following unexplained syncope/blackouts, although a shorter period may be advised by an appropriate specialist.	
Unfit for duty if the employee suffers from unheralded, recurrent syncope/blackouts, which do not respond to treatment.	

**Table D.15 — Medical action and exclusion criteria for vestibular disorders**

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1	2
<b>Exclusion criteria</b>	<b>Action criteria</b>
<b>Vestibular disorders</b>	
Unfit for duty if the employee has, or has had in the previous twelve months, any condition of recurrent vertigo. This includes confirmed Meniere's disease, recurrent unheralded vertigo or benign paroxysmal positional vertigo (or both), with or without treatment, or any other type of vertigo.	Fit for duty subject to specific conditions <sup>a</sup> for <ul style="list-style-type: none"> <li>a) employees who have had vertigo caused by Meniere's; condition, or recurring unheralded attacks of vertigo, after at least twelve months free of vertigo,</li> <li>b) employees who have had one episode of vertigo caused by acute labyrinthitis (deafness and vertigo), acute neuro-labyrinthitis (vestibular neuronitis), after at least six months free of vertigo,</li> <li>c) employees who have any other type of vertigo, after at least two months free of vertigo, and</li> <li>d) employees who have had benign paroxysmal positional vertigo only, after at least two months free of symptoms and signs of benign paroxysmal positional vertigo.</li> </ul>
<sup>a</sup> This action may be recommended, taking into account the opinion of an ear, nose and throat (ENT) specialist and the nature of the work. The ENT specialist should regard the nature of the condition, response to treatment and the employee's jobs/tasks/activities.	

**Table D.16 — Medical action and exclusion criteria for vision and eye disorders**

1	2
<b>Exclusion criteria</b>	<b>Action criteria</b>
<b>1 Visual acuity</b>	
Unfit for duty if unaided acuity is < 6/9 (20/30) in one eye or both eyes.	Fit for duty subject to specific conditions may be recommended <ul style="list-style-type: none"> <li>a) if the standard is met with corrective lenses, and</li> <li>b) after consideration of the stability of any underlying disorder.</li> </ul>
<b>2 Colour vision</b>	
These standards may be varied subsequent to an RA of the network and on advice of a specialist in occupational medicine.	

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Unfit for duty if the employee is colour blind, and where colour vision is an inherent requirement of the job.	Fit for duty subject to specific conditions may be recommended, taking into consideration the opinion of an optometrist/ophthalmologist and include  a) the degree/extent of the colour blindness,  b) the nature of the work, and  c) the result of a field test.
<b>3 Visual fields</b>	
Unfit for duty if the employee's visual fields are equal to/worse than 70° temporal in either eye with or without refraction.	

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Table D.17—Coronary heart disease risk factor prediction chart

1. Find points for each risk factor												
Age (if female)				Age (if male)				HDL-cholesterol		Total-cholesterol		Systolic BP
Age	Pts	Age	Pts	Age	Pts	Age	Pts	HDL-C	Pts	Total-C	SBP	
30	-12	47-48	5	30	-2	57-59	13	0.65-0.68	7	3.60-3.99	-3	98-104
31	-11	49-50	6	31	-1	60-61	14	0.69-0.76	6	4.00-4.30	-2	105-112
32	-9	51-52	7	32-33	0	62-64	15	0.77-0.84	5	4.31-4.60	-1	113-120
33	-8	53-55	8	34	1	65-67	16	0.85-0.90	4	4.70-5.19	0	121-129
34	-6	56-60	9	35-36	2	68-70	17	0.91-0.99	3	5.20-5.69	1	130-139
35	-5	61-67	10	37-38	3	71-73	18	1.00-1.09	2	5.70-6.19	2	140-149
36	-4	68-74	11	39	4	74	19	1.10-1.19	1	6.20-6.79	3	150-160
37	-3			40-41	5			1.20-1.30	0	6.80-7.49	4	161-172
38	-2			42-43	6			1.31-1.43	-1	7.50-8.19	5	173-185
39	-1			44-45	7			1.44-1.56	-2	8.20-8.55	6	
40	0			46-47	8			1.57-1.70	-3			
41	1			48-49	9			1.71-1.89	-4			
42-43	2			50-51	10			1.90-2.07	-5			
44	3			52-54	11			2.08-2.25	-6			
45-46	4			55-56	12			2.26-2.49	-7			

**2. Sum points for all risk factors:** Age ( ) + HDL-C ( ) + Total C ( ) + SBP ( ) + Smoker ( ) + Diabetes ( ) + ECG-LVH ( ) = Point Total ( ) **NOTE: Minus po**

**3. Look up risk corresponding to point total**

Probability (%)											
Pts	5Yr	10Yr									
2	1	2	11	3	6	20	8	18	29	20	36
3	1	2	12	3	7	21	9	19	30	22	38
4	1	2	13	3	8	22	11	21	31	24	40
5	1	3	14	4	9	23	12	23	32	25	42
6	1	3	15	5	10	24	13	25			
7	1	4	16	5	12	25	14	27			
8	2	4	17	6	13	26	16	29			
9	2	5	18	7	14	27	17	31			

NOTE This table was adapted and modified from the American Heart Association.

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**Annex E**  
(informative)

**Potential side effects of certain medication**

Table E.1 lists examples of some of the more important classes of medication that might impact on employees who undertake safety-related work.

**Table E.1 — Certain classes of medication and their potential side effects**

1	2	3
<b>Medication</b>	<b>Use</b>	<b>Side effects</b>
Anaesthetics	Is used during surgery	Prolonged anaesthesia for major procedures might have a detrimental influence on cognitive functions. This might last for many months.
Analgesics (such as morphine, pethidine, opioids, codeine, dextropropoxyphene, tramadol)	Relieves pain	The powerful analgesics such as morphine and pethidine cause marked sedation. The milder opioids, codeine, dextropropoxyphene and tramadol are known to affect driving-related skills.
Anti-cancer medication (such as tamoxifen)	Is used during chemotherapy	Many employees remain at work while on chemotherapy. The medication tamoxifen used in breast cancer is associated with light headedness and visual disturbances such as corneal opacities, cataracts and retinopathy.
Anti-coagulants	Prevents clotting of blood (coagulation)	Injuries from blunt or sharp trauma might not stop bleeding.
Anti-convulsants	Prevents or controls convulsions/epilepsy	Studies have shown that chronic anti-convulsant therapy impairs concentration and sustained attention. The impairment is greater if more than one drug is used.
Anti-depressants	Helps to regulate mood	Some of the older generation anti-depressants tend to cause sedation, especially in the first weeks of therapy. Newer generation anti-depressants are non-sedating and appear to be safe.

1	2	3
Medication	Use	Side effects
Anti-diabetic drugs	Regulates blood sugar	The main risk here is hypoglycaemia and confusion, or even loss of consciousness.
Anti-histamines	Is incorporated in medications for colds and influenza	The older generation anti-histamines cause significant drowsiness and sedation. The newer generation anti-histamines are claimed to be non-sedating, but some individuals experience drowsiness.
Antihypertensive drugs (such as methyldopa, clonidine, guanethidine, bethanidine, debrisoquine, indoramin, methyldopa, and beta blockers)	Helps to lower blood pressure.	Certain antihypertensive drugs might cause intermittent postural hypotension and light headedness. The older generation antihypertensive drugs methyldopa, clonidine, guanethidine, bethanidine, debrisoquine, and indoramin are all sedating drugs. Methyldopa impairs driving performance. Beta blockers can affect psychomotor functions temporarily. Around 5% of persons using beta blockers report severe fatigue and have a demonstrably lower exercise tolerance.
Anti-infective drugs (such as ethambutol, ciprofloxacin and other quinolone antibiotics, penicillin, cephalosporin, metronidazole, griseofulvin, itraconazole)	Serves as an antibiotic (or antibacterial), an antifungal or an antiviral agent.	Ethambutol might cause loss of visual acuity, colour-blindness and restriction of visual fields. Ciprofloxacin and other quinolone antibiotics have central nervous system effects and might impair skilled performances/tasks. There is a (small) risk of convulsions if they are used with non-steroidal anti-inflammatory drugs. The penicillins, cephalosporins, metronidazole, quinolones, griseofulvin and itraconazole might all cause sensations of light headedness.
Anti-inflammatory	Reduces inflammation.	The non-steroidal anti-inflammatories as a class

1	2	3
Medication	Use	Side effects
		can cause drowsiness, fatigue, blurred vision, dizziness and vertigo in some persons.
Anti-migraine drugs (such as 5HT1 agonists, ergotamine, pizotifen, clonidine, and methysergide)	Reduces pain caused by migraines.	The 5HT1 agonists (the "triptans") can cause drowsiness, which might affect the performance of skilled performance/tasks. Ergotamine, pizotifen, clonidine, and methysergide are associated with dizziness, vertigo and postural hypotension.
Anti-psychotics	Is used in the treatment of schizophrenia and other psychosis-inducing diseases.	Anti-psychotics might produce sedation, which might or might not pass off after a week or so, on treatment. Most anti-psychotics might cause notable tremors and a slowing and stiffness of movement.
Barbiturates	Acts as central nervous system depressants.	Barbiturates might cause a range of effects from mild sedation to anaesthesia.
Benzodiazepines	Is commonly used both as sleeping pills and to treat anxiety.	The use of benzodiazepines during the day significantly increases the risk of road traffic accidents.
Cardiovascular drugs <b>Table E.1 (concluded)</b>	Is used in the treatment of heart failure and disorders of vascular tension.	Some of this medication might cause visual disturbances, postural hypotension, light headedness and decreased mobility.
Hypnotics, sedatives and tranquillisers (CNS depressants)	Induces sleep, relieves anxiety, calms	CNS depressants have all been shown to inhibit psychomotor function, retard responsiveness, and impair motor skills, coordination and responses concerned with self-preservation.
Malaria prophylaxis (such as mefloquine, chloroquine)	Is used in the prevention of malaria.	Mefloquine might cause dizziness, poor balance and psychiatric reactions. Chloroquine might cause visual disturbances.
Ocular drugs (such as atropine, homatropine cyclopentolate)	Is used in the treatment of eye disorders.	Eye drops such as atropine, homatropine and cyclopentolate might affect

1	2	3
Medication	Use	Side effects
		accommodation and produce blurred vision.
Respiratory drugs	Is used in the treatment of disorders in the airways, the lungs, and the respiratory muscles that mediate the movement of air into and out of the body.	Asthmatic medication cause tremors, light-headedness, anxiety, agitation, visual disturbances and even seizures.

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**Annex F**  
(informative)

**Guidelines for the development of an employee wellness programme**

**F.1** The RA should consider integrating, where relevant, HF into the risk-based employee wellness programme. The programme should consist of the following elements:

- a) education and training to promote health and wellness; and
- b) interventions to manage identified health trends and risks.

**F.2** Education and training to promote health and wellness may include the following elements:

- a) fitness for duty;
- b) life skills;
- c) back care;
- d) stress management;
- e) dealing with debt;
- f) work-life balance;
- g) healthy eating;
- h) exercise;
- i) fatigue management;
- j) medication and substance abuse;
- k) the purpose of health assessments; and
- l) smoking-cessation campaigns.

**F.3** Interventions to manage health and wellness risks may include the following:

- a) screening for HIV infections, TB and other chronic diseases;

NOTE Health days provide an opportunity for screenings and questionnaires.

- b) vaccinating to prevent influenza, hepatitis and pneumonia;
- c) trauma debriefing;
- d) accessing employee support services and gymnasium facilities;
- e) encouraging team participation in sporting events – fun walks, marathons or cycle races; and
- f) promoting participation in support groups such as walk-for-life, which might address stress and depression.

**F.4** Identification of health and wellness risks may include a review of the following:

- a) relevant reports;

EXAMPLES Absenteeism, wellness trends, risk assessments, substance abuse, employee risk profiles.

- b) health assessments;
- c) occurrences related to human error;
- d) workplace violence or bullying; and
- e) poor performance owing to employees experiencing personal problems (hijack, assault, robbery).

## **Annex G** (informative)

### **Signs and symptoms of stress**

**G.1** Employees who are experiencing stress might show physical signs or demonstrate changes in behaviour. The signs and symptoms listed below may be observed as the result of factors other than stress. The list below should not be used as a checklist to diagnose or label an employee.

**G.2** Physical signs of stress might include the following:

- a) sweating;

- b) hand tremors;
- c) nervous stumbling speech;
- d) tension headaches;
- e) rapid weight loss or weight gain; and
- f) constant feelings of coldness, sleepiness, tiredness, fatigue or lethargy.

**G.3** Behavioural changes might include the following:

- a) inconsistent or declining work performance, including uncharacteristic errors, loss of control over work, loss of motivation and commitment, indecisiveness, lapses in memory and increased time at work;
- b) regressive behaviour, such as crying, irritability, moodiness, sulking, arguing, undue sensitivity, overreaction to problems and personality clashes;
- c) aggressive behaviour, such as shouting, bullying or harassing of colleagues, temper outbursts, criticism, vandalism, malicious gossiping;
- d) withdrawn behaviour, including arriving late for work, leaving early, taking extended lunches, a resigned attitude, reduced social contact, elusiveness or evasiveness and absenteeism; and
- e) other uncharacteristic behaviour, such as increased smoking, consumption of alcohol, lack of interest in appearance and personal hygiene, reckless driving, accidents at home or work, and difficulty to relax.

**Annex H**  
(informative)

**Glossary**

**Overview**

Terms and definitions that can be found in general dictionaries, field specific dictionaries, national legislation, international and national standards are referred to as “commonly” known and therefore excluded from 3.1. The following words/terms are defined in this glossary as SARA 004 users may not have these references readily available.

**biomechanics**

application of mechanical principles to living organisms

**biological monitoring**

a planned, ongoing programme of periodic collection and analysis of body fluid, tissues, excreta or exhaled air in order to detect and quantify the exposure to or absorption of any substance or organisms by employees

**competent person**

a) having the knowledge, training, experience and where applicable, qualifications specific to the work or task being performed: Provided that where appropriate qualifications and training are registered in terms of the relevant national legislation

or

b) declared competent by an accredited assessor or institution.

**engineer**

person who uses scientific knowledge to solve practical problems and who is skilled in the principles and practice of any branch of engineering

**ergonomics**

scientific discipline concerned with the understanding of interactions among humans and other elements of a system, and the profession that applies theory, principles, data, and other methods to design in order to optimize human well-being and overall system performance

**exposure time**

duration per day that a worker is exposed to an environmental stressor

**medical certificate of fitness**

certificate valid for one year issued by an occupational health practitioner

**medical condition**

abnormal condition of an organism that impairs bodily functions, associated with specific symptoms and signs

**medical fitness for duty**

determination was made by the OMP, subject to any restrictions or requirements, that an employee has undergone the medical assessments required and that the employee meets all of the medical fitness for duty requirements for a specific job

**medical surveillance**

planned, programme or periodic examination (which may include clinical examinations, biological monitoring or medical tests) of employees by an occupational health practitioner or in prescribed cases by an occupational medicine practitioner

**medication**

substance intended for use in the medical diagnosis, cure, treatment, or prevention of disease

NOTE Also referred to as medicine, or medicament, treatment, pills, drugs.

**moonlighting**

work at another job, often at night, in addition to one's regular job

**occupational exposure limit**

**OEL**

limit value for a stress factor in the workplace

**occupational health**

**OH**

promotion and maintenance of the highest degree of physical, mental and social wellbeing of workers in all occupations by preventing departures from health, controlling risks and the adaption of work to people, and people to their jobs

[ILO / WHO 1950]

**occupational health practitioner**

**OHP**

occupational medicine practitioner or a person who holds a qualification in occupational health recognized as such by the relevant health professions or nursing council

**occupational hygiene**

anticipation, recognition, evaluation and control of conditions arising in or from the workplace, which may cause illness or adverse health effects to employees

**occupational medicine practitioner**

**OMP**

medical practitioner as defined by the relevant health professions or nursing council and who holds a qualification in occupational medicine which is recognized by the relevant health professions or nursing council

**psychometric tests**

series of questions, problems, or practical tasks that provide a measurement of aspects of somebody's personality, knowledge, ability, or experience; there are three main categories of psychometric tests: ability or aptitude tests, achievement tests, and personality tests

**side-effects**

secondary and usually adverse effect of a drug or therapy

**staffing**

process whereby individuals are recruited, selected, trained, deployed, and retained

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