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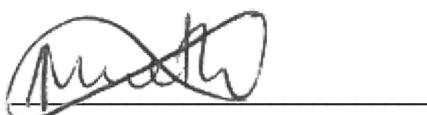
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**GOVERNMENT NOTICES • GOEWERMENTSKENNISGEWINGS**

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**DEPARTMENT OF EMPLOYMENT AND LABOUR****NO. 5952****6 March 2025****OCCUPATIONAL HEALTH AND SAFETY ACT, 1993 (ACT NO. 85 OF 1993)****PHYSICAL AGENTS REGULATIONS, 2024**

The Minister of Employment and Labour has, under section 43(1)(a) and (b) of the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993), after consultation with the Advisory Council for Occupational Health and Safety, made the regulations in the Schedule.

**MS N METH, MP****MINISTER OF EMPLOYMENT AND LABOUR****DATE: 04 February 2025**

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## 1. Definitions

In these Regulations, any word or expression to which a meaning has been assigned in the Act bears the meaning so assigned and, unless the context otherwise indicates—

**"action level"** means the level of a physical agent at which specified actions or counter measures must be taken;

**"air velocity"** means the rate of motion of air in a given direction, measured as distance per unit time;

**"air temperature"** means the temperature of air as determined by a standard thermometer, with units expressed in degrees Celsius (°C);

**"artificial light"** means any light generated by artificial light sources;

**"artificial ventilation"** means the system in which air is caused to circulate through a room by means of a mechanical apparatus which forces or extracts filtered air from such a room;

**"clothing adjustment value"** means the single number that is added to the wet-bulb globe temperature to represent the effects of clothing worn during an activity;

**"Chief Director: Provincial Operations"** means the provincial director as defined in the General Administrative Regulations, 2003, published as Government Notice No. R. 929 in *Gazette* No. 25129 of 25 June 2003;

**"cold stress"** means a condition that occurs when the body can no longer maintain its normal core temperature;

**"competent person"** means—

- (a) (i) in terms of the exposure risk assessment, a person who has, in respect of the work or task to be performed, the required knowledge, training and experience in the physical agent and, where applicable, relevant qualifications specific to or including the physical agent: Provided that where appropriate qualifications and training are registered

in terms of the provisions of the National Qualifications Framework Act, 2008 (Act No. 67 of 2008), those qualifications and that training must be regarded as the required qualifications and training; or

(ii) in terms of the exposure monitoring or inspections and tests of control measures, a person who has, in respect of the work or task to be performed, the required knowledge, training and experience in the identified physical agent and the relevant qualifications specific to or including the identified physical agent: Provided that where appropriate qualifications and training are registered in terms of the provisions of the National Qualifications Framework Act, 2008, those qualifications and that training must be regarded as the required qualifications and training; and

(b) a person who is familiar with the Act and the applicable regulations made under the Act;

**"electromagnetic field"** means the static electric, static magnetic and time-varying electric and magnetic fields with frequencies up to 300 GHz;

**"equivalent chill temperature"** means the expression of wind-chill reflecting the cooling power of wind on exposed flesh, which takes into account both dry-bulb temperature and wind speed;

**"exposure"** means contact with a physical agent at the workplace and includes potential, accidental or possible exposure, and exposed has a derivative meaning;

**"flicker"** means the impression of unsteadiness of visual perception induced by a light stimulus whose luminance or spectral distribution fluctuates with time;

**"glare"** means the condition of vision that is caused by luminance that sufficiently exceeds the luminance to which the eyes are adapted and that causes annoyance or discomfort or reduction in visual performance and visibility;

**"hand-arm vibration"** means the mechanical vibration which is transmitted into the hands and arms during a work activity;

**"heat stress"** means the total heat load to which an employee may be exposed from the combined effects of metabolic heat, environmental factors and clothing requirements;

**"illuminance"** means the expressed amount of light falling on a surface per unit area, measured in lux;

**"illumination"** means the application of light to a scene, objects or their surroundings so that they may be seen, and lighting has a corresponding meaning;

**"indoor air quality"** means the totality of attributes of indoor air at the workplace that affect a person's health and well-being;

**"luminance"** means the intensity of light emitted from a surface per unit area in a given direction;

**"medical screening"** means a risk-based systematic medical assessment of a person or a group of people using a combination of medical history, physical examination and special tests or investigations to detect disease or abnormality;

**"natural ventilation"** means the movement of air into, inside and out of a building due to natural causes;

**"occupational non-ionising radiation"** means all radiations and fields of the electromagnetic spectrum that do not normally have sufficient energy to produce ionisation in matter and includes optical radiation and the electromagnetic field;

**"occupational exposure limit"** means the limit or value set by the Minister for a physical agent in the workplace;

**"optical radiation"** means the part of the electromagnetic spectrum that includes infrared radiation, visible light and ultraviolet radiation;

**"physical agent"** means a source of energy which may result in injury or disease after exposure and includes, but is not limited to, cold stress, heat stress, vibration, non-ionising radiation and illumination;

**"physical agent exposure monitoring"** means the systematic process of measuring the magnitude, frequency and duration of exposure to a physical agent;

**"physical agent exposure risk assessment"** means a risk assessment and risk categorisation of potential exposure to a physical agent;

**"physical agents technical committee"** means a committee established in terms of regulation 19;

**"pitch, yaw and roll"** means the three dimensions of movement when an object moves through a medium;

**"relative humidity"** means the ratio of the quantity of water vapour present in the air to the quantity that would saturate it at any specific temperature;

**"specialised illumination"** means additional illumination developed or designed for use in hazardous workplaces, locations or precision tasks;

**"stroboscopic effect"** means the change in motion perception induced by light stimulus, light luminance or spectral distribution, which fluctuates with time, for a static observer in a non-static environment;

**"the Act"** means the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993);

**"time-weighted average"** means the average of a number of representative measurements that are taken over a defined period of time;

**"uniformity of illuminance"** means the ratio of the minimum illuminance to the area-weighted average illuminance ( $E_{h\min}/E_{h\text{av}}$ ) or area-weighted maximum illuminance ( $E_{h\min}/E_{h\max}$ );

**"vibration"** means the mechanical, periodic or random oscillations of an object about an equilibrium point;

**"vulnerable employee"** means an employee who is at a higher risk of injury, disease or complications caused by exposure to a physical agent;

**"wet-bulb globe temperature index"** means a combination of the effects of the four main thermal components affecting heat stress: air temperature, absolute humidity, air velocity and mean radiant temperature;

**"whole-body vibration"** means mechanical vibration that is transmitted into the body, when seated or standing, through the supporting surface, during a work activity.

## 2. Scope of application

(1) These Regulations apply to—

- (a) any employer or self-employed person who carries out work at a workplace which may expose any person to a physical agent in that workplace; and
- (b) a designer, manufacturer, importer or supplier of plant and machinery for use at a workplace.

(2) With the exception of regulation 3(6), the provisions of regulations 3 and 8 shall not apply to a self-employed person.

(3) The provisions of these Regulations do not apply in the case of noise, where the Noise Exposure Regulations apply.

**3. Information, instruction and training**

(1) An employer who undertakes work which exposes an employee to a physical agent must consult the relevant health and safety representatives or the health and safety committee established for that workplace and inform them of the intention to conduct—

- (a) a physical agent exposure risk assessment;
- (b) physical agent exposure monitoring; and
- (c) training as contemplated in subregulation (4).

(2) An employer who undertakes work which exposes an employee to a physical agent must inform the relevant health and safety representatives or the health and safety committee established for that workplace of the intention to conduct medical screening and medical surveillance.

(3) An employer who undertakes work which exposes an employee to a physical agent must inform the relevant health and safety representatives or the health and safety committee established for that workplace of the documented outcomes of the—

- (a) physical agent exposure risk assessment;
- (b) physical agent exposure monitoring; and
- (c) medical screening and medical surveillance.

(4) Every employer who undertakes work which is likely to expose an employee to any physical agent must, before any exposure, ensure that such employee is comprehensively informed, instructed and trained in both the practical aspects and theoretical knowledge with regard to—

- (a) the content and scope of these Regulations;
- (b) the potential sources of exposure to the physical agent;
- (c) the nature of the physical agent;
- (d) the potential risk to health and safety associated with the physical agent;
- (e) the differing effects of exposure to the physical agent on men, women, young employees and vulnerable employees, where such difference may exist;

- (f) the control measures that are in place to prevent exposure to the physical agent;
- (g) the necessity for compliance with control measures in all areas, including the correct inspection, use, care, maintenance and limitations of such control measures;
- (h) the precautions to be taken by an employee to protect themselves against the adverse effects associated with the exposure;
- (i) the reason for and the outcomes of the physical agent exposure risk assessment and exposure monitoring, the necessity for medical screening and medical surveillance and the long-term benefits of medical screening and medical surveillance;
- (j) the action level and occupational exposure limit for the physical agent and its purpose;
- (k) the procedures for reporting, correcting and replacing defective noise control measures;
- (l) any additional matters contemplated in regulations 4 and 8; and
- (m) the process to access records of the physical agent exposure risk assessment, physical agent exposure monitoring and personal medical records.

(5) The employer must ensure that refresher training is conducted at least annually or at more frequent intervals as may be recommended by the health and safety committee or the health and safety representative.

(6) An employer or self-employed person must ensure, as far as is reasonably practicable, that mandatories or persons other than employees who may be affected by physical agent exposure at the workplace are informed and trained as contemplated in subregulation (4).

#### **4. Duties of persons who may be exposed to a physical agent**

(1) Any person who is exposed or may be exposed to a physical agent must obey any lawful instruction issued by the employer or self-employed person or by anyone authorised thereto by the employer or self-employed person, regarding—

- (a) the use of measures adopted to control a physical agent;
- (b) the immediate reporting of defective, damaged or lost physical agent control measures to the health and safety representative or the employer;
- (c) cooperation with the employer in determining an employee's exposure to a physical agent;
- (d) the reporting of potential physical agent risks to the health and safety representative or the employer;
- (e) reporting for medical screening and medical surveillance; and
- (f) information, instruction and training.

(2) An employee must, where there is a requirement to use personal protective equipment as contemplated in subregulation (1)—

- (a) inspect, use, wear, store and dispose of the personal protective equipment in accordance with any information, training or lawful instruction given by the employer;
- (b) not intentionally misuse or damage the personal protective equipment; and
- (c) immediately inform the employer or health and safety representative of any damage, defect or any need to clean or replace any of the personal protective equipment.

## **5. Duties of designers, manufacturers, importers and suppliers**

(1) Any designer, manufacturer, importer or supplier must—

- (a) as far as reasonably practicable, ensure that the applicable health and safety standards incorporated in these Regulations are incorporated within the design and manufacture;
- (b) as far as is reasonably practicable, ensure that plant or machinery are designed and manufactured to minimise the risk of exposure to a physical agent when properly used;
- (c) as far as is reasonably practicable, supply plant or machinery that can be transported, received, stored and handled in a manner that minimises the risk of exposure to a physical agent;
- (d) as far as is reasonably practicable, install plant or machinery in a manner that minimises the risk of exposure to a physical agent when properly used;
- (e) provide information, instruction and training as deemed necessary to minimise the risk of exposure to a physical agent during the use of plant or machinery; and
- (f) provide information to potential users on the appropriate maintenance of plant or machinery to ensure safe operation and use.

## **6. Physical agent exposure risk assessment**

- (1) An employer or self-employed person must conduct a documented physical agent exposure risk assessment—
  - (a) as far as is reasonably practicable, before exposure to a physical agent;
  - (b) thereafter at intervals not exceeding 24-months; and
  - (c) by a competent person.
- (2) The physical agent exposure risk assessment contemplated in subregulation (1) must include at least—
  - (a) a complete hazard identification;
  - (b) the identification of all persons who may be affected by a physical agent;

- (c) how employees may be affected by a physical agent;
- (d) the analysis and evaluation of the physical agent risks;
- (e) the prioritisation of physical agent risks;
- (f) previous physical agent exposure risk assessments; and
- (g) previous physical agent exposure monitoring reports.

(3) The physical agent exposure risk assessment conducted in terms of subregulation (1) must take into account the specific effects of exposure to a physical agent on men, women, young employees and vulnerable employees, where applicable.

(4) An employer or self-employed person must, in terms of the physical agent exposure risk assessment—

- (a) consider the recommendations identified by a competent person in the physical agent exposure risk assessment; and
- (b) develop a documented action plan for the implementation of the recommendations.

(5) An employer or self-employed person must review the relevant physical agent exposure risk assessment made in accordance with subregulation (1) if—

- (a) such assessment is no longer valid;
- (b) control measures are no longer effective;
- (c) technological or scientific advances allow for more effective control methods;
- (d) there has been a change in—
  - (i) the workplace or work methods;
  - (ii) the type of work carried out; or
  - (iii) the type of plant, machinery or personal protective equipment used to control the exposure;
- (e) an incident occurred; or
- (f) the medical surveillance reveals an adverse health effect where a physical agent is identified as a contributing factor.

(6) The review of the physical agent exposure risk assessment contemplated in subregulation (5) must be carried out in accordance with subregulations (1)(c), (2), (3) and (4).

## 7. Physical agent exposure monitoring

(1) An employer or self-employed person must ensure that a physical agent exposure monitoring programme is implemented at a workplace where a physical agent exposure risk assessment or a review of such assessment indicates that any employee may be exposed to a physical agent—

- (a) at or above the—
  - (i) occupational exposure limits in Tables 1 and 2; or
  - (ii) guideline values in Table 3;
- (b) outside the range for the guideline values in Table 3.

(2) An employer or self-employed person must ensure that the physical agent exposure monitoring programme contemplated in subregulation (1) is—

- (a) carried out in accordance with the provisions of these Regulations;
- (b) conducted by a competent person;
- (c) representative of an employee's exposure to a physical agent;
- (d) conducted in accordance with recognised principles and methodology;
- (e) conducted by means of instruments calibrated to a national or international traceable standard; and
- (f) recording measurements that are traceable to national and international measurements standards.

(3) The physical agent exposure monitoring programme contemplated in subregulation (1) must include the quantification of exposure levels and comparison to values or occupational exposure limits for the particular physical agent.

(4) An employer or self-employed person must conduct the physical agent exposure monitoring contemplated in subregulation (1)—

- (a) at a frequency determined by the physical agent exposure risk assessment; or
- (b) at least every 24-months: Provided that an inspector may direct an employer or self-employed person, in writing, to re-conduct the exposure monitoring or part thereof.

(5) An employer or self-employed person must, in terms of physical agent exposure monitoring—

- (a) consider the recommendations identified by a competent person in the physical agent exposure monitoring report; and
- (b) develop a documented action plan for the implementation of the recommendations.

## **8. Medical screening and medical surveillance**

(1) An employer must ensure that an employee is placed under a documented medical screening programme—

- (a) where the physical agent exposure risk assessment or review of such assessment indicates the need for the employee to be placed under medical screening; or
- (b) for a vulnerable employee, in which case the employer must obtain the opinion of an occupational medicine practitioner to determine whether it is necessary to conduct medical screening.

(2) In the case where the employer has to conduct medical screening as contemplated in subregulation (1), the occupational medicine practitioner must consider if—

- (a) an employee has a health condition that makes the employee vulnerable to a physical agent;
- (b) an employee has a health condition that impacts the proper use of personal protective equipment;

- (c) there is an identifiable occupational disease or adverse health effect related to a physical agent;
- (d) there is a reasonable likelihood that the occupational disease or adverse health effect may occur under the particular exposure conditions of the employee's work; and
- (e) there are valid techniques to diagnose indications of the occupational disease or adverse health effect, as far as is reasonably practicable.

(3) Where the need for medical screening has been determined as necessary by the occupational medicine practitioner, the occupational medicine practitioner must specify requirements for medical screening, including—

- (a) an evaluation of an employee's medical, occupational and exposure history;
- (b) the appropriate clinical examination and medical tests; and
- (c) the intervals at which medical screening must be conducted, appropriate to the health risks and health status of an employee.

(4) The employer must ensure that the medical screening contemplated in subregulation (1)—

- (a) is carried out by an occupational health practitioner; and
- (b) includes—
  - (i) an initial medical screening, as far as reasonably practicable, immediately before an employee commences employment; and
  - (ii) subsequently, periodic medical screening at intervals recommended by the occupational medicine practitioner, but not exceeding 24-months.

(5) After concluding medical screening, the occupational health practitioner must ensure that the employer is informed, in writing, of the outcome of an employee's health evaluation if the outcome was normal.

(6) The occupational medicine practitioner must notify the employer in writing by means of a medical certificate of fitness, and inform the employee accordingly, if—

- (a) the employee has a medical condition which—
  - (i) prevents the wearing of personal protective equipment; or
  - (ii) is likely to be aggravated by the exposures at that workplace; or
- (b) the medical screening identifies an adverse health effect caused by exposure to a physical agent at that workplace.

(7) The employer must ensure that an exit medical screening is carried out by an occupational health practitioner on termination of an employee's employment: Provided that a medical screening conducted within 6-months prior to the date of termination of employment shall be deemed to have fulfilled the requirements of an exit medical screening.

(8) With respect to the medical certificate of fitness contemplated in subregulation (6), the certificate must indicate at least—

- (a) the recommendations pertinent to the employee's fitness to perform the inherent requirements of the job;
- (b) the presence of an occupational disease, without including confidential medical information;
- (c) if any restrictions or conditions apply to any specified duties performed by the employee; and
- (d) the period for which any restrictions or conditions, as applicable, should be applied.

(9) The employer must, as far as is reasonably practicable—

- (a) accommodate the conditions or restrictions recommended; and
- (b) only permit an employee who has been medically certified for restricted duties to return to normal duties if the employee has been certified fit for those duties by an occupational medicine practitioner.

(10) An employer must establish, implement and maintain a documented system of medical surveillance, overseen by an occupational medicine practitioner, where medical screening has been determined necessary.

(11) The medical surveillance contemplated in subregulation (10) must at least—

- (a) include an analysis of the screening results over time; and
- (b) use the results of subregulation (2) to identify the need for targeted exposure prevention in the workplace.

(12) The employer must ensure that an employee provides written informed consent for inclusion in the—

- (a) medical screening; and
- (b) medical surveillance programme.

(13) An employee may appeal any finding by an occupational medicine practitioner stipulated in the medical certificate of fitness to the Chief Inspector in writing within 60-days of receiving the certificate.

## 9. Cold stress

(1) The employer or self-employed person must ensure that cold stress is eliminated at the source, where reasonably practicable.

(2) Where the provision of subregulation (1) is not reasonably practicable and exposure is at or below the OEL stipulated in Table 1, the employer or self-employed person must, as a minimum—

- (a) implement alternative working methods to reduce exposure to cold stress;
- (b) install plant and machinery designed to reduce the risk of cold stress, where applicable;
- (c) implement maintenance programmes for plant and machinery, the workplace and workplace systems;

- (d) review the design and layout of workplaces, workstations and rest facilities;
- (e) review the—
  - (i) physical agent exposure risk assessment;
  - (ii) physical agent exposure monitoring programme;
  - (iii) medical screening;
  - (iv) medical surveillance; and
  - (v) control measures;
- (f) limit the duration and magnitude of exposure of employees such as to not exceed the periods as stipulated in Table 8; and
- (g) provide an employee with dry, whole-body personal protective clothing and equipment with adequate insulation.

(3) The physical agent exposure monitoring programme must—

- (a) take into account both the dry-bulb temperature and air velocity when determining the time-weighted average environmental equivalent chill temperature;
- (b) be taken over a period of at least 4-hours;
- (c) be conducted during the coldest period of an employee's shift; and
- (d) be conducted during the coldest quarter of the year as determined by the physical agent exposure risk assessment.

## 10. Heat stress

- (1) The employer or self-employed person must ensure that heat stress is eliminated at the source, where reasonably practicable.
- (2) Where the provision of subregulation (1) is not reasonably practicable and exposure is at or above the action level for heat stress as stipulated in Table 1, the employer or self-employed person must, as a minimum—
  - (a) identify the reason why the action level was reached; and

(b) review control measures to prevent the OEL from being reached.

(3) Where the provision of subregulation (1) is not reasonably practicable and the employee's exposure is at or above the OEL for heat stress as stipulated in Table 1, the employer or self-employed person must, as a minimum—

- (a) implement alternative working methods to reduce exposure to heat stress;
- (b) install plant and machinery designed to reduce the risk of heat stress, where applicable;
- (c) implement maintenance programmes for plant and machinery, the workplace and workplace systems;
- (d) review the design and layout of workplaces, workstations and rest facilities;
- (e) review the—
  - (i) physical agent exposure risk assessment;
  - (ii) physical agent exposure monitoring programme;
  - (iii) medical screening;
  - (iv) medical surveillance programme; and
  - (v) control measures;
- (f) limit the duration and magnitude of exposure to heat stress;
- (g) subject the exposed employees to a heat acclimatisation programme;
- (h) provide prompt first aid treatment, specific to the adverse health effects from heat stress;
- (i) provide sufficient amounts of potable water for consumption at the place of work as determined by the physical agent exposure risk assessment; and
- (k) provide appropriate personal protective clothing and equipment, taking into account the clothing adjustment value as indicated in Table 9.

(3) The physical agent exposure monitoring programme must be conducted in accordance with SANS 7243.

## 11. Illumination

(1) An employer or self-employed person must provide illumination in the workplace in the form of either natural light, artificial light or a combination thereof.

(2) An employer or self-employed person must ensure that, as far as reasonably practicable, illumination provided in the workplace takes into account at least—

- (a) illuminance values;
- (b) glare;
- (c) uniformity of illuminance;
- (d) flicker; and
- (e) stroboscopic effect.

(3) An employer or self-employed person must ensure that, as far as reasonably practicable, specialised illumination is provided for—

- (a) hazardous workplaces or tasks; or
- (b) precision tasks.

(4) With respect to the illumination to be provided in terms of subregulation (1), the employer or self-employed person must ensure that—

- (a) illuminance provided for the workplace is in accordance with the minimum maintained average illuminance values specified—
  - (i) in Table 4 for interior workplaces: Provided that where a workplace is not referenced in Table 4, the minimum maintained average illuminance values in Table 5 will apply; and
  - (ii) in Table 6 for exterior workplaces: Provided that where a workplace is not referenced in Table 6, the minimum maintained average illuminance values in Table 7 will apply;

- (b) glare is eliminated at the source or, where this is not reasonably practicable, reduced to a degree that maintains visual performance in the workplace;
- (c) the uniformity of illuminance—
  - (i) at any horizontal working plane in a room within an interior workplace, is not less than 0,75;
  - (ii) for interior workplaces within five metres of a working plane, is not less than 0,20 between the average illuminance on that working plane and on the adjacent floor areas; and
  - (iii) for exterior workplaces must be in accordance with the values listed in Table 6: Provided that where a workplace is not referenced in Table 6, the average uniformity in Table 7 will apply;
- (d) flicker is eliminated or, where this is not reasonably practicable, reduced to a degree that maintains visual performance in the workplace; and
- (e) the stroboscopic effect is eliminated where such a hazard is identified.

(5) Every employer or self-employed person must, with regards to emergency evacuation of a workplace, provide emergency sources of illumination which are such that, when activated, the minimum illuminance for—

- (a) escape route illumination is not less than 1 lux at floor level;
- (b) emergency escape illumination is not less than 5 lux at floor level;
- (c) illumination at an emergency exit is not less than 5 lux at floor level;
- (d) workplaces or types of work where it is necessary to stop machinery or shut down plant or processes before evacuating the workplace, is not less than 20 lux at floor level; and
- (e) workplaces or types of work where dangerous materials are present or dangerous processes are carried out, is not less than 20 lux at floor level.

(6) An employer or self-employed person must ensure that the emergency sources of illumination—

- (a) prescribed in subregulations (5)(a), (b) and (c) are activated within 30 seconds of the failure of the illumination prescribed in subregulation (1);
- (b) prescribed in subregulations (5)(d) and (e) are activated within 0,5 seconds of the failure of the illumination prescribed in subregulation (1);
- (c) last long enough to ensure the safe evacuation of the workplace;
- (d) are—
  - (i) mounted at a height of not less than 2 metres above floor level; and
  - (ii) not aimed between 10 degrees above and 45 degrees below the horizontal line on which they are installed; and
- (e) are kept clean, in good working order and tested for efficient operation at intervals of not more than 3-months.

(7) An employer or self-employed person must establish and conduct an illumination measurement and monitoring programme at that workplace where a physical agent exposure risk assessment or a review of such assessment indicates that any employee may be exposed to—

- (a) illumination below the minimum maintained average illuminance values in Tables 4, 5, 6 and 7;
- (b) flicker;
- (c) stroboscopic effect; or
- (d) specialised illumination for hazardous workplaces or tasks or precision tasks.

(8) The illumination measurement and monitoring programme as contemplated in subregulation (7) must be conducted—

- (a) at a frequency determined by the physical agent exposure risk assessment; or

- (b) at intervals not exceeding 24-months: Provided that an inspector may direct an employer or self-employed person, in writing, to re-conduct the measurement and monitoring or part thereof;
- (c) by a competent person;
- (d) by means of instruments calibrated to a national or international traceable standard;
- (e) to record measurements that are traceable to national and international measurements standards; and
- (f) in accordance with recognised principles and methodology stipulated in—
  - (i) SANS 10114-1 for interior lighting;
  - (ii) SANS 10389-1 for exterior lighting; and
  - (iii) SANS 10114-2 for emergency lighting.

(9) An employer or self-employed person must, in terms of the illumination measurement and monitoring programme as contemplated in subregulation (7)—

- (a) consider the recommendations identified by a competent person in the illumination measurement and monitoring report; and
- (b) develop a documented action plan for the implementation of the recommendations.

(10) In order to maintain the requirements in subregulation (1), an employer or self-employed person must ensure that—

- (a) luminaires and lamps are maintained, kept clean, in good working order and replaced or repaired when defective; and
- (b) windows and other sources of natural light are maintained, kept clean, fit for purpose and replaced or repaired when defective.

(11) An employer or self-employed person engaged in building work shall cause all workplaces where danger may exist through the lack of natural light to be illuminated such that it will be safe in terms of the physical agent exposure risk assessment.

(12) An employer or self-employed person must ensure that all windows comply with the requirements of SANS 10400: Part O.

## **12. Indoor air quality**

(1) The employer or self-employed person must ensure that risk of exposure to hazardous biological, chemical and physical agents impacting indoor air quality is eliminated at the source, where reasonably practicable.

(2) Where the provision of subregulation (1) is not reasonably practicable, the employer or self-employed person must control indoor air quality to guidance levels as contemplated in Table 3 through the provision of either—

- (a) natural ventilation; or
- (b) an artificial ventilation system.

(3) For an artificial ventilation system contemplated in subregulation (2)(b), the employer or self-employed person must ensure that the system—

- (a) complies with the air requirements for different types of occupancies listed in SANS 10400: Part O;
- (b) is tested—
  - (i) by a competent person; and
  - (ii) at intervals as per the original manufacturer specifications but not exceeding 24-months; and
- (c) is maintained as per the original manufacturer specifications: Provided that in the absence of the original manufacturer specifications, as per the physical agent exposure risk assessment.

(4) The physical agent exposure monitoring must take into account the following parameters as contemplated in Table 3—

- (a) thermal environment, including—
  - (i) air temperature;
  - (ii) air velocity; and

- (iii) relative humidity;
- (b) airborne contaminants, including—
  - (i) carbon monoxide;
  - (ii) carbon dioxide;
  - (iii) other applicable hazardous chemical agents;
  - (iv) mould; and
  - (v) other applicable hazardous biological agents; and
- (c) air requirements for different types of occupancies.

### 13. Vibration

(1) The employer or self-employed person must ensure that hand-arm vibration or whole-body vibration is eliminated at the source, where reasonably practicable.

(2) Where the provision of subregulation (1) is not reasonably practicable and exposure is at or above the action level for hand-arm vibration or whole-body vibration as stipulated in Table 1, the employer or self-employed person must, as a minimum—

- (a) identify the reason why the action level was reached; and
- (b) review control measures to prevent the OEL from being reached.

(3) Where the provision of subregulation (1) is not reasonably practicable and exposure is at or above the OEL for hand-arm vibration or whole-body vibration as stipulated in Table 1, the employer or self-employed person must, as a minimum—

- (a) implement alternative working methods to reduce exposure to vibration;
- (b) install plant and machinery designed to produce the least possible vibration;
- (c) implement maintenance programmes for plant and machinery, the workplace and workplace systems;
- (d) review the design and layout of workplaces, workstations and rest facilities;
- (e) review the—

- (i) physical agent exposure risk assessment;
- (ii) physical agent exposure monitoring programme;
- (iii) medical screening;
- (iv) medical surveillance; and
- (v) control measures;

- (f) limit the duration and magnitude of exposure to vibration; and
- (g) provide personal protective clothing to protect employees from cold and damp.

(4) The physical agent exposure monitoring must—

- (a) for whole-body vibration, be conducted in accordance with SANS 2631;
- (b) for hand-arm vibration, in order to be representative of an employee's exposure—
  - (i) be conducted along the axes for pitch, yaw and roll;
  - (ii) be a minimum of one exposure cycle, normalised to an 8-hour time-weighted average: Provided that in the event of multiple sources of vibration, the partial exposure values are combined and normalised to an 8-hour time-weighted average;
  - (iii) in the case of plant or machinery which need to be held with both hands, be conducted on each hand, whereby the exposure is determined by reference to the higher value of the two;
  - (iv) be conducted during the coldest period of an employee's shift; and
  - (v) be conducted during the coldest quarter of the year as determined by the physical agent exposure risk assessment.

#### **14. Occupational non-ionising radiation**

(1) The employer or self-employed person must ensure that occupational non-ionising radiation is eliminated at the source, where reasonably practicable.

(2) Where the provision of subregulation (1) is not reasonably practicable and exposure is at or above the OEL for the respective type of occupational non-ionising radiation as stipulated in Tables 1 and 2, the employer or self-employed person must, as a minimum—

- (a) implement alternative working methods to reduce exposure to occupational non-ionising radiation;
- (b) install plant and machinery designed to produce the least possible occupational non-ionising radiation;
- (c) implement maintenance programmes for plant and machinery, the workplace and workplace systems;
- (d) review the design and layout of workplaces, workstations and rest facilities;
- (e) review the—
  - (i) physical agent exposure risk assessment;
  - (ii) physical agent exposure monitoring programme;
  - (iii) medical screening;
  - (iv) medical surveillance; and
  - (v) control measures;
- (f) limit the duration and magnitude of exposure to occupational non-ionising radiation; and
- (g) provide personal protective equipment to protect employees from occupational non-ionising radiation.

(3) The physical agent exposure monitoring must take into account—

- (a) the source of the occupational non-ionising radiation; and
- (b) the type of occupational non-ionising radiation.

(4) Signage must be provided—

- (a) for—
  - (i) an identified source of occupational non-ionising radiation, where reasonably practicable; and

- (ii) an area that has been identified to have an electromagnetic interference effect on bio-medical devices; and
- (b) in the form specified in Annexure 1, which is clearly visible.

#### **15. Prevention or control of exposure to a physical agent**

- (1) An employer or self-employed person must ensure that the exposure of a person to a physical agent is eliminated, where reasonably practicable.
- (2) Where the provision of subregulation (1) is not reasonably practicable, an employer or self-employed person must, as far as is reasonably practicable, reduce exposure to a physical agent to below the OELs contemplated in Tables 1 and 2 by implementing a combination of the hierarchy of control measures, including, but not limited to—
  - (a) engineering control measures to eliminate or reduce exposure at its source, or the modification of the routes of exposure;
  - (b) keeping plant and machinery which generates a physical agent in good working order or repaired or replaced when defective; and
  - (c) administrative control measures to limit the number of persons exposed and the duration of exposure.
- (3) An employer or self-employed person must ensure that an employee who is exposed to a physical agent receives information, instructions and training with regard to the inspection and correct use of control measures and reporting of failures of control measures implemented in subregulation (2).

#### **16. Personal protective equipment and facilities**

- (1) Where it is not reasonably practicable to ensure that the exposure of an employee to a physical agent is either eliminated or controlled, the employer must provide the employee with suitable personal protective equipment.
- (2) Where personal protective equipment is provided, the employer must ensure that—

- (a) the relevant personal protective equipment is capable of reducing the exposure to the physical agent concerned;
- (b) selection of the relevant personal protective equipment takes into consideration—
  - (i) the nature of the physical agent;
  - (ii) the type of work to be done;
  - (iii) the physical effort required to do the work;
  - (iv) the length of time it will have to be worn;
  - (v) the requirements in relation to the work for visibility, comfort and employee communication;
  - (vi) compatibility with any other personal protective equipment that may be needed; and
  - (vii) any recommendations made by the occupational health practitioner;
- (c) information, instructions, training and supervision are provided with regard to the correct inspection, use, care and disposal of personal protective equipment;
- (d) reusable personal protective equipment is kept in a hygienic condition and proper working order;
- (e) facilities are provided for the safe disposal of disposable personal protective equipment, in a manner that would not cause any hazard;
- (f) the relevant personal protective equipment is readily available;
- (g) storage facilities for personal protective equipment are provided when not in use; and
- (h) personal protective equipment is used or worn by enforcing the use thereof.

(3) Subregulations (1) and (2) also apply to persons other than employees who may be exposed to physical agents.

**17. Maintenance of control measures**

(1) Every employer or self-employed person must ensure that any control measure is—

- (a) fully and properly used;
- (b) maintained in an efficient state and in good working order;
- (c) in good repair and clean condition; and
- (d) reviewed for effectiveness through inspections and tests at intervals not exceeding 24-months.

(2) The inspections and tests contemplated in subregulation 1(d) must be conducted by a competent person.

**18. Records**

(1) An employer or self-employed person must—

- (a) keep record of—
  - (i) training;
  - (ii) the physical agent exposure risk assessment and action plan;
  - (iii) the physical agent exposure monitoring and action plan;
  - (iv) the illumination measurement, monitoring and action plan;
  - (v) medical screening and medical surveillance reports; and
  - (vi) maintenance of control measures;
- (b) keep records as contemplated in subregulation (1)(a) for 40-years;
- (c) make available to—
  - (i) the relevant health and safety representative, health and safety committee or an inspector the records as contemplated in regulations 3, 6, 7, 11 and 17; and
  - (ii) any person the records contemplated in regulation 8, subject to formal written consent of the employee.

(2) If an employer or self-employed person ceases activities, the employer or self-employed person must inform the relevant Chief Director: Provincial Operations of—

- (a) where the records listed in subregulation 1(a) will be kept; and
- (b) how those records will be accessed when required.

## 19. Physical agents technical committee

(1) The Council may, after consultation with the Minister, establish a physical agents technical committee which must consist of—

- (a) a chairperson designated by the Chief Inspector from the employees of the Department of Employment and Labour;
- (b) one person designated by the Chief Inspector from the employees of the Department of Employment and Labour;
- (c) three persons designated by employers' organisations to represent employers;
- (d) three persons designated by employees' organisations to represent the federation of unions;
- (e) one person to represent a professional body recognised by the Chief Inspector;
- (f) one person representing a higher educational institution;
- (g) one person representing occupational medicine; and
- (h) persons who are competent in respect of the matters to be dealt with by the physical agents technical committee who have been co-opted by the committee with the authorisation of the Council.

(2) The Council must—

- (a) appoint members of the physical agents technical committee for a period that the Council may determine at the time of the appointment;

- (b) after having afforded a member a reasonable opportunity to respond, discharge such a member at any time, for reasons that are fair and just; and
- (c) appoint a new member in the place of a member who is discharged in terms of subregulation (2)(b).

(3) The physical agents technical committee must—

- (a) advise the Council on physical agents related matters, including, but not limited to, codes, standards and training requirements;
- (b) make recommendations and submit reports to the Council regarding any matter to which these Regulations apply;
- (c) advise the Council regarding any matter referred to the physical agents technical committee by the Council;
- (d) perform any other function for the administration of a provision of these Regulations that may be requested by the Council;
- (e) conduct its work in accordance with the instructions and rules of conduct framed by the Council; and
- (f) advise the Chief Inspector regarding appeals lodged in writing regarding a medical certificate of fitness as contemplated in regulation 8(6).

## **20. Offences and penalties**

Any person who contravenes or fails to comply with any provision of regulation 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17 or 18 shall be guilty of an offence and liable on conviction to a fine or to imprisonment for a maximum of 12-months and, in the case of a continuous offence, to an additional fine of R200 for each day on which the offence continues or additional imprisonment of one day for each day on which the offence continues: Provided that the period of such additional imprisonment shall in no case exceed 90-days.

**21. Repeal of regulations**

The Environmental Regulations for Workplaces, 1987 as amended, published as Government Notice No. R. 2281 of 16 October 1987, will be repealed 18-months after the date of promulgation of the Physical Agents Regulations.

**22. Short title**

These regulations shall be called the Physical Agents Regulations, 2024.

#### ANNEXURE 1 – SIGNAGE

Beware of occupational non-ionising radiation



Beware of Electromagnetic interference on bio-medical devices



**Table 1: Occupational exposure limits and action levels for physical agents**

Physical agent	Action level	Time-weighted average OEL	Unit	Duration
Cold stress equivalent chill temperature or ECT	-	10	degrees Celsius, °C	4-hours
Heat stress wet-bulb globe temperature index	27	30	Degrees Celsius, °C	1-hour
Hand-arm vibration	2,5	5	metres per square second, m/s <sup>2</sup>	8-hours
Whole-body vibration	0,5	1,15	metres per square second, m/s <sup>2</sup>	8-hours
Ultraviolet radiation	-	0,1	microwatt per square centimetre, µW/cm <sup>2</sup>	8-hours
Infrared radiation	-	10	milliwatt per square centimetre, mW/cm <sup>2</sup>	1 000 seconds

**Table 2: Occupational exposure limits for electromagnetic fields\***

Frequency range	Incident E-field strength – $E_{inc}$ V/m <sup>-1</sup>	Incident H-field strength – $H_{inc}$ A/m <sup>-1</sup>	Incident power density – $S_{inc}$ W/m <sup>-2</sup>
0,1 to 30 MHz	$660/f_M^{0,7}$	$4,9/f_M$	n/a
> 30 to 400 MHz	61	0,61	10
> 400 to 2 000 MHz	$3/f_M^{0,5}$	$0,008/f_M^{0,5}$	$f_M/40$
> 2 to 300 GHz	n/a	n/a	50

\*Note: levels for exposure are averaged over 30 minutes and for the whole-body.

**Table 3: Guideline levels for indoor air quality parameters**

IAQ parameter	Level	Unit
Air temperature	20 to 28 dry-bulb temperature	degrees Celsius, °C
Air velocity	0,1 to 0,5	meters per second, m/s
Relative humidity	30 to 60	per cent, %
Carbon dioxide	Not to exceed outdoor concentration by more than 600 ppm	parts per million, ppm
Carbon monoxide	10	parts per million, ppm

**Table 4: Minimum maintained average illuminance values for interior workplaces**

Type of interior, area, task or activity	Minimum maintained average illuminance, Lux
<b>General Building Areas</b>	
Entrance halls	100
Lounges	200
Circulation areas and corridors	100
Stairs, escalators and travelators	150
Loading ramps/bays	150
Canteens	200
Rest rooms	100
Rooms for physical exercise	300
Cloakrooms, washrooms, bathrooms, toilets	200
Sickbays	500
Rooms for medical attention	500
Plant rooms, switchgear rooms	200
Post rooms, switchboards	500
Stores, stockrooms, cold stores	100
Dispatch packing and handling areas	300
Control stations	150
<b>Airports</b>	
Arrival and departure halls, baggage claim areas	200
Connecting areas, escalators, travelators	150
Information desks, check-in desks	500
Customs and passport control desks	500
Waiting areas	200
Luggage store rooms	200
Security check areas	300
Air traffic control towers	500
Air traffic rooms	500
Radar-type and other control tower-type screens	specialised illumination
Ticket halls and concourses	200

Type of interior, area, task or activity	Minimum maintained average illuminance, Lux
Ticket and luggage offices and counters	300
Platforms and passenger subways, underpasses	50
Testing and repair hangars	500
Engine test areas	500
Measuring areas in hangars	500
<b>Banks</b>	
Counters (see also offices)	500
General work areas	500
Sales areas: small	300
Sales areas: large	500
Till areas, wrapper tables	500
General work areas	300
Stairs and corridors	200
Stockrooms	200
<b>Cabinet Making</b>	
Veneer sorting and preparation	500
Veneer pressing	400
Marquetry, inlay work	750
Components store	100
Fitting, final inspection	500
<b>Car Parks, indoors</b>	
In/out ramps: day	300
In/out ramps: night	75
Traffic lanes	75
Parking areas	75
Ticket offices: manned	300
Ticket vending machines	150
<b>Cement, Concrete and Brick Industry</b>	
Drying	50
Preparation of materials, work on kilns and mixers	200

Type of interior, area, task or activity	Minimum maintained average illuminance, Lux
General machine work	300
Rough forms	300
Fiberising, mixing, shredding, agitating, manufacturing of flat sheets, corrugated sheets and moulded goods	300
Pipe and pole manufacturing: mixing, spinning, reinforcing, stripping	200
<b>Ceramics and Glass Industry</b>	
Drying	50
Furnace rooms, mixing, bending, annealing ovens, forming	200
Enamelling, rolling, pressing, shaping simple parts, glazing, glass blowing	300
Preparation, general machine work	300
Grinding, engraving, glass polishing, shaping precision parts, manufacture of glass instruments	750
Decorative work	500
Grinding of optical glass, crystal hand grinding and engraving, work on average goods	750
Precision work, e.g. decorative grinding, hand painting	1 000
Manufacture of synthetic precious stones	1 500
Finishing, bevelling, etching, silvering	500
Brilliant cutting	800
Inspection – General	300
Inspection – Fine	800
<b>Chemical, plastics and rubber Industries</b>	
Hand furnaces, boiling tanks, stationary driers or gravity crystallisers	150
Mechanical driers	150
Evaporators, filtration plants	150
Mechanical crystallising, bleaching	200
Extractors, percolators, nitrators, electrolytic cells	200
Controls, gauges, valves	100
Control rooms: vertical control panel face: vertical illuminance	400

Type of interior, area, task or activity	Minimum maintained average illuminance, Lux
Control desks	400
General work areas	150
Inspection	1 000
<b>Clay and Pottery</b>	
Grinding, filter pressing, kiln rooms, moulding, pressing, cleaning, trimming, firing	400
Enamelling, colouring, decorating	600
<b>Dye Works</b>	
Reception, "grey" perching	600
Wet processes	300
Dry processes	300
Dyers' offices	800
<b>Educational Buildings</b>	
Playschool rooms	300
Nursery classes	300
Nursery craft rooms	300
Classrooms, tutorial rooms	300
Classrooms for evening classes and adult education	500
Lecture halls	500
Chalk boards: vertical illuminance	500
Demonstration tables	500
Art and craft rooms	500
Art rooms in art schools	750
Technical drawing rooms	750
Preparation rooms and workshops	500
Music practice rooms	500
Student common rooms and assembly halls	200
Assembly halls for exams	500
Teachers' rooms	300
Library shelves, stacks	300
Reading tables	400

Type of interior, area, task or activity	Minimum maintained average illuminance, Lux
Dormitories	100
Corridors and stairs	150
<b>Electrical Manufacturing</b>	
Cable and wire manufacturing	300
Coil winding:	
– large coils	300
– medium coils	500
– small coils	750
Coil impregnating	300
Coil and armature processes, general	400
Galvanising	300
Assembly	
– rough, e.g. large transformers	300
– medium, e.g. switchboards	500
– fine, e.g. telephones	750
Precision, e.g. measuring equipment	1 000
Electronic workshops, testing, adjusting	1 500
<b>Electricity Generating Stations</b>	
Turbine halls: operating floor	300
Blowers, auxiliary generators	150
Cable, screens and transformer chambers	100
Cable tunnel, covered walkways, storage tanks	50
Battery and charging equipment rooms	150
Coal and ash handling	100
Boiler rooms	100
Boiler front: operating floor	150
Between boilers: operating floor, stairs, galleries, operating platforms and precipitator high-voltage chamber	150
Pulverisers, feeders, ash-plants, conveyors: tunnel, junction tower	100
Overland conveyor housing walkways	100
Boiler house and turbine house basements	150
Pump houses and rooms, water treatment plants	150

Type of interior, area, task or activity	Minimum maintained average illuminance, Lux
Control rooms, control panel face: vertical illuminance	300
Control desks with display screen equipment	400
Rear of control panels	150
Computer rooms	500
Switch houses and rooms	200
Relay and telecommunications rooms	300
Nuclear reactors, steam raising plants, reactor areas, boilers, galleries	200
Gas circulator bays	200
Reactor charge/discharge face	200
High-voltage substations: indoor	200
<b>Entertainment</b>	
<b>Cinemas</b>	
Projection rooms	200
Corridors, stairs	150
Foyers	100
Auditoriums: other than during performances	100
Booking areas	300
<b>Theatres and concert halls</b>	
Foyers	100
Auditoriums: other than during performances	100
Platforms	200
Corridors and stairs	150
Booking offices	300
Cloakrooms, washrooms, bathrooms, toilets	200
<b>Food Industry</b>	
Workplaces and zones in breweries, malting floor, area for washing, barrel filling, cleaning, sieving, peeling, cooking in preserve and chocolate factories, fermentation cellars	200
Sorting and washing of products, milling, mixing, packing	300

Type of interior, area, task or activity	Minimum maintained average illuminance, Lux
Workplaces and zones in slaughter houses, butcheries, dairies, mills, filtering floors	500
Cutting and sorting of fruit and vegetables	300
Manufacturing of delicatessen foods, kitchens	500
Inspection of glasses and bottles, product control, trimming, sorting, decoration	500
Laboratories	500
Colour inspection	1 000
Inspection of produce	500
<b>Abattoirs</b>	
Cold stores, casting and stunning pens	150
Bleeding areas	200
Dressing, evisceration, washing tripe and skin sorting	300
Inspection and grading	500
By-products manufacturing, e.g. digesters, grinding, etc.	200
<b>Agriculture</b>	
Loading and operating of goods-handling equipment and machinery	200
Feed preparation, utensil washing	200
Cutting and sorting of fruit and vegetables	300
<b>Bakeries</b>	
Preparation and baking	300
Finishing, glazing and decorating	500
<b>Brewing and distilling</b>	
General work areas	200
Brewhouses, bottling and canning plants	300
Bottle inspection	500
<b>Canning and preserving</b>	
Preparation, kettle areas, mechanical cleaning, dicing, trimming	400
Retorts for canned and bottled goods	200
High-speed labelling lines	400

Type of interior, area, task or activity	Minimum maintained average illuminance, Lux
Can inspection	400
Automatic processes	200
<b>Dairies</b>	
General work areas	200
Bottle inspection	500
Bottle filling	500
Dispatching	150
<b>Sugar refinery</b>	
General workplaces and zones	200
Crushing, settling, evaporating, boiling, curing, drying, packing	200
Centrifuging, metering, filtering, condensing	200
Panning, mixing, drying	300
<b>Foundries and Metal Casting</b>	
Man-size underground tunnels, cellars	50
Platforms	100
Sand preparation	200
Dressing rooms	200
Workplaces at cupola and mixer	200
Casting bays	200
Shakeout areas	200
Machine moulding	200
Hand and core moulding	300
Die casting	300
Model building	500
<b>Furniture Industry</b>	
Raw material stores	100
Finished goods stores	100
Wood machining and assembly	300
Raw material store	100
Rough sawing and cutting	200

Type of interior, area, task or activity	Minimum maintained average illuminance, Lux
Machining, sundry and assembly of components	350
Rough sawing and cutting	200
Machining, sundry and assembly of components	350
<b>Gas Works</b>	
Retort houses, oil gas plants, water gas plants, purifiers, coke screening and coke handling plants	50
<b>Hat Making</b>	
Stiffening, braiding, cleaning, refining, forming, pouncing	300
Flanging, finishing, ironing	400
Inspection	1 000
General work areas	400
Governor, meter, compressor, booster, exhauster houses	250
<b>Healthcare and Hospital Premises</b>	
Waiting rooms	200
Stairs and corridors during the day	200
Stairs and corridors at night	50
Day rooms	200
Casualty and outpatient departments	200
Staff offices	500
Staff rooms	300
<b>Wards</b>	
General lighting	100
Reading lighting	300
Simple examination	300
Examination and treatment	1 000
Night lighting, observation lighting	5
Bathrooms and toilets for patients	200
Examination rooms: general	500
Ear and eye examination	1 000
Reading and colour vision test with vision charts	500

Type of interior, area, task or activity	Minimum maintained average illuminance, Lux
Scanners with image enhancers and television systems	50
Dialysis rooms	500
Dermatology rooms	500
Dispensaries	400
Endoscopy rooms	300
Plaster rooms	500
Medical baths	300
Massage and radiotherapy rooms	300
Pre-op and recovery rooms	500
Operating theatres	1 000
Operating cavity	specialised illumination
<b>Intensive care</b>	
General lighting	100
Simple examination	300
Examination and treatment	1 000
Night watch	20
Sterilisation rooms	300
Disinfection rooms	300
Autopsy rooms and mortuaries	500
Autopsy and dissecting tables	5 000
<b>Dentistry</b>	
General lighting	500
At the patient	1 000
Operating cavity	5 000
White teeth matching	5 000
Colour inspection: laboratories	1 000
<b>Hosiery and Knitwear</b>	
Circular and flat knitting machines; universal winders; cutting out, folding and pressing	400
Lock-stitch and overlocking machines	500
Mending – light goods	1 000

Type of interior, area, task or activity	Minimum maintained average illuminance, Lux
Mending – dark goods	1 500
Examining and hand-finishing light goods	600
Examining and hand-finishing dark goods	1 000
Linking or running on	500
<b>Hospitality Industry</b>	
<b>Restaurants and hotels</b>	
Reception/cashier desks, porters' desks, lounges	300
Kitchens and bakeries	500
Restaurants, dining rooms, function rooms, bars	200
Food preparation	300
Freezers, refrigerators	150
Self-service restaurants	200
Buffets	300
Conference rooms	500
Corridors	100
Stairs	150
Entrance halls	200
Lounges	150
Bedrooms: general	100
Dressing tables, headboards, etc.	200
Billiard rooms: general	200
Billiard tables	specialised illumination
Card rooms	300
Laundries	300
Goods and passenger lifts	100
Cloakrooms and toilets	150
Bathrooms	150
Self-service counters	300
General work areas	300
<b>Iron and Steel</b>	

Type of interior, area, task or activity	Minimum maintained average illuminance, Lux
Production plants without manual intervention	50
Production plants with occasional manual intervention	150
Production plants with continual manual intervention	200
Slab stores	50
Furnaces	200
Mill trains, coilers, shear lines	300
Control platforms, control panels	300
Testing, measurement and inspection	500
Underground man-sized tunnels, belt sections, cellars, etc.	50
Slab yards, melting shops, ingot stripping, soaking pits, blast furnaces, work areas, pickling and clearing lines, mechanical pump houses, slabbing and large section rolling mills	100
Mould preparation, light section wire and cold strip mills, mill motor rooms, slab and bloom inspection and conditioning, sheet and plate finishing, tinning, galvanising and roll shops	100
Inspection	300
Tin plate inspection and pulpits: control rooms	500
General work areas	200
<b>Inspection areas</b>	
Rough work, e.g. counting and rough checking of stock parts	300
Medium work, e.g. "go" and "no-go" gauges	400
Subassemblies	400
Fine work, e.g. radio and telecommunication equipment, calibrated scales, precision mechanisms, instruments	600
Very fine work, e.g. gauging and inspection of small, intricate parts	1 200 or 1 600
Minute work	1 200 or 1 600
<b>Jewellery Manufacturing</b>	
Working with precious stones	1 500
Manufacturing of jewellery	1 000
Watchmaking: manual	1 500
Watchmaking: automatic	500

Type of interior, area, task or activity	Minimum maintained average illuminance, Lux
Fine processes	800
Minute processes	4 000
Gem cutting, polishing	1 500
<b>Joinery</b>	
Bench gluing, assembly	300
Machine turning, fluting, dressing, rebating, grooving, cutting, sawing, sinking	500
Quality control	1 000
<b>Laboratories and Test Rooms</b>	
General laboratories, balance rooms	500
Electrical and electronic instrument laboratories	500
Calibration scales, precision mechanical instruments	700
<b>Laundries and Dry-cleaning</b>	
Goods receiving, marking and sorting	300
Washing and dry-cleaning	300
Ironing, pressing	300
Inspection and repairs	750
<b>Leather Industry</b>	
Work on vats, barrels, pits	200
Fleshing, skiving, rubbing, tumbling of skins	300
Saddlery work, shoe manufacture, sewing, polishing, shaping, cutting, punching	500
Sorting and grading	1 000
Leather dyeing: machine	500
Glove making	500
Clicking and closing, preparation operations	800
Cutting tables and presses, stitching	1 000
Bottom stock preparation, lasting and bottom finishing	800
Shoe rooms	800
Quality control	1 000
Inspection	1 000

Type of interior, area, task or activity	Minimum maintained average illuminance, Lux
Wrapping, packing and labelling	200
Sorting stock	200
Open die forging	200
Drop forging, welding, cold forming	300
Rough and average machining, tolerances > 0,1 mm	300
Precision machining, grinding, tolerances < 0,1 mm	500
Scribing, inspection	750
Wire and pipe drawing, shapes	300
Plate machining > 5 mm	200
Sheet metal-work < 5 mm	300
Tool making, cutting equipment manufacture	750
Rough	200
Medium	300
Fine	500
Precision	750
Galvanising	300
Surface preparation and painting	750
Template and jig making, precision mechanics, micro-mechanics	1 000
Rough	200
General work areas	250
Tempering	200
Rough bench and machine work	200
Medium bench and machine work, ordinary automatic machines, rough grinding, medium buffing and polishing	400
<b>Lifts</b>	
Car interior	100
Motor rooms	200
<b>Machining and Fitting</b>	
Rough bench and machine work	200
Medium bench and machine work, ordinary automatic machines, rough grinding, medium buffing and polishing	400

Type of interior, area, task or activity	Minimum maintained average illuminance, Lux
<b>Material Handling Premises</b>	
Wrapping, packing and labelling	200
Sorting stock	200
<b>Mattress Making</b>	
Assembly	400
Tape edging	500
<b>Metal Work – Assembly</b>	
Rough	200
Medium	300
Fine	500
Precision	750
Galvanising	300
Surface preparation and painting	750
Template and jig making, precision mechanics, micro-mechanics	1 000
<b>Metal Work – Blacksmith</b>	
General work areas	250
Tempering	200
<b>Metal Work – Processing</b>	
Open die forging	200
Drop forging, welding, cold forming	300
Rough and average machining, tolerances > 0,1 mm	300
Precision machining, grinding, tolerances < 0,1 mm	500
Scribing, inspection	750
Wire and pipe drawing, shapes	300
Plate machining > 5 mm	200
Sheet metal work < 5 mm	300
Tool making, cutting equipment manufacture	750
<b>Offices</b>	
Entrance halls and reception areas	200
Reception desks	300

Type of interior, area, task or activity	Minimum maintained average illuminance, Lux
Copying, filing, etc.	300
General office workstations, computer and business machine operation	500
Writing, reading, data processing	500
Technical drawing – illustrating etc. – pen and ink	750
CAD workstations	500
<b>Paint Industry</b>	
General automatic processes	200
Special batch mixing	400
Colour matching	600
<b>Paint Shops and Spray Booths</b>	
Rubbing, dipping, ordinary painting, spraying and finishing	400
Fine painting, spraying and finishing	700
Retouching and matching	1 000
<b>Paper Industry</b>	
Pulp mills, edge runners	200
Paper manufacturing and processing, paper and corrugating machines, cardboard manufacturing	300
Paper and board making, machine houses, calendering, preparation plants, cutting, trimming, finishing	300
Inspection and sorting: overhauling	400
Paper converting process, general	300
Associated printing	300
<b>Paper Bag, Carton and Box Making</b>	
Corrugated boards, cartons, containers and paper box manufacturing	200
Coating and laminating process	300
Associated printing	300
<b>Pharmaceutical and Fine Chemical</b>	
Raw material storage	200
Control laboratories and testing	500

Type of interior, area, task or activity	Minimum maintained average illuminance, Lux
Pharmaceuticals manufacturing, grinding, granulating, mixing and drying, tableting, sterilising and washing	500
Preparation of solutions and filling, labelling, capping and inspection	400
Fine chemical plant processing	200
Fine chemical finishing	500
<b>Photographic</b>	
Safety-light darkrooms	10
Studios	specialised illumination
<b>Plastics</b>	
Processing: calendering, extruding	300
Moulding: compression, injection	300
Sheet: shaping	300
Trimming, machining, polishing	400
Colour matching and inspection	1 000
<b>Plating</b>	
Vats and baths	400
Final buffing and polishing	600
<b>Printing Industry</b>	
Cutting, gilding, embossing, block engraving, work on stones and platens, printing machines, matrix making	500
Paper sorting and hand printing	500
Typesetting, retouching, lithography	1 000
Electrotyping: block making, electroplating, washing, backing	500
Moulding, finishing, routing	400
Photoengraving: block making, etching, masking	400
Finishing, routing	500
Colour printing: inspection areas	1 000
<b>Public Buildings</b>	
<b>Churches, mosques, synagogues and temples</b>	
General interior	150

Type of interior, area, task or activity	Minimum maintained average illuminance, Lux
Pulpit and lectern areas, chancel, choir	200
Altars, communion tables	200
Vestries	200
<b>Courtdrooms</b>	
Seating	200
Courts	500
<b>Fire stations</b>	
Appliance rooms	150
External aprons	50
<b>Libraries</b>	
Shelves and stacks	300
Carrels, reading rooms, newspapers and magazines, reading tables, counters	500
Binding	500
Cataloguing, sorting, stockrooms	300
General work areas	300
Shelves and stacks	300
<b>Museums and art galleries</b>	
General	200
Displays and paintings	specialised illumination
<b>Post offices</b>	
Circulation	100
Counters	500
Sorting of mail by hand	500
Sorting of mail by auto-sort-system	200
<b>Refrigeration</b>	
Chilling and cold rooms, ice-making	200
<b>Retailing</b>	
Sales areas: small	300
Sales areas: large	500
Till areas, wrapper tables	500

Type of interior, area, task or activity	Minimum maintained average illuminance, Lux
General work areas	300
Stairs and corridors	200
Stockrooms	200
<b>Rubber</b>	
Fabric preparation creels	200
Dipping, moulding, compounding calenders	500
Tyre and tube making	400
Curing	400
Inspection	1 000
<b>Sheet metal</b>	
Bench work, pressing, punching, shearing, stamping, spinning	300
Sheet inspection	500
<b>Soap manufacturing</b>	
All processes, e.g. kettle houses and ancillaries, batch or continuous soap rooting and soap stamping	300
General areas	300
Auto processes	200
Control panel face	200
Product processing and packing	200
<b>Spray booths</b>	
Colour finishing	600
Clear finishing	400
<b>Structural steel fabrication</b>	
General	200
Marking off	400
<b>Telephony</b>	
Manual exchange rooms: on desk	300
Main distribution frame rooms in automatic exchanges, UPS rooms	300
Battery rooms	150
Cable tunnels	50

Type of interior, area, task or activity	Minimum maintained average illuminance, Lux
<b>Textile Industry</b>	
<b>General areas</b>	
Workplace and zones in baths, bale opening	200
Carding, washing, ironing, drawing, combing, sizing, card cutting, pre-spinning	300
Spinning, plying, reeling, winding, warping, weaving, braiding, knitting	500
Sewing, fine knitting, taking up stitches	750
Manual design, drawing patterns	750
Finishing, dyeing	500
Drying rooms	100
Automatic fabric printing	500
Burling, picking, trimming	1 000
Colour inspection, fabric control	1 000
Invisible mending	1 500
Hand tailoring	1 000
<b>Cotton or linen</b>	
Bale breaking, blowing, carding	300
Roving, slubbing, spinning: ordinary counts, winding, hackling, spreading, cabling	300
Warping, slashing, dressing and dyeing, doubling: fancy, spinning (fine counts)	300
Healding: drawing in	800
Weaving: patterned cloths	800
Weaving: plain "grey" cloths	800
Cloth inspection	1 000
<b>Jute</b>	
Weaving, spinning flat, Jacquard carpet looms, cop winding	300
Yarn calender	400
<b>Silk or synthetics</b>	
Soaking, fugitive tinting, conditioning or setting of twist	500

Type of interior, area, task or activity	Minimum maintained average illuminance, Lux
Spinning	500
Winding, twisting, rewinding and coning, quilling, slashing	350
Warping	400
Healding: drawing in	800
Weaving	800
Inspection	1 000
<b>Upholstery</b>	
Cloth inspection	800
Filling, covering	500
Slipping	500
Cutting, sewing	500
<b>Woollens</b>	
Preparing, raising, brushing, pressing, backwashing, gilling, grabbing, blowing	300
Blending, carding, combing: white, tentering, drying, cropping	300
Spinning, roving, winding, warping, combing: coloured, twisting	500
Healding: drawing in	800
Weaving: fine worsteds	800
medium worsteds, fine woollens	500
heavy woollens	400
burling and mending	800
Perching: "Grey"	800
Finals	2 000
<b>Tobacco</b>	
Primary manufacturing: weighing, blending, conditioning, threshing, cutting	250
Cigarette making machines, filter plug makers	500
Catcher: inspection	1 000
Hand processes	750
Cigarette or tobacco packing	600
<b>Tool Rooms</b>	

Type of interior, area, task or activity	Minimum maintained average illuminance, Lux
General	300
Benches	400
<b>Transport Terminals: Bus, Rail, Sea</b>	
Radar-type and other control tower-type screens	specialised illumination
Reception areas: desks, customs and immigration halls, lounges, luggage collection, security check	300
Check-in counters, customs and passport control	500
Circulation, platforms, dispatch	150
<b>Vehicle Construction</b>	
Body work and assembly	500
Painting, spraying chambers, polishing chambers	750
Painting: touch-up, inspection	1 000
Upholstery manufacture	1 000
Final inspection	1 000
General assemblies, chassis assemblies, car assemblies, trim shops, body subassemblies	400
Final inspection	500
<b>Vehicle Servicing</b>	
Parking areas: indoors	75
Washing bays, polishing, greasing bays	200
Servicing pits	200
Repairs	350
Workbenches	400
Fuel pumps	200
<b>Warehousing</b>	
Small material, racks, packing and dispatch	200
Issue counters	300
Loading bays, large material	100
Inactive storage and automatic stores	50
<b>Welding and Soldering</b>	
Gas and arc welding	250

Type of interior, area, task or activity	Minimum maintained average illuminance, Lux
Medium soldering, brazing and spot welding, e.g. domestic hardware	350
Fine soldering and spot welding, e.g. instruments, radio set assembly	800
Very fine soldering and spot welding, e.g. printed circuits	1 500
<b>Woodworking and Sawmilling</b>	
Rough sawing and bench work, sizing, planing, rough sanding	250
Medium machine and bench work, gluing, cooperage	300
Fine bench and machine work, fine sanding and finishing	500
Automatic processing, e.g. drying, plywood manufacturing	50
Steam pits	150
Saw frames	300

**Table 5: Minimum maintained average illuminance value ranges for workplaces not listed in Table 4**

Type of area, task or activity	Illuminance range (lux)
Outdoor circulation and work areas	20 to 50
Circulation areas, simple orientation or short, temporary visits	50 to 150
Rooms not used continuously for working purposes	100 to 200
Tasks with simple visual requirements	200 to 500
Tasks with medium visual requirements	300 to 750
Tasks with demanding visual requirements	500 to 1 000
Tasks with difficult visual requirements	750 to 1 500
Tasks with special visual requirements	1 000 to 2 000
Performance of very exacting visual tasks	> 2 000
The lower values in the range may be used—	
(a) when reflectance or contrast is unusually high, (b) when speed or accuracy is not important, and (c) when the task is only performed occasionally.	

**Table 6: Minimum maintained average illuminance values for exterior workplaces**

Areas to be lit, operation performed	Minimum maintained average illuminance Lux		Minimum uniformity ratio Ehmin/Ehav	Minimum uniformity ratio Ehmin/Ehmax
	Horizontal Ehav	Vertical Evav		
<b>Airports</b>				
Apron parking areas	20	20	0,25	0,2
Areas adjacent to apron	10		0,25	0,2
Taxiway between aprons	5	15	0,25	0,2
<b>Building Sites</b>				
<b>Work area or task</b>				
Very rough work	20		0,25	0,125
Rough work	50		0,4	0,2
Accurate work	100		0,4	0,2

Areas to be lit, operation performed	Minimum maintained average illuminance Lux		Minimum uniformityratio Ehmin/Ehav	Minimum uniformityratio Ehmin/Ehmax
	Horizontal Ehav	Vertical Evav		
Fine work	200		0,5	0,2
<b>Traffic areas</b> Pedestrian passages, vehicle turning, loading and unloading points	50		0,4	0,2
<b>Safety and security</b> General lighting on building site, element mould, timber and steel storage, building foundation hole and working areas on sides of the hole	50		0,4	0,2
<b>Canals and locks</b> Outport embankment ballasting		1 to 10		
Waiting quays	10		0,25	0,125
Locking chamber walls: • Wall height below 10 m • Wall height over 10 m		25		
<b>Filling and Service Stations</b>				
Entry and exit driveways: light environment: cities dark environment	50 20		0,4 0,4	0,2 0,2
Meter reading area: light environment: cities dark environment	300 150		0,5 0,5	0,333 0,333
Air pressure and water checking points and other service areas	75		0,4	0,2
Vehicle parking and storage area (see also parking areas)	5		0,25	0,1
<b>Harbours</b>				

<b>Areas to be lit, operation performed</b>	<b>Minimum maintained average illuminance Lux</b>		<b>Minimum uniformityratio</b> Ehmin/Ehav	<b>Minimum uniformityratio</b> Ehmin/Ehmax
	<b>Horizontal</b> Ehav	<b>Vertical</b> Evav		
<b>Work area or task</b>				
Cargo handling, loading and unloading	20		0,25	0,125
Coupling of hoses and pipes	50			0,167
<b>Traffic area</b>				
Walking passages exclusively for pedestrians	10		0,25	0,125
Passenger areas in passenger harbours	50		0,4	0,2
Vehicle traffic areas	20		0,4	0,167
Dangerous part of walkways and driveways	50		0,4	0,2
<b>Safety and security</b>				
General lighting	10		0,25	0,125
Medium risk areas	20		0,4	0,167
High risk areas	50		0,4	0,2
<b>Industrial Yards and Storage Areas</b>				
<b>Work area or task</b>				
Very rough work	20		0,25	0,125
Rough work	50		0,40	0,2
Accurate work	100		0,50	0,33
Fine work	200		0,50	0,33
<b>Traffic areas</b>				
Walkways exclusively for pedestrians	5		0,25	0,1
Traffic areas for slowly moving vehicles: max. 10 km/h	10		0,4	0,2
Regular vehicle traffic: max. 40 km/h	20		0,4	0,2

Areas to be lit, operation performed	Minimum maintained average illuminance Lux		Minimum uniformityratio Ehmin/Ehav	Minimum uniformityratio Ehmin/Ehmax
	Horizontal Ehav	Vertical Evav		
<b>Safety and security</b>				
Low risk areas	5		0,25	0,125
Medium risk areas	20		0,4	0,167
High risk areas	50		0,4	0,2
<b>Parking Lots</b>				
<b>Parking lots and pedestrian areas</b>				
Light traffic	5		0,25	0,1
Medium traffic	10		0,25	0,125
Heavy traffic	20		0,25	0,125
<b>Vehicle driveways</b>				
Light traffic	5		0,25	0,1
Medium traffic	10		0,4	0,167
Heavy traffic	20		0,4	0,2
<b>Petrochemical Industries and Other Hazardous Industries</b>				
<b>Work area or task</b>				
Very rough work	20		0,25	0,125
Rough work	50		0,4	0,2
Accurate work	100		0,4	0,2
Fine work	200		0,5	0,33
<b>Traffic areas</b>				
Walkways exclusively for pedestrians	5		0,25	0,1
Traffic areas for slowly moving vehicle traffic: max. 10 km/h	10		0,4	0,167
Regular vehicle traffic: max. 40 km/h	20		0,4	0,2
<b>Safety and security</b>				

<b>Areas to be lit, operation performed</b>	<b>Minimum maintained average illuminance Lux</b>		<b>Minimum uniformityratio Ehmin/Ehav</b>	<b>Minimum uniformityratio Ehmin/Ehmax</b>
	<b>Horizontal Ehav</b>	<b>Vertical Evav</b>		
Low risk areas	10		0,4	0,167
Medium risk areas	20		0,4	0,167
High risk areas	50		0,4	0,2
Fuel loading and unloading sites	100		0,4	0,2
<b>Power, Electricity, Gas and Heat Plants</b>				
<b>Work area or task</b>				
Very rough work	20		0,25	0,125
Rough work	50		0,4	0,2
Accurate work	100		0,4	0,2
Fine work	200		0,5	0,33
<b>Traffic areas</b>				
Pedestrian movements within electrically safe areas	5		0,25	0,1
Traffic areas for slowly moving vehicle traffic: max. 10 km/h	10		0,4	0,167
Regular vehicle traffic: max. 40 km/h	20		0,4	0,2
<b>Safety and security</b>				
Low risk areas	5		0,25	0,1
Medium risk areas	20		0,4	0,167
High risk areas	50	50	0,4	0,2
<b>Railways Areas</b>				
<b>Passenger areas</b>				
Open platforms, small stations	10		0,25	0,125
Open platforms, medium-size stations	20		0,4	0,33

<b>Areas to be lit, operation performed</b>	<b>Minimum maintained average illuminance</b> Lux		<b>Minimum uniformityratio</b> Ehmin/Ehav	<b>Minimum uniformityratio</b> Ehmin/Ehmax
	<b>Horizontal</b> Ehav	<b>Vertical</b> Evav		
Open platforms, large stations	50		0,4	0,33
Covered platforms, small stations	50		0,4	0,33
Covered platforms, large stations	100		0,5	0,33
Stairs, small and medium-size stations	50		0,4	0,33
Stairs, large stations	100		0,5	0,33
Walkways, small and medium-size stations	20		0,4	0,167
Walkways, large stations	50		0,4	0,2
<b>Freight areas</b>				
Freight track, temporary or quick operation	10		0,25	0,125
Freight track, continuous operation	20		0,4	0,167
Open platforms	20		0,4	0,167
Covered platforms, temporary or quick operation	50		0,4	0,33
Covered platforms, continuous operation	100		0,5	0,33
Traffic areas for mobile cranes and cars	20		0,4	0,167
Container handling areas	20		0,5	0,167
Container storage areas	10		0,25	0,125
Track for trailer loading on wagons	20		0,4	0,167
<b>Railway Yards</b>				
<b>Flat marshalling yards</b>				

<b>Areas to be lit, operation performed</b>	<b>Minimum maintained average illuminance</b> Lux		<b>Minimum uniformityratio</b> Ehmin/Ehav	<b>Minimum uniformityratio</b> Ehmin/Ehmax
	<b>Horizontal</b> Ehav	<b>Vertical</b> Evav		
Switching area	10		0,25	0,125
Central area of yard, temporary or quick	10		0,4	0,167
Central area of yard, continuous operation	15		0,4	0,2
Turn-out track, uncoupling area	10		0,5	0,33
<b>Retarder marshalling yards</b>				
Switching area	10		0,25	0,125
Central area of yard	15		0,4	0,2
<b>Hump area</b>				
Wagon inspection pit		100		
Uncoupling area	50	20	0,4	0,33
Hump crest, wagon numbering reading	20	50	0,4	0,33
<b>Classification yards</b>				
(a) Hard operated wagon rolling, switching and braking				
Braking rail with brake shoe	20		0,4	0,33
Switching area, head end	15			
Brake area with brake shoe	15		0,4	0,2
(b) Automatic wagon rolling and switching				
Retarders		50		0,33
Continuous retarders	15		0,4	0,2
Switching area, head end	15		0,4	0,2
Central area of	15		0,4	0,2

Areas to be lit, operation performed	Minimum maintained average illuminance Lux		Minimum uniformityratio Ehmin/Ehav	Minimum uniformityratio Ehmin/Ehmax
	Horizontal Ehav	Vertical Evav		
classification yard				
Switching area, central area of yard	10		0,25	0,125
<b>Tracks on passenger station areas</b>				
Switching area, central area of yard	10		0,25	0,125
<b>Servicing and stabling tracks for cars, trains and locomotives</b>				
Passenger car cleaning area	10		0,25	0,125
Passenger car servicing area	20	20	0,4	0,2
Passenger car washing area	20	20	0,4	0,2
Stabling tracks for wagons and cars	5		0,25	0,125
Stabling tracks for locomotives	20		0,4	0,2
Level crossings	20		0,4	0,2
<b>Saw Mills</b>				
<b>Work area or task</b>				
Very rough work	20		0,25	0,125
Rough work	50		0,4	0,33
Accurate work	100		0,4	0,2
Fine work	200		0,5	0,33
Very fine work	300		0,50	0,25
<b>Traffic areas</b>				
Walkways exclusively for pedestrians	5		0,25	0,1
Traffic areas for slowly moving vehicle traffic: max. 10 km/h	10		0,25	0,125
Regular vehicle traffic: max. 40 km/h	20		0,4	0,2

Areas to be lit, operation performed	Minimum maintained average illuminance Lux		Minimum uniformityratio Ehmin/Ehav	Minimum uniformityratio Ehmin/Ehmax
	Horizontal Ehav	Vertical Evav		
<b>Safety and security</b>				
Small risk areas	5		0,25	0,1
Medium risk areas	10		0,4	0,167
High risk areas	50		0,4	0,2
<b>Shipyards and Docks</b>				
<b>Work area or task</b>				
Very rough work	20		0,25	0,125
Rough work	50		0,25	0,2
Accurate work	100		0,4	0,2
Fine work, mounting of electrical and mechanical components	200		0,5	0,33
<b>Traffic areas</b>				
Walking passages exclusively for pedestrians	5		0,25	0,125
Traffic areas for slowly moving vehicle traffic: max. 10 km/h	10		0,4	0,2
Regular vehicle traffic: max. 40 km/h	20		0,4	0,167
<b>Safety and security</b>				
General lighting on shipyard area, storage areas for prefabricated goods	20		0,25	0,125
<b>Water and Sewage Plants</b>				
<b>Work area or task</b>				
Very rough work	20		0,25	0,125
Rough work	50		0,4	0,2

<b>Areas to be lit, operation performed</b>	<b>Minimum maintained average illuminance</b> Lux		<b>Minimum uniformityratio</b> Ehmin/Ehav	<b>Minimum uniformityratio</b> Ehmin/Ehmax
	<b>Horizontal</b> Ehav	<b>Vertical</b> Evav		
Accurate work	100		0,4	0,2
Fine work	200		0,5	0,33
<b>Traffic areas</b>				
Walkways exclusively for pedestrians	5		0,25	0,1
Traffic areas for slowly moving vehicle traffic: max. 10 km/h	10		0,40	0,167
Regular vehicle traffic: max. 40 km/h	20		0,40	0,2
<b>Safety and security</b>				
Low risk areas	5		0,25	0,1
Medium risk area	20		0,4	0,167

**Table 7: Minimum maintained average illuminance values for exterior workplaces not mentioned in Table 6**

Work	Minimum maintained average horizontal illuminance Ehav (lux)	Minimum uniformity ratio	
		Emin/Eav	Emin/Emax
Very rough	20	0,25	0,125
	20	0,4	0,1666
	20	0,4	0,2
	20	0,4	0,333
	50	0,4	0,2
Rough	50	0,4	0,2
	50	0,4	0,333
Accurate	100	0,4	0,2
	100	0,5	0,333
Fine	200	0,5	0,333

**Table 8: Cold stress exposure period**

ECT in °C	Maximum exposure
<10 to -18	No limit
Lower than -18 but not lower than -34	Maximum continuous exposure during each hour = 50 minutes. After every exposure in a low-temperature area at least 10 minutes must be spent, under supervision, in a comfortably warm environment.
Lower than -34 but not lower than -57	Two periods of 30 minutes each, at least 4-hours apart. Total low-temperature exposure: 1-hour per day.
Lower than -57	Maximum permissible exposure = 5 minutes during any 8-hour period.

**Table 9: Clothing adjustment values or CAV**

Ensemble	Comments	CAV
Work clothes	Work clothes made from a woven fabric is the reference ensemble	0
Cloth coveralls	Coveralls made from woven fabric that includes treated cotton	0
Non-woven SMS coveralls as a single layer	A non-proprietary process to make non-woven fabrics from polypropylene	0
Non-woven polyolefin coveralls as a single layer	A proprietary fabric made from polyethylene	2
Double-layer woven clothing	Generally taken to be coveralls over work clothes	3
Vapour-barrier apron with long sleeves and long length over cloth coveralls	The wrap-around apron configuration was designed to protect the front and sides of the body against spills from chemical agents	4
Vapour-barrier coveralls as a single layer, without hood	The real effect depends on the level of humidity and in many cases the effect is less	10
Vapour-barrier coveralls with hood as a single layer	The real effect depends on the level of humidity and in many cases the effect is less	11
Vapour-barrier over cloth coveralls, without hood	-	12
Hood	Wearing a hood of any fabric with any clothing ensemble	+1



**employment & labour**

Department:  
Employment and Labour  
**REPUBLIC OF SOUTH AFRICA**

# **Explanatory Notes to**

## **Physical Agents**

## **Regulations,**

**2024**

**Chief Directorate: Occupational Health and Safety**

**FOREWORD**

The purpose of this document is to provide guidance to all employers, employees and the public alike, who are responsible for or concerned with the control and prevention of exposure to physical agents in the workplace.

This guide does not replace the Physical Agents Regulations of 2024. It is intended to give practical insight into the application of the Regulations. It should always be read in conjunction with the Occupational Health and Safety Act of 1993, Act 85 of 1993 as amended, the Physical Agents Regulations and any other applicable legislation and referenced standards.

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<b>Regulation 6</b>	<b>Physical agent exposure risk assessment</b>
<b>Regulation 7</b>	<b>Physical agent exposure monitoring</b>
<b>Regulation 8</b>	<b>Medical screening and medical surveillance</b>
<b>Regulation 9</b>	<b>Cold stress</b>
<b>Regulation 10</b>	<b>Heat stress</b>
<b>Regulation 11</b>	<b>Illumination</b>
<b>Regulation 12</b>	<b>Indoor air quality</b>
<b>Regulation 13</b>	<b>Vibration</b>
<b>Regulation 14</b>	<b>Occupational non-ionizing radiation</b>
<b>Regulation 15</b>	<b>Prevention or control of exposure to physical agent</b>
<b>Regulation 16</b>	<b>Personal protective equipment and facilities</b>
<b>Regulation 17</b>	<b>Maintenance of controls measures</b>
<b>Regulation 18</b>	<b>Records</b>

## Introduction

A physical agent is a source of energy that may cause injury or disease after exposure. In the Physical Agents Regulations, there are a number of occupational stressors specified: cold stress, heat stress, illumination, indoor air quality, vibration and occupational non-ionising radiation. Indoor air quality is considered under these Regulations because it is directly impacted by sources of energy. However, there may be additional physical agents, which meet the definition, but are not listed in the Regulations, which are potential hazards in the workplace, for which the employer would be required to either eliminate or mitigate exposure. Physical agents may present risks to employees in most industry categories.

The practical benefits of controlling the exposure to a physical agent may have a real and direct impact on productivity and performance. Some of the benefits may include, but not limited to:

- Labour – improved health, well-being and safety of employees.
- Business – improved productivity, efficiency and prevention of occupational incidents and adverse health effects.
- Government – a workplace that is safe and without risk to the health of employees.

The Regulations speak to a programme approach which should be integrated into new and existing occupational health and safety programmes. A physical agents' programme is a systematic process for anticipating, identifying, analysing and controlling exposure to a physical agent through the sub-regulations of the Physical Agents Regulations. It is important to acknowledge that a physical agent is not only addressed in isolation, but its interaction with other workplace hazards is assessed as well.

## Regulation 2: Scope of Application

These Regulations apply at any workplace, as defined by the Occupational Health and Safety Act, Act 85 of 1993 as amended (OHS Act), and are intended to protect the health and safety of any person (as prescribed in Sections 8 and 9 of the OHS Act) who may be exposed to a physical agent in the workplace.

## Regulation 3: Information, Instruction and Training

The provision of information, instruction and training for any person who may be exposed to a physical agent is essential, in order to assist employers and employees in mitigating the exposure to a physical agent. The employer must ensure employees are knowledgeable

about the Physical Agents Regulations, to understand the requirements imposed on them by these Regulations.

Before any instruction and training is provided to any persons, the employer should consult with relevant health and safety representatives and or health and safety committee members on aspects of these Regulations, which have an impact on the training programme.

The employer must ensure that they obtain suitable information, which is specific to that workplace, in order to provide effective training. The Physical Agents Regulations, regulation 3(4) does not stipulate whether training must be provided by an external service provider or not. However, regardless of whether an internal employee or external service provider is used, the requirements of regulation 3(4) still apply.

Information and training must be planned carefully and presented on commencement of employment. Thereafter, the frequency of training should occur at least annually. However, the frequency of training may be increased by the health and safety representatives and or health and safety committee, taking into account aspects of these Regulations, as well as the severity of the risks. The frequency may vary for different sections in a workplace.

Health and safety committee members and health and safety representatives, as employees, would receive training relating to the identified physical agents in the workplace. However, in order for the health and safety committee members and health and safety representatives to perform other functions in the workplace, as prescribed by legislation, they should have an understanding of the Physical Agents Regulations, in order for them to identify which physical agent is present in their area of appointment.

An employer should also verify that any person that has received training in terms of these Regulations, has understood the training they have received.

The aspects of training stipulated in regulation 3 are a minimum requirement of a training programme. However, the employer should provide a suitable training programme that is understandable to all their employees and any other persons exposed and is applicable to current risk identified.

The employer would be required to present at least the following portfolio of evidence:

- competence of the person who provided the training,
- attendance of training, and
- training content framework.

**Regulation 4: Duties of those who may be at risk of exposure to a physical agent**

Employees or any other person exposed to a physical agent at the workplace, have a moral and legal duty to comply with any lawful instruction and procedure (written or oral) given by or on behalf of the employer. In addition, employees must comply with the requirements laid down by the OHS Act and other applicable Regulations. These instructions and procedures may vary from one workplace to another because workplaces are not identical.

**Regulation 5: Duties of Designers, Manufacturers, Importers and Suppliers**

Designers, manufacturers, importers and suppliers must take account of potential physical agent exposure in the workplace during the design, implementation and operational phases, so as to contribute to the elimination or mitigation of the physical agent in the workplace.

Designers, manufacturers, importers and suppliers should provide an employer with sufficient information regarding the performance, operation, and safety requirements of plant or machinery and design parameters. This information should be factored into any exposure risk assessment or exposure monitoring or during a review of such, to mitigate risk associated with any physical agent identified.

A physical agent needs to be taken into account in all steps of the life cycle of the plant, machinery or workplace. To support the above, the following should be taken into account by the designer, manufacturer, importer and supplier -

- the design, installation, operation, maintenance and decommissioning should be considered;
- employee characteristics, behaviours and duties;
- foreseeable operating conditions including emergencies;
- the interface between the employee and plant, machinery or workplace;
- instructions, technical information, training information, warning signs, safe operation and disposal requirements must be provided; and
- where applicable, SANS standards.

**Regulation 6: Physical Agent Exposure Risk Assessment**

It is the duty of the employer to conduct an exposure risk assessment for all tasks where an employee is exposed to a physical agent. The exposure risk assessment must be conducted by a person that must be familiar with the task at the workplace and have an adequate level of competence to conduct the exposure risk assessment. This may be either an employee or

a health and safety professional. While one individual may be able to carry out an exposure risk assessment, it may be beneficial to draw on the knowledge and competencies of others.

The exposure risk assessment should include at least the following steps -

- identifying the work process and or task which generate a physical agent
- identifying the employees who are exposed to a physical agent
- determining the extent of exposure (through exposure monitoring)
- evaluating control measures
  - existing control measures
  - efficacy of existing control measures
- considering additional control measures
- analysing, evaluating and rating the risk
- implementing recommendations directed at eliminating or mitigating exposure

When conducting the exposure risk assessment, the employer must take into consideration the diversity (e.g. age, gender, religion, ethnicity, disability, etc.) of the workforce, their differences and how the differences may be affected by exposure to the physical agent present.

When conducting the exposure risk assessment, the employer should take into account –

- the previous exposure risk assessments;
- exposure monitoring reports;
- the outcomes of medical screening and medical surveillance.
- previous incidents
- the information provided about plant and machinery from designers, manufacturers, importers and suppliers; and
- any other information which may influence the risk of exposure to current and emerging physical agent.

Once the exposure risk assessment has been completed, the recommendations identified in the exposure risk assessment needs to be considered. Thereafter, an action plan must be drafted to address the identified recommendations, where reasonably practicable.

The exposure risk assessment should be conducted and reviewed at least every 24-months and recorded. Shorter review periods may be necessary if new information becomes available or there has been a change in task or control measures. The exposure risk assessment should

also be reviewed if a reportable incident occurs or if an employee suffers an adverse health effect as a result of exposure to a physical agent.

### **Regulation 7: Physical Agent Exposure Monitoring**

Exposure monitoring must be conducted when the exposure risk assessment or review of such assessment indicates that an employee may be exposed to a physical agent at the limits or levels indicated in tables 1, 2 and 3 or outside of the range of levels indicated in table 3.

The exposure monitoring must be conducted by a competent person, as contemplated in the definition for a competent person (a) (ii), whose essential requirement must be qualification-based knowledge about the: recognised principles and methodologies related to that physical agent, the equipment used to monitor the physical agent and the standards used for measuring the physical agent. This person who conducts the exposure monitoring may or may not be the same person who conducted the exposure risk assessment.

It is essential the equipment used to monitor the physical agent is fit for purpose and has an up-to-date calibration certificate.

Once the exposure monitoring has been completed, the recommendations identified in the exposure monitoring report needs to be considered. Thereafter, an action plan must be drafted to address the identified recommendations, where reasonably practicable.

### **Regulation 8: Medical screening and medical surveillance**

Medical surveillance in the workplace is an integral part of occupational health surveillance. Surveillance is the close observation of a person or group, especially those identified by the risk assessment. It refers to the detection of adverse health effects resulting from occupational exposures at as early a stage as possible, so that appropriate preventative measures can be instituted promptly. For this reason, medical surveillance is placed at a secondary level of prevention as the adverse health effect is still reversible or more easily treatable.

Medical surveillance should have a clearly defined objective for targeted employees, and medical procedures, such as questionnaires and health examinations, must be available to achieve the objective. Medical surveillance must be risk based and tailored to a specific adverse health effect that is to be prevented. Medical surveillance for a physical agent should be either incorporated into current or new medical surveillance programmes.

Medical surveillance is performed at regular pre-determined intervals; at the beginning, termination of employment and throughout the employment period and or as determined by the occupational medicine practitioner. Medical surveillance must be carried out by the occupational health practitioners.

Medical surveillance includes the following elements –

- identification of employees according to the physical agent exposure risk assessment, for which the medical surveillance activities will be appropriate;
- an initial health examination and collection of clinical history;
- periodic health examinations at regularly scheduled intervals;
- more frequent and scheduled health examinations, as indicated on the basis of findings from these examinations;
- a written report of medical findings;
- employee training to recognise symptoms of exposures to a physical agent; and
- employer actions in response to the identified adverse health effects on employees with ongoing data analysis to evaluate collected information and institute control measures, including employee rehabilitation at the workplace.

When designing and implementing a programme of medical surveillance, the following, minimum criteria should be included in any programme -

- risk assessment to determine the potential exposure to a physical agent.
- identification of target-organ toxicity, so as to direct medical screening.
- selection of appropriate tests and testing schedule. Tests should have the desirable operating characteristics of high sensitivity, specificity, reliability and predictive value. The frequency of testing is stipulated in the Regulations but should be based on an understanding of the nature of the hazard and the natural history of any adverse effects.
- development of action criteria. The occupational health practitioners will have to develop pragmatic criteria in the context of the specific workplace.
- standardisation of test process. Quality control needs to be exercised both in the testing site and in the laboratory contracted to carry out analyses. Consistency should be sought to make measurements comparable over a period of time.
- ethical considerations. Information and training of employees should include the rationale for doing medical surveillance and the consequence of abnormal findings. An employee must be notified of the results and interpretation of their tests and any recommendations made. The confidentiality of personal medical records is laid down by Regulations.

- determination of employees fitness to remain in that job. Results may be compared against the action criteria and preferably also with the employees previous results to determine whether individual action needs to be taken. Action may include repeating the test, further medical examination, removal of the employee from further exposure, and notification of the employer.
- evaluation of control. An abnormal finding in an employee, or a pattern of findings in a group of employees, may point to inadequate primary control of exposure. In such cases the employer needs to be notified of such details of the medical findings as are necessary to evaluate the workplace problem and take remedial action.
- record keeping. This includes both medical records and exposure information for every employee. While the employer is responsible for record keeping in terms of the Regulations, the contents of personal medical records may be accessible to the occupational medicine practitioner, the employee, and any person nominated by the employee in writing.

### **Regulation 9: Cold stress**

The windchill index (WCI) is universally accepted for describing the combined cooling effects of air temperature and wind velocity. This index provides a description of cold thermal conditions rather than just air temperature alone because, at any given constant temperature, the risk of tissue freezing increases with air movement (convection). Windchill reflects the cooling power of wind on exposed flesh and is commonly expressed as an equivalent chill temperature (tch). The tch is the temperature under calm wind (velocity = 1.8 m/s), which would cause cooling of the skin equivalent to that found with other combinations of temperature and wind.

The windchill index (WCI) and the equivalent chill temperature (tch) can be calculated as follows-

$$WCI = (10.45 + 10 \text{ var } 1/2 - \text{var}) (33 - Ta)$$

$$tch = (33 - (WCI/22)), ^\circ\text{C}$$

where:

WCI = windchill index;  
var = relative air velocity, m/s;  
Ta = air temperature,  $^\circ\text{C}$ ;  
tch = equivalent chill temperature,  $^\circ\text{C}$

**Regulation 10: Heat Stress**

Heat stress is a risk for both indoor and outdoor employees across all sectors. A task-based exposure risk assessment will determine the severity of exposure to the heat stress. Both external factors and individual characteristic should be considered when conducting the exposure risk assessment. Examples of external factors include, but not limited to: geographical location, heat source, working conditions and physical exertion, whilst examples of individual characteristics include, but not limited to: age, health, socioeconomic status and even gender. These must be accounted for in risk mitigating measures.

For the limitation of duration and magnitude of exposure, the employer may implement an appropriate work/rest schedule, specific to the conditions at their workplace.

The heat acclimatisation programme is a process of adapting the body to a new thermal environment. Acclimatisation is the physiological adaptation that occurs during repeated exposure to a hot environment and conducted over a defined time period, based on the circumstances of the workplace. Employees who may need to undergo acclimatisation for heat exposure are identified by the exposure risk assessment. These may include, but not limited to, employees who –

- will be exposed to changes in processes and or working conditions;
- are new to the job;
- will be wearing additional clothing, like chemical protective clothing;
- are more active than usual;
- have been on vacation or sick leave;
- are working through seasonal temperature changes;
- are working on a day when it's significantly warmer than the day before.

For the provision of potable water, employees should aim to drink water regularly during a shift and not only when thirsty. Employees should also be encouraged to rehydrate between shifts.

An employer may issue personal protective clothing for exposure to another hazard which may increase core body temperature, for example a furnace suit or long sleeve overall. Thus, the clothing adjustment value of that particular clothing must be taken into account in determining that employee's total exposure to heat in the workplace.

**Regulation 11: Illumination**

The provision of good quality illumination promotes employee wellbeing and performance and may improve efficiency and productivity within the workplace. The correct levels and quality of illumination required for the task to be undertaken should be provided at all times. Poor quality illumination and low illumination levels can adversely affect wellbeing, performance, efficiency and productivity, as can illumination levels which are excessively high. Thus, care should be exercised in maintaining illumination levels and limit exposure where correct illumination cannot be provided.

Although flicker is visible in a static environment, it does not mean that it is not visible in an environment that has moving objects. Furthermore, whilst a light source may be static and not the cause of flicker, moving objects between the light source and the observer may create flicker and will need to be addressed.

**Tasks with demanding visual requirements:** Are tasks undertaken by an employee that require prolonged attention, focus, effort and time to complete the task.

**Tasks with difficult visual requirements:** Are tasks that require additional illumination in a visually difficult environment to allow an employee to fulfil a difficult or demanding task, which may require speed and accuracy.

**Tasks with special visual requirements:** Are tasks that may require specialised illumination to allow an employee to fulfil specialised and more difficult visual tasks requiring precision, intense focus and attention, focus, effort and time to complete the task.

Emergency escape lighting can be regarded as the part of emergency lighting that provides illumination for the safety of people who are leaving a location in the premises or who are attempting to terminate a hazardous process before leaving the location. Escape route lighting is the part of emergency escape lighting that is provided to ensure that the escape routes can be effectively identified and safely used at all times. Emergency exit lighting refers to an exit that is intended to be used during an emergency and is sufficiently illuminated by the emergency escape lighting system, such that the emergency exit can be easily recognised.

**Regulation 12: Indoor air quality**

Indoor air quality (IAQ) is impacted by energy sources present in the workplace and addresses the ambient environment of that workplace. Whilst other Regulations, such as the Regulations for Hazardous Chemical Agents, Lead Regulations, Asbestos Abatement Regulations, the Major Hazard Installation Regulations and Hazardous Biological Agents Regulations

addresses specific occupational hazards, IAQ regulation addresses the biological, chemical and physical agents' adverse impact on employee wellbeing, performance, efficiency and productivity.

Regulations are interlinked and the risk assessment for that particular workplace will identify how biological, chemical and physical agents impact the IAQ in that workplace.

### **Regulation 13: Vibration**

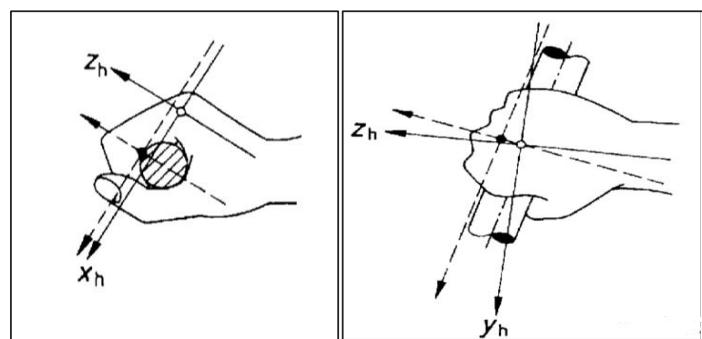
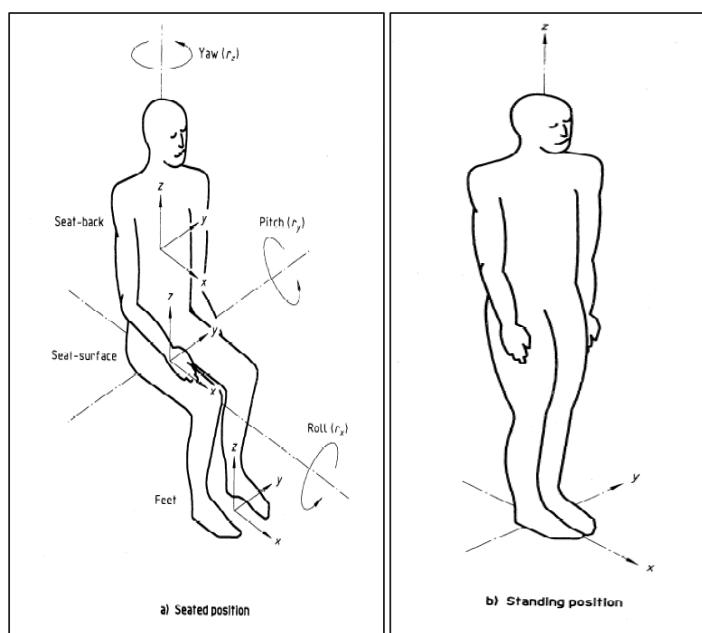
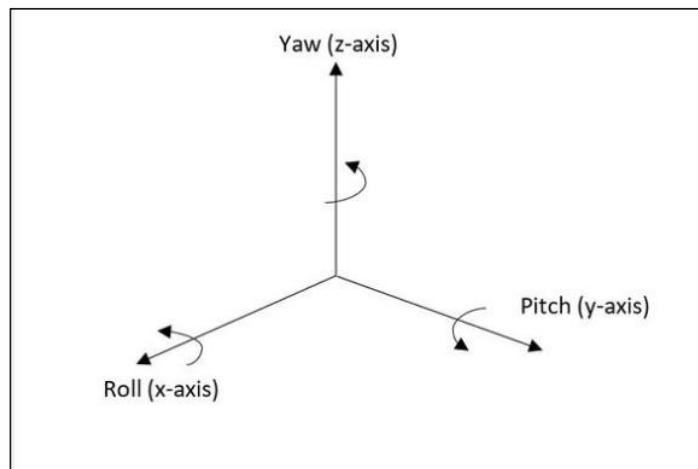
Exposure monitoring for both whole-body and hand-arm vibration must take into account the roll, pitch and yaw. The images below indicate the roll, pitch and yaw, based on the position of the employee's body or hand/s position.

Where,

Roll is x-axis

Pitch is y-axis

Yaw is z-axis



### Regulation 14: Occupational non-ionising radiation

The diagram below is a depiction of the electromagnetic spectrum, which consists of non-ionising and ionising radiation. The Physical Agents Regulations only cover the aspect of non-ionising radiation of the spectrum, in an occupational environment.

Region	Non-ionizing Radiation										Ionizing Radiation
	Sub-Radiofrequency	Radiofrequency	Microwave	Infrared			Light	Ultraviolet			
Waveband	ELF			IR-C	IR-B	IR-A		UV-A	UV-B	UV-C	
Wavelength	1000 km	10 km	1 m	1 mm	3 µm	1.4 µm	760 nm	400 nm	315 nm	280 nm	180 nm
Frequency	300 Hz	30 kHz	300 MHz	300 GHz	Light and Near Infrared			Ultraviolet			Ionizing Radiation
	Sub-Radiofrequency	Radiofrequency and Microwave		Lasers							

### Regulation 15: Prevention and control of exposure to a physical agent

Exposure to a physical agent should be mitigated to the lowest reasonably practicable level by implementing a progressive combination of the hierarchy of controls.

The hierarchy of controls is a step-by-step approach to eliminate or mitigate workplace hazards. It ranks controls from the most effective level of protection to the least effective level of protection. When choosing a control method, start from the top of the list below. Assess the feasibility of the first layer of controls (elimination) before moving on to the second layer (substitution). Continue this process until you reach the bottom of the list and have identified as many controls as possible to adequately protect the employee from the hazard.

The hierarchy of controls are listed as follows –

1. **Elimination:** Elimination is the process of removing the hazard from the workplace. It is the most effective way to control a risk because the hazard is no longer present. It is the preferred way to control a hazard and should be used whenever possible. Examples may include:
  - not introducing the physical agent into the workplace.
  - redesigning the job or task so that the physical agent is eliminated from the workplace.
2. **Substitution:** If eliminating a hazard is not possible, substitution is the next control method that should be considered. Substitution is the act of replacing a hazard with a less hazardous one. The hazards and risks associated with an alternative must be thoroughly assessed to determine if it is an appropriate replacement, and the new hazard is actually lower, and not as harmful or more harmful. Examples may include:

- the current job or task should be replaced with a less hazardous job or task. It is important to ensure that the new design is less hazardous than the original.
- the current plant or machinery should be replaced with a less hazardous plant or machinery. It is important to ensure that the new plant or machinery is less hazardous than the original.

3. Engineering controls: Engineering controls are methods that will remove the hazard at the source, before it comes in contact with the employee. Engineering controls can be built into the design of a plant, machinery, or process to minimize the hazard. Engineering controls are a very reliable way to control employee exposures when the controls are designed, used, and maintained properly. Examples of engineering controls are:

- isolation and shielding – separating employees from the hazard by distance or the use of barriers
- enclosures – placing the material or process in a closed system (e.g., enclosed machines, booths, etc.)
- ventilation – using local exhaust or general dilution ventilation to eliminate or mitigate a physical agent
- mechanical lifting devices – using mechanical methods to lift or move objects instead of manual lifting

4. Administrative controls: Administrative controls involve developing procedures to ensure the work is conducted in a way that minimizes the hazard. Administrative controls are ranked lower and have more limitations than elimination, substitution, and engineering controls because this method does not necessarily eliminate or mitigate the hazard from the workplace. Administrative controls should be used in combination with other control measures where possible.

Examples of administrative control include:

- developing or changing policies, implementing or improving training and education, and developing or enhancing work practices and procedures, such as -
  - i. using job-rotation schedules or a work-rest schedule that limit the amount of time an employee is exposed to a physical agent.
  - ii. implementing a preventative maintenance programme to keep plant and machinery in proper working order.
  - iii. scheduling maintenance and other high exposure operations for times when minimal employees are present (such as evenings, weekends).
  - iv. restricting access to a work area.
  - v. restricting the task to only those competent or qualified to perform the work.
  - vi. using signs to warn employees of a hazard.

**Regulation 16: Personal protective equipment and facilities**

Personal protective equipment (PPE) refers to anything employees wear to help protect them from a physical agent. The use of PPE as the main method to control exposures should be limited to situations where elimination, substitution, engineering, or administrative controls are not practicable, or when:

- additional protection is required because other control methods are not sufficient to mitigate the hazard
- the hazard is a result of a temporary or emergency condition

Only once elimination, substitution, engineering, or administrative controls have been tried and shown to be ineffective in controlling a physical agent to a reasonably practicable level, the additional use of PPE should be considered.

PPE limits exposure to the harmful effects of a hazard but only if the PPE is worn and used correctly. It is important that there is consultation at the workplace in the fitting and selection of assigned PPE, to ensure that the PPE is fit for use.

The choice of what type of PPE is required must be based on the specific physical agent found at the workplace.

**Regulation 17: Maintenance of control measures**

The employer should implement a planned maintenance programme for all control measures implemented to eliminate or mitigate the exposure to a physical agent.

The evaluation of the control measures must be done through inspections and tests, analysis of incident reports, medical surveillance reports and exposure monitoring reports. Recommendations to any identified or reported deficiency in the control measures, need to be implemented to make sure that the control measure is working effectively.

The physical agent exposure risk assessment must be updated to reflect any changes made to a control measure for a physical agent.

**Regulation 18: Records**

Well-kept records are documented information which may provide input to the risk assessment process. The records may provide documented proof between the exposure to a physical

agent and adverse health effects caused by the resultant exposure, as well as what control measures were implemented to eliminate or mitigate exposure.

With regard to access to medical surveillance records, the medical surveillance records imply any report relating to-

- exposure to a physical agent and
- an adverse health effect diagnosis relating to exposure to a physical agent

The causal relationship between exposure to a physical agent and diagnosis, may occur over a period of time, hence necessitating the long period of retention of records.

The Regulations does not specify the format on how records should be stored, i.e. electronically or hardcopy. Whichever method of storage the employer chooses to use, the records should be easily accessible and in a manner that allows the person accessing the records to be readable.

## DEPARTMENT OF EMPLOYMENT AND LABOUR

NO. 5953

6 March 2025

**OCCUPATIONAL HEALTH AND SAFETY ACT, 1993 (ACT NO. 85 OF 1993)****NOISE EXPOSURE REGULATIONS, 2024**

The Minister of Employment and Labour has, under section 43(1)(a) and (b) of the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993), after consultation with the Advisory Council for Occupational Health and Safety, made the regulations in the Schedule.

**MS N METH, MP****MINISTER OF EMPLOYMENT AND LABOUR****DATE:** 3 February 2025

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## 1. Definitions

In these Regulations, word or expression to which a meaning has been assigned in the Occupational Health and Safety Act.1993 (Act No. 85 of 1993), bears the meaning so assigned and, unless the context otherwise indicates—

**"approved noise inspection authority"** means an inspection authority approved by the Chief Inspector of the Department of Employment and Labour for the monitoring of noise in the workplace;

**"Chief Director: Provincial Operations"** means the provincial director as defined in the General Administrative Regulations, 2003, published as Government Notice R.929 in *Gazette* No. 25129 of 25 June 2003;

**"competent person: audiometric testing"** means—

- (a) for screening audiometry;
  - (i) a person registered in terms of the Health Professions Act, 1974 (Act No. 56 of 1974), with the Health Professions Council of South Africa in any of the following categories:
    - (aa) ENT (ear, nose and throat specialist);
    - (bb) speech therapist; or
    - (cc) audiologist;
  - (ii) a person with a valid occupational skills certificate: Occupational Audiometric Screener, obtained from an organisation accredited with the Quality Assurance Body that has been delegated the quality assurance responsibilities for Occupational Audiometric Screener unit standards by the Quality Council for Trades and Occupations (QCTO), established in terms of section 26(1) of the Skills Development Amendment Act, Act No. 37 of 2008, as

amended, and registered with an organisation recognised by the Chief Inspector; and

- (b) for diagnostic audiology—
  - (i) a person registered in terms of the Health Professions Act, 1974 (Act No. 56 of 1974), with the Health Professions Council of South Africa in any of the following categories:
    - (aa) ENT (ear, nose and throat specialist); or
    - (bb) audiologist;

**"competent person"** in relation to noise means a person who—

- (a) has, in respect of the work or task to be performed, the required knowledge, training and experience in noise and, where applicable, relevant qualifications specific to or including noise: Provided that where appropriate qualifications and training are registered in terms of the provisions of the National Qualifications Framework Act, 2008 (Act No. 67 of 2008), those qualifications and that training must be regarded as the required qualifications and training; and
- (b) is familiar with the Act and the applicable regulations made under the Act;

**"exposure"** means the extent to which a person is exposed to noise at the workplace as determined by the noise exposure risk assessment, and includes potential or accidental exposure, and exposed has a derivative meaning;

**"hearing protective device or HPD"** means a device with the proven capability of reducing actual noise exposure to either below the noise-rating limit or the noise action level where there is concomitant exposure to ototoxic chemical agents and/or whole-body vibration;

**"impulse noise"** means sound characterised by brief excursions of sound pressure that exceeds the background noise;

**"L<sub>Req, 8h</sub> or 8-hour rating level"** means the rating level normalised to a nominal 8-hour working day and should be A-weighted;

**"L<sub>peak</sub> or peak noise level"** means the peak level of the sound pressure wave with no time constant applied and should be C-weighted;

**"medical screening"** means a risk-based systematic medical assessment of a person or a group of people using a combination of medical history, physical examination and special tests/investigations to detect disease or abnormality;

**"noise"** means unwanted sound that may cause annoyance, interference with speech or communication and/or hearing impairment;

**"noise action level"** means the value of the 8-hour rating level at or above 82 dBA for continuous noise and/or the value of the peak noise level at or above 135 dBC for impulse noise at which specified actions or counter measures must be taken;

**"noise exposure monitoring"** means the systematic process of measuring the magnitude, frequency and duration of exposure to noise;

**"noise-rating limit"** means the value of the 8-hour rating level at or above 85 dBA for continuous noise and/or peak noise level at or above 137 dBC for impulse noise at which specified actions or counter measures must be taken;

**"noise exposure risk assessment"** means an assessment and risk categorisation of exposure to noise in the workplace;

**"noise technical committee"** means a committee established in terms of regulation 16;

**"noise zone"** means an area, and plant or machinery without a fixed location, where the exposure to noise is—

- (a) at or above the noise-rating limit; or
- (b) at or above the noise action level where there is concomitant exposure to ototoxic chemical agents and/or whole-body vibration;

**"ototoxic chemical agent"** means a chemical agent with the potential to cause hearing impairment alone or in combination with noise, even below 85 dBA;

**"the Act"** means the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993);

**"vulnerable employee"** means an employee who is at a higher risk of injury, disease or complications caused by exposure to noise;

**"whole-body vibration"** means mechanical vibration which is transmitted into the body, when seated or standing, through the supporting surface, during a work activity.

## **2. Scope of application**

(1) These Regulations apply to—

- (a) any employer or self-employed person at any workplace under their control, where persons are exposed to continuous or impulse noise at or above either the noise-rating limit or the noise action level where there is concomitant exposure to ototoxic chemical agents and or whole-body vibration; and
- (b) a designer, manufacturer, importer or supplier of plant or machinery for use at a workplace.

(2) With the exception of regulation 4 (6), the provisions of regulations 4 and 9 shall not apply to a self-employed person.

(3) Where the employer or self-employed person exposes any person to either an ototoxic chemical agent or whole-body vibration, the provisions of the Regulations for Hazardous Chemical Agents and Physical Agents Regulations shall apply.

## **3. Exposure to noise**

(1) Subject to regulations 10 and 11, an employer or self-employed person must ensure that no person entering the workplace under their control will be exposed to noise at

or above the noise-rating limit or the noise action level where there is concomitant exposure to ototoxic chemical agents and/or whole-body vibration.

#### **4. Information, instruction and training**

(1) An employer who undertakes work which exposes an employee to noise must consult the relevant health and safety representative or the health and safety committee established for that workplace and inform them of the intention to conduct—

- (a) a noise exposure risk assessment;
- (b) noise exposure monitoring; and
- (c) training contemplated in subregulation (4).

(2) An employer who undertakes work which exposes an employee to noise at or above either the noise-rating limit or the noise action level where there is concomitant exposure to ototoxic chemical agents and/or whole-body vibration must inform the relevant health and safety representative or the health and safety committee established for that workplace of the intention to conduct medical screening and medical surveillance.

(3) An employer must inform the relevant health and safety representative or the health and safety committee for that workplace of the documented outcomes of the—

- (a) noise exposure risk assessment;
- (b) noise exposure monitoring; and
- (c) medical screening and medical surveillance.

(4) Every employer who undertakes work which is likely to expose an employee to noise must, before any exposure, ensure that such employee is comprehensively informed, instructed and trained in both the practical aspects and theoretical knowledge with regard to—

- (a) the content and scope of these Regulations;
- (b) the potential sources of exposure to noise;
- (c) ototoxic chemical agents and whole-body vibration acting synergistically with noise to cause hearing loss;

- (d) the potential risks to health and safety caused by exposure to noise;
- (e) the differing effects of exposure to noise on men, women, young employees and vulnerable employees, where such difference may exist;
- (f) the control measures that are in place to prevent exposure to noise;
- (g) the necessity for compliance with noise control measures in all areas, including the correct inspection, use, care, maintenance, limitations and disposal of HPDs;
- (h) the precautions to be taken by an employee to protect themself against the adverse effects associated with the exposure;
- (i) the reason for and the outcomes of the noise exposure risk assessment, noise exposure monitoring and the necessity for medical screening and medical surveillance;
- (j) the noise action level and noise-rating limit for hearing conservation and their meaning;
- (k) the procedures for reporting, correcting and replacing defective noise control measures, including HPDs;
- (l) any additional matters contemplated in regulations 5 and 9; and
- (m) the process to access records of noise exposure risk assessment, noise exposure monitoring and personal medical records.

(5) The employer must ensure that refresher training is conducted at least annually or at more frequent intervals as may be recommended by the health and safety committee or the health and safety representative.

(6) An employer or self-employed person must ensure, as far as is reasonably practicable, that mandatories or persons other than employees who may be affected by noise exposure at the workplace are informed and trained in accordance with subregulation (4).

(7) The training programme contemplated in subregulation (4), (5) and (6) must be conducted by a competent person.

**5. Duties of persons who may be exposed to noise**

(1) Any person who is or may be exposed to noise at or above either the noise-rating limit or the noise action level where there is concomitant exposure to ototoxic chemical agents and/or whole-body vibration must obey any lawful instruction by the employer or self-employed person or by anyone authorised thereto by the employer or self-employed person, regarding—

- (a) the use of measures adopted for noise control;
- (b) the immediate reporting of defective, damaged or lost noise control measures to the health and safety representative or the employer;
- (c) the use of HPDs;
- (d) a prohibition to enter or remain in an area where HPDs are required unless the person is authorised to do so and is wearing the required HPDs;
- (e) co-operation with the employer in determining personal exposure, which may include the wearing of a dosimeter;
- (f) the reporting for medical screening and medical surveillance; and
- (g) information, instruction and training received.

(2) An employee must, where there is a requirement to use HPDs—

- (a) inspect, use, wear, store and dispose of the HPDs in accordance with any information, training or lawful instruction given by the employer;
- (b) not intentionally misuse or damage the HPDs; and
- (c) immediately inform the employer of any damage, defect or any need to clean or replace any of the HPDs.

**6. Duties of designers, manufacturers, importers and suppliers**

(1) Any designer, manufacturer, importer or supplier must—

- (a) as far as is reasonably practicable, ensure that plant or machinery are designed and manufactured to minimise the risk of exposure to noise when properly used;
- (b) as far as is reasonably practicable, supply plant or machinery that can be transported, received, stored and handled in a manner that minimises the risk of exposure to noise;
- (c) as far as is reasonably practicable, install plant or machinery in a manner that minimises the risk of exposure to noise when properly used; and
- (d) provide the employer or user with—
  - (i) noise and vibration emission data for the plant or machinery to be supplied;
  - (ii) information, instruction and training as deemed necessary to minimise the risk of exposure to noise during the use of plant or machinery; and
  - (iii) information on the appropriate maintenance of plant or machinery to ensure safe operation and use.

## 7. Noise exposure risk assessment

- (1) An employer or self-employed person must, in respect of a workplace under their control, cause the noise exposure risk assessment to be done—
  - (a) as far as is reasonably practicable, before exposure to noise;
  - (b) thereafter at intervals not exceeding 24-months; and
  - (c) by a competent person.
- (2) When making the noise exposure risk assessment contemplated in subregulation (1), an employer or self-employed person must take into account at least the following—
  - (a) the noise sources to which a person may be exposed;

- (b) the adverse health effects that the exposure to noise may have on men, women, young employees, vulnerable employees and other persons, where applicable;
- (c) the extent to which a person may be exposed;
- (d) the nature of the work process and any reasonable deterioration in or failure of any control measures;
- (e) the previous noise exposure risk assessments, including—
  - (i) the results of previous approved noise inspection authority noise exposure monitoring reports; and
  - (ii) the outcomes of the hearing loss trend analysis;
- (f) the presence and extent of exposure to ototoxic chemical agents; and
- (g) in the case of the exposure to whole-body vibration, whether the exposure exceeds the action level for whole-body vibration set out in the Physical Agents Regulations.

(3) An employer or self-employed person must, in terms of the noise exposure risk assessment—

- (a) consider the recommendations identified by a competent person in the noise exposure risk assessment; and
- (b) develop a documented action plan for the implementation of the recommended interventions.

(4) An employer or self-employed person must forthwith review a noise exposure risk assessment made in accordance with subregulation (1) if—

- (a) there is reason to believe that such noise exposure risk assessment is no longer valid;
- (b) control measures are no longer efficient;
- (c) technological or scientific advances allow for more efficient control methods;
- (d) there has been a change in—

- (i) work methods;
- (ii) plant and machinery;
- (iii) the type of work carried out; or
- (iv) control measures;

- (e) an incident occurred; or
- (f) the medical surveillance reveals an adverse health effect, where noise exposure is identified as a contributing factor.

(5) The review of the noise exposure risk assessment contemplated in subregulation (4) must be carried out in accordance with subregulations (1)(c), (2) and (3).

## **8. Noise exposure monitoring**

(1) The employer or self-employed person must ensure that a noise exposure monitoring programme is implemented where the noise exposure risk assessment or a review of such assessment indicates that any employee may be exposed to noise at or above either the noise-rating limit or the noise action level where there is concomitant exposure to ototoxic chemical agents and/or whole-body vibration.

(2) The noise exposure monitoring programme contemplated in subregulation (1) must be—

- (a) carried out in accordance with the provisions of these Regulations;
- (b) carried out by an approved noise inspection authority;
- (c) representative of an employee's exposure to noise, in accordance with subregulation (3); and
- (d) carried out at least every 24-months: Provided that an inspector may direct an employer, in writing, to re-conduct the exposure monitoring or part thereof.

(3) In order to comply with subregulation (2)(c), an employer must ensure that—

- (a) area noise exposure monitoring is conducted as contemplated in SANS 10083—
  - (i) where a number of employees work in an area of approximately equal noise level; and
  - (ii) where an employee is working at an approximately fixed location relative to the noise source;
- (b) personal dosimetry monitoring is conducted as contemplated in SANS 10083 for employees who do not have a fixed workplace; and
- (c) peak noise levels are monitored where the noise exposure risk assessment determines that employees may be exposed to impulse noise.

(4) The employer or self-employed person must, in terms of the noise exposure monitoring report—

- (a) consider the recommendations identified by approved noise inspection authority in the noise exposure monitoring report; and
- (b) develop a documented action plan for the implementation of the recommended interventions.

## **9. Medical screening and medical surveillance**

(1) The employer must establish a documented medical screening programme—

- (a) where any employee may be exposed to noise at or above either the noise-rating limit or the noise action level where there is concomitant exposure to ototoxic chemical agents and/or whole-body vibration; or
- (b) for a vulnerable employee, in which case the employer must obtain the opinion of an occupational medicine practitioner to determine whether it is necessary to conduct medical screening.

(2) In the case where the employer has to conduct medical screening as contemplated in subregulation (1), the occupational medicine practitioner must consider if—

- (a) an employee has a health condition that makes the employee vulnerable to noise;
- (b) an employee has a health condition that impacts the proper use of HPDs;
- (c) there is an identifiable occupational disease or adverse health effect related to noise;
- (d) there is a reasonable likelihood that the occupational disease or adverse health effect may occur under the particular exposure conditions of their work; and
- (e) there are valid techniques to diagnose indications of the occupational disease or adverse health effect, as far as is reasonably practicable.

(3) Where the need for medical screening as contemplated in subregulation (1) has been determined as necessary by the occupational medicine practitioner, the occupational medicine practitioner must specify requirements for medical screening, including—

- (a) an evaluation of an employee's medical, occupational and exposure history;
- (b) the appropriate clinical examination and medical tests; and
- (c) the intervals at which medical screening must be conducted, appropriate to the health risks and health status of the employee.

(4) The employer must ensure that medical screening contemplated in subregulation (1) is—

- (a) carried out by an occupational health practitioner; and
- (b) includes—
  - (i) an initial medical screening, as far as reasonably practicable, immediately before an employee commences employment; and
  - (ii) subsequently, periodic medical screening at intervals recommended by the occupational medicine practitioner, but not

exceeding 24-months.

(5) After concluding medical screening, the occupational health practitioner must ensure that the employer is informed, in writing, of the outcome of an employee's health evaluation if the outcome was normal.

(6) The employer must implement audiometry on—

(a) any employee who may be exposed to noise at or above either the noise-rating limit or the noise action level where there is concomitant exposure to ototoxic chemical agents and/or whole-body vibration; or

(b) a vulnerable employee.

(7) The audiometry contemplated in subregulation (6) must be—

(a) according to the Code of Practice for Audiometry; and

(b) conducted by a competent person: audiometric testing.

(8) The occupational medicine practitioner must notify the employer in writing by means of a medical certificate of fitness, and inform the employee accordingly, if—

(a) an employee has a medical condition which—

(i) prevents the wearing of hearing protective devices;

(ii) is likely to be aggravated by the exposures at that workplace; or

(b) the medical screening identifies an adverse health effect caused by exposure to noise at that workplace.

(9) The employer must ensure that an exit medical screening is carried out by an occupational health practitioner on termination of an employee's employment: Provided that the most recent medical screening conducted within 6-months prior to the date of termination of employment shall be deemed to have fulfilled the requirements of an exit medical screening.

(10) With respect to the medical certificate of fitness contemplated in subregulation (8), the certificate must indicate at least—

(a) the recommendations pertinent to an employee's fitness to perform the inherent requirements of the job;

- (b) the presence of an occupational disease, without including confidential medical information;
- (c) if any restrictions or conditions apply to any specified duties performed by the employee; and
- (d) the period for which any restrictions or conditions, as applicable, should be applied.

(11) The employer must, as far as is reasonably practicable—

- (a) accommodate the conditions or restrictions recommended; and
- (b) only permit an employee who has been medically certified for restricted duties to return to normal duties if the employee has been certified fit for those duties by an occupational medicine practitioner.

(12) The employer must establish, implement and maintain a documented system of medical surveillance where medical screening has been determined necessary.

(13) The medical surveillance as contemplated in subregulation (12) must—

- (a) take into account the outcomes of the medical screening as contemplated in subregulation (2);
- (b) be overseen by an occupational medicine practitioner; and
- (c) at least—
  - (i) include an analysis of the screening results over time; and
  - (ii) use the results of subregulation (2) to identify the need for targeted exposure prevention in the workplace.

(14) The employer must ensure that an employee provides written informed consent for inclusion in the—

- (a) medical screening; and
- (b) medical surveillance programme.

(15) An employee may appeal any finding of an occupational medicine practitioner stipulated in the medical certificate of fitness to the Chief Inspector in writing within 60-days of receiving the certificate.

**10. Prevention or control of exposure to noise**

(1) An employer or self-employed person must ensure that the exposure of a person to noise is eliminated, where reasonably practicable.

(2) Where the provision of subregulation (1) is not reasonably practicable, an employer or self-employed person must, as far as is reasonably practicable, reduce noise exposure to levels below the limits referred to in regulation 2(1)(a) by implementing a combination of the hierarchy of noise control measures, including, but not limited to—

- (a) engineering control measures to eliminate or reduce noise at its source, or the modification of the routes by which noise reaches workplaces;
- (b) keeping plant and machinery which generates noise in good working order or repaired or replaced when defective; and
- (c) administrative control measures to limit the number of persons exposed and the duration of exposure.

(3) The employer must ensure that an employee who is exposed to noise receives information, instruction and training with regard to the inspection and correct use of control measures and reporting of failures of control measures implemented in subregulation (2).

**11. Noise zone**

(1) The employer or self-employed person must ensure that any workplace or part of such workplace is designated and clearly demarcated as a noise zone where the noise level is at or above—

- (a) the noise-rating limit; or
- (b) the noise action level, and there is concomitant exposure to—
  - (i) ototoxic chemical agents; and/or
  - (ii) whole-body vibration that exceeds the action level set in the Physical Agents Regulations.

(2) The employer or self-employed person must designate and clearly demarcate any plant and machinery that does not have a fixed location as a noise zone where the noise level generated is at or above—

- (a) the noise-rating limit; or
- (b) the noise action level, and there is concomitant exposure to—
  - (i) ototoxic chemical agents; and/or
  - (ii) whole-body vibration that exceeds the action level set in the Physical Agents Regulations.

(3) The employer must not allow any person to enter or remain in a noise zone unless effective HPDs are worn correctly.

## **12. Hearing protective devices**

(1) Where it is not reasonably practicable to ensure that the exposure of an employee to noise is either eliminated or controlled, the employer must provide the employee with suitable HPDs.

(2) Where HPDs are provided, an employer must ensure that HPDs—

- (a) reduce exposure to noise to below the—
  - (i) noise-rating limit; or
  - (ii) noise action level where there is concomitant exposure to ototoxic chemical agents and/or whole-body vibration;
- (b) are correctly selected, fitted and properly used, taking into consideration—
  - (i) the nature and characteristics of the noise as contemplated in subregulation (2)(a);
  - (ii) the type of work to be done;
  - (iii) the physical effort required to do the work;
  - (iv) the length of time it will have to be worn;

- (v) the requirements in relation to the work for visibility, comfort and employee communication;
- (vi) compatibility with any other personal protective equipment that may be needed; and
- (vii) any recommendations made by the occupational health practitioner;

- (c) are kept in good condition and efficient working order; and
- (d) are readily available to exposed persons.

(3) The employer must—

- (a) ensure reusable HPDs are kept in hygienic condition and efficient working order;
- (b) provide separate containers or storage facilities for HPDs when not in use; and
- (c) ensure that all HPDs not in use, are stored only in the place provided for it.

(4) Subregulations (1), (2) and (3) also apply to persons other than employees who may be exposed to noise.

### **13. Maintenance of control measures**

(1) Every employer or self-employed person must ensure that any control measure contemplated in regulation 10 is—

- (a) fully and properly used;
- (b) maintained in an efficient state and in good working order; and
- (c) in good repair and clean condition.

### **14. Records**

(1) The employer or self-employed person must—

- (a) keep record of—
  - (i) training;
  - (ii) noise exposure risk assessment and action plan;
  - (iii) noise exposure monitoring and action plan;
  - (iv) medical screening and medical surveillance records; and
  - (v) maintenance of control measures;
- (b) keep records, as contemplated in subregulation (1)(a) for 40-years;
- (c) make the records contemplated in regulations 4, 7, 8 and 13 available for inspection by an inspector and relevant health and safety representative or health and safety committee; and
- (d) make the records contemplated in regulation 9 available to any person, subject to formal written consent of the employee.

(2) If the employer or self-employed person ceases activities, the employer or self-employed person must inform the relevant Chief Director: Provincial Operations of—

- (a) where the records listed in subregulation 1(a) shall be kept; and
- (b) how those records shall be accessed when required.

## **15. Code of practice**

(1) The Chief Inspector may, in consultation with the Noise Technical Committee, develop or review approved codes of practice relevant to these Regulations in order to guide and regulate exposure to noise in the workplace.

## **16. Noise technical committee**

(1) The Council may, after consultation with the Minister, establish a noise technical committee which must consist of—

- (a) a chairperson designated by the Chief Inspector from the employees of the Department of Employment and Labour;

- (b) one person designated by the Chief Inspector from the employees of the Department of Employment and Labour;
- (c) three persons designated by employers' organisations to represent the employers;
- (d) three persons designated by employees' organisations to represent the federation of unions;
- (e) two persons to represent professional bodies recognised by the Chief Inspector;
- (f) one person representing a higher educational institution;
- (g) one person representing audiology;
- (h) one person representing occupational medicine; and
- (i) persons who are competent in respect of the matters to be dealt with by the noise technical committee who have been co-opted by the committee with the authorisation of the Council.

(2) The Council must—

- (a) appoint members of the noise technical committee for a period that the Council may determine at the time of the appointment;
- (b) after having afforded a member a reasonable opportunity to respond, discharge such a member at any time, for reasons that are fair and just; and
- (c) appoint a new member in the place of a member who is discharged in terms of subregulation (2)(b).

(3) The noise technical committee must—

- (a) advise the Council on noise related matters, including, but not limited to, codes, standards and training requirements;
- (b) make recommendations and submit reports to the Council regarding any matter to which these Regulations apply;

- (c) advise the Council regarding any matter referred to the noise technical committee by the Council;
- (d) perform any other function for the administration of a provision of these Regulations that may be requested by the Council;
- (e) conduct its work in accordance with the instructions and rules of conduct framed by the Council; and
- (f) advise the Chief Inspector regarding appeals logged in writing regarding medical certificate of fitness, as contemplated in regulation 9(8).

### **17. Offences and penalties**

Any person who contravenes or fails to comply with any provision of regulations 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 or 15 is guilty of an offence and liable on conviction to a fine or to imprisonment for a period not exceeding 12-months and, in the case of a continuous offence, to an additional fine of R200 for each day on which the offence continues or to additional imprisonment of one day for each day on which the offence continues: Provided that the period of such additional imprisonment will in no case exceed 90-days.

### **18. Repeal of regulations**

The Noise-Induced Hearing Loss Regulations, 2003, published as Government Notice No. R. 307 of 7 March 2003, will be repealed 18-months after the date of promulgation of the Noise Exposure Regulations.

### **19. Short title**

These Regulations are called the Noise Exposure Regulations, 2024.



## **employment & labour**

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Department:  
Employment and Labour  
**REPUBLIC OF SOUTH AFRICA**

# **CODE OF PRACTICE FOR AUDIOMETRY**

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## ACRONYMS AND DEFINITIONS

### Acronyms

ABHL:	average binaural hearing loss
dB:	decibel
dBA:	decibel A-weighting
dBc:	decibel C-weighting
IEC:	International Electrotechnical Commission
HPD:	hearing protective device
HTL:	hearing threshold level
MPASPL:	maximum permissible ambient sound pressure levels
NIHL:	noise-induced hearing loss
OHP:	occupational health practitioner
OMP:	occupational medicine practitioner
PLH:	percentage loss of hearing
SANS:	South African National Standard
STS:	standard threshold shift
TC:	technical committee

### Definitions

**"acoustic environment"** means a room, booth or mobile facility in which audiometric tests are conducted;

**"audiogramme"** means a chart, graph or table indicating the hearing threshold levels (HTLs) of an individual as a function of frequency as determined during the measurement of a person's HTLs;

**"audiometer"** means an instrument for the measurement of hearing levels that complies with the relevant requirements specified in IEC 60645;

**"audiometric test"** means the act of measuring an individual's hearing to establish a percentage loss of hearing (PLH) shift and/or standard threshold shift (STS);

**"audiometric zero"** means the average hearing threshold at 2 000, 3 000 and 4 000 Hz for each ear calculated from baseline;

**"audiometry"** means the procedure to be followed in testing an individual's hearing for either screening or diagnostic purposes;

**"baseline audiometric test"** means a one-off test that is conducted in terms of Instruction 171;

**"Compensation Commissioner"** means the Compensation Commissioner appointed under section 2(1) of the Compensation for Occupational Injuries and Diseases Act, 1993 (Act No. 130 of 1993);

**"competent person: audiometric testing"** means—

(a) for screening audiometry—

- (i) a person registered in terms of the Health Professions Act, 1974 (Act No. 56 of 1974), with the Health Professions Council of South Africa in any of the following categories:
  - (aa) ENT (ear, nose and throat specialist);
  - (bb) speech therapist; or
  - (cc) audiologist; or
- (ii) a person with a valid occupational skills certificate: Occupational Audiometric Screener, obtained from an organisation accredited with the Quality Assurance Body that has been delegated the quality assurance responsibilities for Occupational Audiometric Screener unit standards by the Quality Council for Trades and Occupations (QCTO), established in terms of section 26(1) of the Skills Development Amendment Act, Act No. 37 of 2008, as amended, and registered with an organisation recognised by the Chief Inspector; and

(b) for diagnostic audiology—

- (i) a person registered in terms of the Health Professions Act, 1974 (Act No. 56 of 1974), with the Health Professions Council of South Africa in any of the following categories:
  - (aa) ENT (ear, nose and throat specialist); or
  - (bb) an audiologist;

**"competent person"** in relation to noise, means a person who—

- (a) has, in respect of the work or task to be performed, the required knowledge, training and experience in noise and, where applicable, relevant qualifications specific to or including noise: Provided that where appropriate qualifications and training are registered in terms of the provisions of the National Qualifications Framework Act, 2008 (Act No. 67 of 2008), those qualifications and that training must be regarded as the required qualifications and training; and
- (b) is familiar with the Act and the applicable regulations made under the Act;

**"diagnostic audiology"** means an advanced assessment of hearing and hearing loss conducted by an audiologist or ENT specialist;

**"entry audiometric test"** means a one-off test in terms of Instruction 171 that is conducted on vulnerable employees or employees employed in a noise zone;

**"exit audiometric test"** means a one-off test in terms of Instruction 171 that is conducted on vulnerable employees or employees employed in a noise zone at the time of termination of employment in a noise zone;

**"IEC 60645-1:2017"** means the Electroacoustics – Audiometric equipment – Part 1: Equipment for pure-tone and speech audiometry;

**"initial audiometric test"** means a one-off test in terms of Instruction 171 that is conducted on vulnerable employees or employees employed in a noise zone, who have not had a baseline or entry audiometric test;

**"Instruction No. 171"** means the Compensation Commissioner's Circular Instruction 171 and Supplement entitled The Determination of Permanent Disablement Resulting from Hearing Loss Caused by Exposure to Excessive Noise and Trauma;

**"noise zone"** means an area, and plant or machinery without a fixed location, where the noise is—

- (c) at or above the noise-rating limit; or
- (d) at or above the noise action level where there is concomitant exposure to ototoxic chemical agents and/or whole-body vibration;

**"percentage loss of hearing or PLH"** means percentage loss of hearing calculated on every audiogramme as per Instruction 171;

**"percentage loss of hearing shift or PLH shift"** means the difference between the current PLH and the baseline PLH and is used to determine the need for compensation for noise-induced hearing loss (NIHL);

**"periodic audiometric test"** means a test in terms of Instruction 171 that is conducted on vulnerable employees or employees employed in a noise zone at stipulated intervals;

**"SANS 10154"** means the South African National Standard for calibration of pure-tone audiometers;

**"SANS 10182"** means the South African National Standard for the measurement and assessment of acoustic environments for audiometric tests;

**"screening audiometric tests"** means audiometric tests, conducted by a competent person: audiometric testing, to establish baseline, entry, initial, periodic and exit audiograms;

**"standard threshold shift or STS"** means an average change in hearing of 10 dB or more at the frequencies of 2 000, 3 000 and 4 000 Hz in one or both ears, as compared to the employee's audiometric zero.

## 1. INTRODUCTION

The Minister's Advisory Council for Occupational Health and Safety granted approval from the establishment of a technical committee (TC) to review the Noise-Induced Hearing Loss Regulations of 2003. The TC is constituted of members of organised labour, organised business, specialists in the field of occupational health and safety and the Department of Employment and Labour.

Due to the complex nature of medical screening and medical surveillance with regard to assessing employees' exposure to occupational noise and the resultant effects, a decision was taken by the TC to produce a code of practice for audiometry, incorporated under the new Noise Exposure Regulations. The Code of Practice for Audiometry is a move from a reactive approach to addressing occupational hearing loss to a proactive approach that incorporates all requirements of medical screening and medical surveillance, particularly audiometric testing, in one document.

## **2. OBJECTIVES OF THE CODE**

The objective of the Department of Employment and Labour's Code of Practice for Audiometry in respect of the Noise Exposure Regulations is to—

- (a) assist employers with the development and implementation of a medical screening and medical surveillance programme;
- (b) detect early NIHL; and
- (c) prevent further hearing loss.

## **3. APPLICATION OF THE CODE**

This Code of Practice applies to all employers and employees as provided for in the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993) (the OHS Act), and the Noise Exposure Regulations promulgated under section 43 of the OHSA. The Code is incorporated into the Noise Exposure Regulations of 2024 through regulation 15 of the said regulations.

The scope of the Code of Practice for Audiometry will be aligned with the scope of application of the Noise Exposure Regulations, 2024.

## **4. MEDICAL SCREENING AND MEDICAL SURVEILLANCE**

- 4.1 An employer is required to establish, implement and maintain a documented system of medical surveillance in terms of regulation 9 of the Noise Exposure Regulations.
- 4.2 Medical surveillance with respect to noise exposure is a planned, ongoing programme of medical tests and examinations, which includes audiometry.

## **5. AUDIOMETRY**

- 5.1 Audiometry is the procedure to be followed in testing an individual's hearing for either screening or diagnostic purposes, which consists of establishing and managing the following—
  - (a) audiometer;

- (b) acoustic environment;
- (c) employee factors;
- (d) method; and
- (e) audiogramme report.

5.2 Audiometric testing must be conducted by a competent person: audiometric testing as defined in this Code.

## 6. AUDIOMETER

Audiometric equipment is classified as screening or diagnostic equipment and ranges from type 1 to type 4.

### 6.1 Screening Audiometric Equipment

- 6.1.1 At least a type 4 audiometer is used for obtaining hearing threshold limits for baseline, entry, initial, periodic and exit audiometric tests.
- 6.1.2 A type 4 audiometer, specified in IEC 60645, must be used for pure-tone air-conduction measurements of hearing thresholds at the frequencies: 500, 1 000, 2 000, 3 000, 4 000, 6 000 and 8 000 Hz.
- 6.1.3 The type 4 audiometer specified in IEC 60645 provides for measuring amplitude from at least -10 dB to 90 dB.

### 6.2 Diagnostic Audiology Equipment

- 6.2.1 At least a type 3 audiometer is used for obtaining hearing threshold limits for the batch of diagnostic audiology tests.
- 6.2.2 A type 3 audiometer specified in IEC 60645 must be used to measure the hearing thresholds at the frequencies: 125, 500, 1 000, 2 000, 3 000, 4 000, 6 000 and 8 000 Hz and must include at least the following batch of tests-
  - (a) otoacoustic emission testing;
  - (b) pure-tone air-conduction;
  - (c) pure-tone bone-conduction;
  - (d) tympanometry; and
  - (e) speech discrimination.
- 6.2.3 The type 3 audiometer specified in IEC 60645 provides for measuring amplitude from at least -10 dB to 90 dB.

## 7. CALIBRATION OF AUDIOMETER

The audiometer must be calibrated and checked according to the three recognised methods listed below—

- (a) electro-acoustic calibration;
- (b) biological calibration; and
- (c) daily check.

### 7.1 Electro-acoustic Calibration

- 7.1.1 The electro-acoustic calibration must be conducted—
  - (a) before initial use; and
  - (b) thereafter, at intervals not exceeding 12-months: Provided that where an audiometer is either moved from one acoustic environment to another acoustic environment or the acoustic environment where the audiometer is station is changed, that audiometer must be calibrated at least every 3-months, provided that the biological calibration is conducted after each move, prior to testing.
- 7.1.2 The electro-acoustic calibration must be conducted—
  - (a) by a competent person; and
  - (b) in accordance with SANS 10154.
- 7.1.3 The competent person must issue a certificate of compliance which must contain the information required in the relevant parts of SANS 10154.
- 7.1.4 The certificate of compliance may only be issued once any deviations or defects observed have been corrected.
- 7.1.5 The electro-acoustic calibration must be reconducted when any of the components of the audiometer have been replaced.

### 7.2 Biological Calibration

- 7.2.1 The biological calibration must be conducted—
  - (a) on a weekly basis; or
  - (b) whenever the audiometer is moved to a new acoustic environment.
- 7.2.2 The biological calibration must be conducted—
  - (a) by a competent person: audiometric testing; and
  - (b) in accordance with SANS 10154.

7.2.3 Documented evidence of the biological calibration must be kept.

### **7.3 Daily Check**

7.3.1 A daily check must be conducted on the day of testing.

7.3.2 The daily check must be conducted by a competent person: audiometric testing and include at least—

- (a) presence of valid electro-acoustic and biological calibration evidence; and
- (b) verification of the frequencies and decibels to be used, using the monaural pure-tone air-conduction method on at least three of the same frequencies, until the next biological calibration is due.

## **8. ACOUSTIC ENVIRONMENT**

The acoustic environment must comply with the provisions of SANS 10182 with respect to maximum permissible ambient sound pressure levels (MPASPL).

### **8.1 Certification of Acoustic Environment**

- 8.1.1 Audiometry must not be conducted unless the acoustic environment has been certified in accordance with the requirements of SANS 10182.
- 8.1.2 The certification must be conducted by a competent person.
- 8.1.3 The competent person must issue a certificate of compliance for that acoustic environment, which must contain the information required in the relevant parts of SANS 10182.
- 8.1.4 All acoustic environments must be certified before initial use and thereafter at intervals not exceeding 12-months: Provided that, should there be any change that may affect the ambient noise in the acoustic environment, the certification must be reissued immediately.
- 8.1.5 The certificate of compliance may only be issued once any deviations or defects observed have been corrected.
- 8.1.6 An audiometer must not be moved to an acoustic environment that is not certified.
- 8.1.7 No other medical examinations and tests must be conducted in the acoustic environment during the same time that an audiometric test is being conducted.

## **9. EMPLOYEE FACTORS**

For an employee undergoing audiometry, the following variables need to be identified before obtaining the HTLs, by a competent person: audiometric testing, in respect of—

- (a) occupational-acoustic history;
- (b) otoscopic examination; and
- (c) clear instructions.

### **9.1 Occupational-acoustic History**

9.1.1 The occupational-acoustic history is conducted to verify—

- (a) current and previous occupational exposure;
- (b) protective measures taken;
- (c) previous audiograms;
- (d) noise-free preparation time for the current test; and
- (e) other significant history which can affect hearing: medical history, surgical and trauma history, genetic predisposition and social factors.

### **9.2 Otoscopic Examination**

9.2.1 The otoscopic examination is conducted on an employee before the HTLs are obtained to ensure that the test results are not influenced by conductive components.

### **9.3 Clear Instructions**

9.3.1 The competent person: audiometric testing must ensure that the employee undergoing the audiometry understands the instructions given.

## **10. METHODS**

10.1 To produce accurate and reliable HTLs, the audiometric test must only be conducted if the audiometric test methods applied meet the requirements for—

- (a) audiometer;
- (b) acoustic environment; and
- (c) employee factors.

## 11. AUDIOPRAME REPORT

11.1 The minimum information that should appear on the audiogramme report includes—

11.1.1 Demographic information: surname, name, identification number, date of birth, gender;

11.1.2 Occupational information: date of employment, date of termination of employment, employer name, task performed by employee, current noise exposure level, noise-free validation statement, hearing protective devices (HPDs) used;

11.1.3 Calibration: date of electro-acoustic calibration, date of acoustic environment certificate, date of biological calibration;

11.1.4 Audiometric test: date of audiometric test, time of audiometric test, category of audiometric test, date of baseline audiometric test;

11.1.5 Audiometric test results: baseline PLH, audiometric zero, current HTLs, current PLH value, current STS value from audiometric zero, average binaural hearing loss (ABHL), PLH shift from baseline value, results of previous audiometric tests;

11.1.6 Interpretation and case management: interpretation of the results and management of abnormal cases must be based on action criteria determined by the occupational medicine practitioner (OMP); and

11.1.7 Signatures of acknowledgement: employee, competent person: audiometric screening.

11.2 The audiogramme should be depicted in both numerical and graphic format in accordance with IEC 60645.

## 12. AUDIOMETRIC TESTING

### 12.1 Screening Audiometric Testing

12.1.1 Screening audiometric testing, including baseline, entry, initial, periodic and exit audiometry, must be conducted on—

(a) all employees who are to be employed in or who are employed in a noise zone; or

(b) vulnerable employees.

**12.2 Baseline Audiometry**

12.2.1 A baseline audiometric test must be conducted–

- (a) on every employee who meets the requirement of 12.1.1; and
- (b) before or within 30-days of employment.

12.2.2 The baseline audiometric test in terms of 12.2.1 must establish–

- (a) a baseline PLH, which will serve as a reference PLH against which all future PLH shifts will be compared; and
- (b) the audiometric zero for the purpose of calculating the STS against which all future STS will be compared.

12.2.3 To be considered valid, the baseline audiometric test must comply with–

- (a) reliability criteria; and
- (b) validity criteria.

12.2.3.1 Reliability criteria must consist of the following requirements:

- (a) audiometer (clause 6);
- (b) calibration of audiometer (clause 7);
- (c) acoustic environment (clause 8);
- (d) employee factors (clause 9);
- (e) methods (clause 10); and
- (f) audiogramme report (clause 11).

12.2.3.2 Validity criteria as referenced in Instruction 171, Supplement 171,–

- (a) consists of two audiogrammes done–
  - (i) on the same day;
  - (ii) in the same setting;
  - (iii) in two different sittings; and
  - (iv) after at least 16-hours free from any noise exposure without the use of HPDs.
- (b) the hearing thresholds in the two audiogrammes for each ear at any frequency from 500 to the 4 000 Hz must not differ by more than 10 dB.

12.2.4 Once a valid baseline audiometric test has been established, the audiogramme with the lowest PLH will be regarded as the baseline for that employee.

12.2.5 Where a screening audiometric test is unable to establish a valid baseline audiometric test, the screening test must be repeated after another interval

of 16-hours free from exposure to noise (without the use of HPD). If the repeat screening test is still unable to establish a valid baseline audiometric test, the employee must be referred to an audiologist to establish a valid baseline audiometric test using appropriate techniques or methodologies as referenced in Instruction 171. This process must be completed, as far as is reasonably practicable, within the 30-day deadline.

12.2.6 Where a valid baseline audiometric test has not been established or is not available for the period 1 May 2001 to 16 November 2003 or for employees employed in a noise zone after November 2003–

- (a) the baseline PLH will be considered to be 0%; and
- (b) the audiometric zero will be regarded as zero.

### **12.3 Audiometric zero and Standard Threshold Shift**

- 12.3.1 Audiometric zero and STS are recorded for prevention purposes.
- 12.3.2 Audiometric zero is determined from an average calculated at 2 000, 3 000 and 4 000 Hz.
- 12.3.3 The audiometric zero must be used in determining any future deterioration in hearing loss.
- 12.3.4 Determination of audiometric zero
  - 12.3.4.1 For employees employed after the promulgation of the Noise Exposure Regulations, the audiometric zero shall be established from a valid baseline.
  - 12.3.4.2 For employees employed before the promulgation of the Noise Exposure Regulations, the audiometric zero shall be established from their existing baseline.
  - 12.3.4.3 For any employee for whom a valid baseline is not available, the audiometric zero shall be zero.

### **12.4 Entry Audiometry**

- 12.4.1 An entry audiometric test must be conducted–
  - (a) on a new employee who–
    - (i) meets the requirement of 12.1.1; and
    - (ii) previously met the requirement of 12.1.1 at a previous employer;
  - (b) on employees who have a valid baseline or do not have a valid baseline; and
  - (c) before or within 30-days of employment.

CONTINUES ON PAGE 130 OF BOOK 2

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12.4.2 Where reasonably practicable and relevant, a new employee must provide a copy of their baseline audiometric test.

12.4.3 The entry audiometric test must establish—

- (a) PLH shifts from baseline;
- (b) STS comparison against audiometric zero;
- (c) effectiveness of preventive interventions;
- (d) the need for reporting in terms of clause 13; and
- (e) the need for referral for diagnostic audiology.

12.4.4 To be considered valid, the entry audiometric test must comply with—

- (a) reliability criteria; and
- (b) validity criteria.

12.4.4.1 Reliability criteria must consist of the following requirements—

- (a) audiometer (clause 6);
- (b) calibration of audiometer (clause 7);
- (c) acoustic environment (clause 8);
- (d) employee factors (clause 9);
- (e) methods (clause 10); and
- (f) audiogramme report (clause 11).

12.4.4.2 Validity criteria as referenced in Instruction 171, Supplement 171,—

- (a) consists of two audiogrammes done—
  - (i) on the same day;
  - (ii) in the same setting;
  - (iii) in two different sittings; and
  - (iv) after at least 16-hours free from any noise exposure without the use of HPDs; and
- (b) the hearing thresholds in the two audiogrammes for each ear at any frequency from 500 to 4 000 Hz must not differ by more than 10 dB.

12.4.5 Once a valid entry audiometric test has been conducted, the audiogramme with the lowest PLH will be regarded as the entry audiometric test for that employee.

**12.5 Initial Audiometry**

12.5.1 An initial audiometric test must be conducted on every employee exposed to noise in terms of 12.1.1 where there is no valid baseline and/or valid entry audiometric test.

12.5.2 An initial audiometric test must be conducted–

- (a) on an employee who meets the requirement of 12.1.1; and
- (b) within 18-months of the publication of the Noise Exposure Regulations and this Code.

12.5.3 The initial audiometric test must establish–

- (a) PLH shifts from baseline;
- (b) STS comparison against audiometric zero;
- (c) effectiveness of preventive interventions;
- (d) the need for reporting in terms of clause 13; and
- (e) the need for referral for diagnostic audiology.

12.5.4 To be considered valid, the initial audiometric test must comply with–

- (a) reliability criteria; and
- (b) validity criteria.

12.5.4.1 Reliability criteria must consist of the following requirements–

- (a) audiometer (clause 6);
- (b) calibration of audiometer (clause 7);
- (c) acoustic environment (clause 8);
- (d) employee factors (clause 9);
- (e) methods (clause 10); and
- (f) audiogramme report (clause 11).

12.5.4.2 Validity criteria as referenced in Instruction 171, Supplement 171–

- (a) consist of one audiogramme; and
- (b) must be conducted after at least 16-hours free from any noise exposure without the use of HPDs.

**12.6 Periodic Audiometry**

12.6.1 A periodic audiometric test must be conducted on every employee who meets the requirement of 12.1.1;

12.6.2 The periodic audiometric test must be conducted–

- (a) every 12-months for exposures–

- (i) at or above 85 dBA but less than 105 dBA; or
- (ii) at or above 82 dBA with concomitant exposure to ototoxic chemical agents and/or whole body vibration but less than 105 dBA;
- (b) every 6-months for exposures at or above 105 dBA;
- (c) every 6-months for exposures at or above 135 dBC; or
- (d) at more frequent intervals if recommended by the occupational health practitioner (OHP) based on clinical evidence.

12.6.3 For an employee whose STS has not exceeded 25 dB over a period of 3-years, an OMP may extend the frequency of periodic audiometric test to—

- (a) 24-months for employees exposed in terms of 12.6.2 (a); and
- (b) 12-months for employees exposed in terms of 12.6.2 (b).

12.6.4 The periodic audiometric test must establish—

- (a) PLH shifts from baseline;
- (b) STS comparison against audiometric zero;
- (c) effectiveness of preventive interventions;
- (d) the need for reporting in terms of clause 13; and
- (e) the need for referral for diagnostic audiology.

12.6.5 To be considered valid, the periodic audiometric test must comply with—

- (a) reliability criteria; and
- (b) validity criteria.

12.6.5.1 Reliability criteria must consist of the following requirements—

- (a) audiometer (clause 6);
- (b) calibration of audiometer (clause 7);
- (c) acoustic environment (clause 8);
- (d) employee factors (clause 9);
- (e) methods (clause 10); and
- (f) audiogram report (clause 11).

12.6.5.2 Validity criteria as referenced in Instruction 171, Supplement 171—

- (a) consists of one audiogram; and
- (b) where reasonably practicable, must be conducted after a period of at least 16-hours free from any noise exposure without the use of HPDs: Provided that the correct wearing of HPDs while performing work in a

noise zone prior to the periodic audiometric test must be deemed as meeting the 16-hour period free from noise exposure.

## 12.7 Diagnostic Audiology

12.7.1 A diagnostic audiometric test must be conducted on all employees exposed to noise in terms of 12.1.1, where—

- (a) screening audiometry identifies a PLH shift greater than 10% from baseline;
- (b) the hearing loss pattern suggests NIHL; and
- (c) screening audiometry identifies an STS shift of 25 dB or more from audiometric zero.

12.7.2 To be considered valid, the diagnostic audiometric test must comply with—

- (a) reliability criteria; and
- (b) validity criteria.

12.7.2.1 Reliability criteria must consist of the following requirements—

- (a) audiometer (clause 6);
- (b) calibration of audiometer (clause 7);
- (c) acoustic environment (clause 8);
- (d) employee factors (clause 9);
- (e) methods (clause 10); and
- (f) audiogramme report (clause 11).

12.7.2.2 Validity criteria as referenced in Instruction 171, Supplement 171, includes—

- (a) a test conducted by an audiologist or ENT specialist;
- (b) two sets of the battery of diagnostic audiometric tests;
- (c) a period of at least 24-hours free from any noise exposure without the use of HPDs;
- (d) a test conducted on the same day; and
- (e) two diagnostic audiometric tests that do not differ by more than 10 dB at any frequency used to determine the PLH.

12.7.3 Where, after 3 attempts by the audiologist, it is not possible to obtain a diagnostic audiogramme that meets the validity criteria, the employee must be referred to an ENT specialist, as soon as reasonably practicable, to determine the hearing loss.

- 12.7.4 Where, after 3 attempts by the ENT specialist, it is not possible to obtain a diagnostic audiogramme that meets the validity criteria, the test must be deferred for a period of 6-months.
- 12.7.5 The diagnostic audiometric test used to compensate an employee for NIHL must be deemed as that employee's new baseline.

## **12.8 Exit Audiometry**

- 12.8.1 An exit audiometric test must be conducted on every employee who was exposed to noise in terms of 12.1.1.
- 12.8.2 The exit audiometric test must be conducted within 30-days prior to or 30-days after date of termination of employment in a noise zone.
- 12.8.3 A valid audiometric test conducted within 6-months prior to date of termination of employment shall be deemed to have fulfilled the requirements of an exit audiometric test.
- 12.8.4 The exit audiometric test must establish–
  - (a) PLH shifts from baseline;
  - (b) STS comparison against audiometric zero;
  - (c) effectiveness of preventive interventions;
  - (d) the need for reporting in terms of clause 13; and
  - (e) the need for referral for diagnostic audiology.
- 12.8.5 To be considered valid, the exit audiometric test must comply with–
  - (a) reliability criteria; and
  - (b) validity criteria.
  - 12.8.5.1 Reliability criteria must consist of the following requirements–
    - (a) audiometer (clause 6);
    - (b) calibration of audiometer (clause 7);
    - (c) acoustic environment (clause 8);
    - (d) employee factors (clause 9);
    - (e) methods (clause 10); and
    - (f) audiogramme report (clause 11).
  - 12.8.5.2 Validity criteria as referenced in Instruction 171, Supplement 171, includes–
    - (a) one audiogramme; and
    - (b) where reasonably practicable, a period of at least 16-hours free from any noise exposure without the use of HPDs: Provided that the correct

wearing of HPDs while performing work in a noise zone prior to the periodic audiometric test must be deemed as meeting the 16-hour period free from noise exposure

### **13. ACTION CRITERIA AND REPORTING**

13.1 The OHP must determine the–

- (a) audiometric zero and STS; and
- (b) PLH and PLH shift from baseline.

#### **13.2 STS of 10 dB to less than 25 dB**

13.2.1 Where a STS of 10 dB to less than 25 dB is reached, the OHP must–

- (a) determine the type of hearing loss, such as NIHL and/or other causes of hearing loss;
- (b) confirm whether the hearing loss is work-related;
- (c) stipulate the frequency of subsequent periodic audiometric tests; and
- (d) report the case to the OMP and employer.

13.2.3 The employer must–

- (a) conduct an investigation to determine–
  - (i) the effectiveness of the hierarchy of controls with respect to engineering and administrative controls and HPDs;
  - (ii) if additional control measures need to be implemented; and
  - (iii) compliance with correct use of control measures;
- (b) ensure that the employee is retested in line with the stipulated frequency of periodic audiometric testing recommended by the OMP;
- (c) stipulate the frequency of the retraining of the employee in the use of and compliance with control measures implemented;
- (d) inform the health and safety committee and/or the health and safety representative; and
- (e) determine whether a review of the hearing conservation programme is warranted.

#### **13.3 STS of 25 dB or more**

13.3.1 Where a STS of 25 dB or more is reached, the OHP must ensure that the employee is referred–

- (a) to the OMP for further evaluation; and

(b) for diagnostic audiology.

13.3.2 Where diagnostic audiology confirms a STS of 25 dB or more and is work-related, the OMP must–

- (a) issue a medical certificate of fitness that stipulates whether the employee is still fit to continue to work in a noise zone or not; and
- (b) report the STS to the Chief Inspector of the Department of Employment and Labour.

**13.4 PLH shift of 10% or more**

13.4.1 Where screening audiometry identifies a PLH shift of 10% or more from baseline or from previously compensated diagnostic PLH, the OHP must ensure that the employee is referred to the OMP for further case management.

13.4.2 The OMP must–

- (a) confirm if the hearing loss is noise induced and work-related; and
- (b) refer the employee for diagnostic audiology.

**13.5 Confirmation of a PLH shift of 10% or more**

13.5.1 Where diagnostic audiology confirms a PLH shift of 10% or more from baseline or from previously compensated diagnostic PLH, the OHP must ensure that the employee is referred to the OMP for further evaluation.

13.5.2 The OMP must–

- (a) confirm that the hearing loss pattern is commensurate with NIHL;
- (b) issue a medical certificate of fitness that stipulates whether the employee is still fit to continue to work in a noise zone or not;
- (c) stipulate the frequency of subsequent periodic audiometric tests; and
- (d) report the case to–
  - (i) the employer; and
  - (ii) the Chief Inspector of the Department of Employment and Labour.

13.5.3 The employer must–

- (a) conduct an investigation to determine–
  - (i) the effectiveness of the hierarchy of controls with respect to engineering and administrative controls and HPDs;
  - (ii) if additional control measures need to be implemented; and
  - (iii) compliance with correct use of control measures;

- (b) ensure that the employee is retested in line with the stipulated frequency of periodic audiometric testing recommended by the OMP;
- (c) stipulate the frequency of the retraining of the employee in the use of and compliance with control measures implemented;
- (d) inform the health and safety committee and/or the health and safety representative;
- (e) determine whether a review of the hearing conservation programme is warranted; and
- (f) report the case to the Compensation Commissioner.

### **13.6 Date of diagnosis of compensable NIHL**

- 13.6.1 The date of diagnosis of compensable NIHL shall be the date on which the medical practitioner diagnosed the disease for the first time, based on a shift in PLH of 10% or more from–
  - (a) baseline; or
  - (b) previously compensated diagnostic PLH.

## **14. RECORDS**

- 14.1 The employer must keep a record of the following–
  - (a) all audiometry conducted;
  - (b) all documents relating to reliability and validity criteria; and
  - (c) investigations into STS and PLH shifts.
- 14.2 The employer must ensure that an employee is provided with a copy of baseline and exit audiometric tests upon termination of employment.



## **employment & labour**

Department:  
Employment and Labour  
**REPUBLIC OF SOUTH AFRICA**

# **Explanatory Notes to Noise Exposure Regulations 2024**

**Chief Directorate: Occupational Health and Safety**

**FOREWORD**

The purpose of this document is to provide guidance to all employers, employees and the public alike, who are responsible for or concerned with the control and prevention of exposure to noise in the workplace.

This guide does not replace the Noise Exposure Regulations of 2024. It is intended to give practical insight into the application of the Regulations. It should always be read in conjunction with the Occupational Health and Safety Act of 1993, Act 85 of 1993 as amended, Noise Exposure Regulations and the any other applicable legislation and referenced standards.

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## Introduction

The Noise Exposure Regulations speak to a programme approach which should be integrated into existing occupational health and safety programmes. A hearing conservation programme is a documented, systematic process for anticipating, identifying, analysing and controlling exposure to noise through the sub-regulations of the Noise Exposure Regulations. The hearing conservation programme strives to prevent initial occupational hearing loss, preserve and protect remaining hearing, and equip employees and employers with the knowledge of effects of noise on health, controls in place to prevent hearing loss and hearing protection devices necessary to safeguard themselves.

The programme must include at least the role and responsibilities of the following stakeholders; the employer, employees, OHS representatives and committees, suppliers, manufacturers, approved inspection authorities and relevant health professionals. It is important to acknowledge that noise is not addressed in isolation, but in conjunction with other workplace hazards.

The practical benefits of controlling the exposure to noise may have a real and direct impact on productivity and performance. Some of the benefits may include, but not limited to:

- Labour – improved health, well-being and safety of employees.
- Business – improved productivity, efficiency and prevention of occupational incidents and adverse health effects.
- Government – a workplace that is safe and without risk to the health of employees.

## Regulation 2: Scope of application

These Regulations apply at any workplace, as defined by the Occupational Health and Safety Act, Act 85 of 1993 as amended (OHS Act), and are intended to protect the health and safety of any person (as prescribed in Sections 8 and 9 of the OHS Act) who may be exposed to noise in the workplace.

## Regulation 3: Exposure to noise

The extent of exposure to noise at the workplace, as determined by the noise exposure risk assessment and exposure monitoring report, needs to be adequately controlled.

**Regulation 4: Information, instruction and training**

The provision of information, instruction and training for any person who may be exposed to noise is essential, in order to assist employers and employees in reducing the exposure to noise. The employer must ensure the employee is knowledgeable about noise, to understand the requirements imposed on them by the Regulations.

Before any instruction and training is provided to any person, the employer should consult with relevant health and safety representatives and or health and safety committee members on aspects of the Regulations, which have an impact on the training programme.

The training must be delivered by a competent person. However, the Noise Exposure Regulations, regulation 4(4) does not stipulate whether training must be provided by an external service provider or not. However, regardless of whether an internal employee or external service provider is used, the requirements of regulation 4(4) still apply. The employer must ensure that they obtain suitable information, which is specific to that workplace, in order to provide effective training.

Information and training must be planned carefully and presented on commencement of employment. Thereafter, the frequency of training should occur at least annually. However, the reoccurrence of training may be made more frequent by the health and safety representatives and or health and safety committee, taking into account aspects of this Regulations, as well as the severity of the risks. The frequency may vary for different sections in a workplace.

All role players who have a responsibility for the implementation of a hearing conservation programme for that workplace, should receive necessary training relating to the identified noise in the workplace.

The scope of training included in the regulation is the minimum content of a training programme and must be specific to the hazards identified and controls implemented at that workplace. However, the employer should provide a suitable training programme that is understandable to all their employees and any other persons exposed. An employer should

also verify that any person that has received training in terms of these Regulations, has understood the training they have received.

The employer would be required to present at least the following portfolio of evidence:

- competence of the person who provided the training,
- attendance of training, and
- training content framework.

#### **Regulation 5: Duties of persons exposure to noise**

Employees or any other person exposed to noise at the workplace, have a moral and legal duty to comply with any lawful instruction and procedure (written or oral) given by or on behalf of employers. In addition, employees must comply with the requirements laid down by the OHS Act and other applicable regulations. These instructions and procedures may differ from one workplace to another because workplaces are not identical.

#### **Regulation 6: Duties of designers, manufacturers, importers and suppliers**

Designers, manufacturers, importers and suppliers must take account of potential noise exposure in the workplace during the design, implementation and operational phases, so as to contribute to the elimination or mitigation of noise in the workplace.

Designers, manufacturers, importers and suppliers should provide an employer with sufficient information regarding the performance, operation, and safety requirements of plant or machinery and design parameters. This information should be factored into any exposure risk assessment or exposure monitoring or during a review of such, to mitigate risk associated with any noise identified.

Noise exposure needs to be taken into account in all steps of the life cycle of the plant, machinery or workplace. To support the above, the following should be taken into account by the designer, manufacturer, importer and supplier:

- the design, installation, operation, maintenance and decommissioning should be considered;
- employee characteristics, behaviours and duties;

- foreseeable operating conditions including emergencies;
- the interface between the employee and *plant, machinery or workplace*;
- instructions, technical information, training information, warning signs, safe operation and disposal requirements must be provided; and
- where applicable, SANS standards.

### **Regulation 7: Noise exposure risk assessment**

It is the duty of the employer to conduct an exposure risk assessment for all tasks where an employee is exposed to noise. The exposure risk assessment must be carried out by a competent person. A competent person may draw on the expertise of others when conducting the exposure risk assessment.

The exposure risk assessment should include at least the following steps:

- identifying the work process and or task which generate noise
- identifying the employees who are exposed to the noise
- determining the extent of exposure (noise, ototoxic chemical agents or whole-body vibration)
- evaluating control measures
  - existing control measures
  - efficacy of existing control measures
- considering additional control measures
- analysing, evaluating and rating the risk
- implementing recommendations directed at eliminating or mitigating exposure to noise

### **Regulation 8: Noise exposure monitoring**

Noise exposure monitoring is the systematic process of measuring the magnitude, frequency and duration of exposure to noise. Once the exposure monitoring has been completed, the recommendations identified in the exposure monitoring report needs to be considered. Thereafter, an action plan must be drafted to address the identified recommendations, where reasonably practicable.

### **Regulation 9: Medical screening and medical surveillance**

The Noise Exposure Regulations 9 and Code of Practice for Audiometry provide the employer, employee and health and safety professional with the requirements to be implemented for medical screening and medical surveillance. The below information is provided in support of those requirements.

Medical surveillance, i.e. audiometry, is an integral part of a hearing conservation programme. Audiometric testing should be based on the findings of the noise exposure risk assessment. Only vulnerable employees or employees employed into a noise zone should be subjected to audiometric testing.

The employer would be required to present at least the following portfolio of evidence:

- competence of the person who conducted the audiometric test,
- the type of audiometer, appropriate for screening or diagnostic,
- calibration of audiometer, and
- calibration of the acoustic environment.

### **Regulation 10: Prevention or control of exposure to noise**

Exposure to a noise should be mitigated to the lowest reasonably practicable level by implementing a progressive combination of the hierarchy of controls.

The hierarchy of controls is a step-by-step approach to eliminate or mitigate workplace hazards. It ranks controls from the most effective level of protection to the least effective level of protection. When choosing a control method, start from the top of the list below. Assess the feasibility of the first layer of controls (elimination) before moving on to the second layer (engineering controls). Continue this process until you reach the bottom of the list and have identified as many controls as possible to adequately protect the employee from the hazard.

The hierarchy of controls are listed as follows –

1. Elimination: Elimination is the process of removing the hazard from the workplace. It is the most effective way to control a risk because the hazard is no longer present. It

is the preferred way to control a hazard and should be used whenever possible.

Examples may include:

- Not introducing noise into the workplace, e.g. lower noise emitting equipment purchasing practices.
- Redesigning the job or task so that noise is eliminated from the workplace.

2. Engineering controls: The objective of engineering controls is to prevent exposure to noise. Engineering controls can be built into the design of a plant, machinery, or process. Engineering controls are a very reliable way to control employee exposures when the controls are designed, used, and maintained properly. Examples of engineering controls are:

- substitution of the process or plant and machinery
- enclosures – placing the material or process in a closed system (e.g., enclosed machines, booths, etc.)
- isolation and or shielding – separating employees from the hazard by distance or the use of barriers
- sound absorption along the transmission path
- maintenance of plant and machinery

3. Administrative controls: Administrative controls involve developing procedures to ensure the work is conducted in a way that minimizes the hazard and exposure. Administrative controls are ranked lower and have more limitations than elimination and engineering controls because this method does not necessarily eliminate or mitigate the hazard from the workplace. Administrative controls should be used in combination with other control measures where possible.

Examples of administrative control include:

- developing or changing policies, implementing or improving training and education, and developing or enhancing work practices and procedures, such as -
  - using job-rotation schedules or a work-rest schedule that limit the amount of time an employee is exposed to noise.
  - implementing a preventative maintenance programme to keep plant and machinery in proper working order.
  - scheduling maintenance and other high exposure operations for times when minimal employees are present (such as evenings, weekends).
  - restricting access to a work area.
  - restricting the task to only those competent or qualified to perform the work.
  - using signs to demarcate noise zones.

**Regulation 11: Noise zone**

The signage used to demarcate a noise zone, should be-

- placed in a location which would make the signage clearly visible
- clearly legible

The employer or self-employed person should consider any relevant standards for signage.

**Regulation 12: Hearing protective devices**

Hearing Protective Devices (HPD) refers to anything employees wear to help protect them from exposure to noise. HPDs should be used as a complementary control measure, in addition to elimination, engineering, or administrative controls.

HPDs limits exposure to the harmful effects of a hazard but only if the PPE is worn and used correctly. It is important that there is consultation at the workplace in the fitting and selection of assigned HPDs , to ensure that the HPD is fit for use.

Employers should obtain written confirmation from the manufacturers, importer or supplier, that the chosen HPDs provide the correct attenuation, to reduce the exposure to noise to below the legislated limits.

**Regulation 13: Maintenance of control measures**

The employer should implement a planned maintenance programme for all control measures implemented to eliminate or mitigate the exposure to noise.

The evaluation of the control measures must be done through inspections and tests, analysis of incident reports, medical surveillance reports and exposure monitoring reports. Recommendations to any identified or reported deficiency in the control measures, need to be implemented to make sure that the control measure is working effectively.

The noise exposure risk assessment must be updated to reflect any changes made to a control measure for noise exposure.

#### **Regulation 14: Records**

Well-kept records are documented information which may provide input to the exposure risk assessment process. The records may provide documented proof between the exposure to noise and adverse health effects caused by the resultant exposure, as well as what control measures were implemented to eliminate or mitigate exposure.

With regard to access to medical surveillance records, the medical surveillance records imply-

- audiometric tests' results (screening and diagnostic)
- audiometric questionnaires
- ENT reports (where relevant)
- any other report relating to a noise exposure and NIHL diagnosis

The causal relationship between exposure to noise and diagnosis, may occur over a period of time, hence necessitating the long period of retention of records.

The Regulations does not specify the format on how records should be stored, i.e. electronically or hardcopy. Whichever method of storage the employer chooses to use, the records should be accessible and readable to the person accessing the records. The records should also have controlled access, taking into account protection of confidential employee information.

## DEPARTMENT OF EMPLOYMENT AND LABOUR

NO. 5954

6 March 2025

**OCCUPATIONAL HEALTH AND SAFETY ACT, 1993 (ACT NO. 85 OF 1993)****GENERAL SAFETY REGULATIONS, 2025**

The Minister of Employment and Labour has, under section 43(1)(a) and (b) of the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993), after consultation with the Advisory Council for Occupational Health and Safety, made the regulations in the Schedule.

**MS N METH, MP****MINISTER OF EMPLOYMENT AND LABOUR****DATE:** 04 February 2025

## NOTICE REGARDING AMENDMENT TO GENERAL SAFETY REGULATIONS

## Regulation 2. Personal Safety Equipment and Facilities

(1) [Subject to the provisions of paragraph (f), (g), (h) and (i) of regulation 5 of the General Administrative Regulations published under Government Notice R2206 of 5 October 1984,] Every employer and every use of machinery shall make an evaluation of the risk attached to any condition or situation which may arise from the activities of such employer or user, as the case may be, and to which persons at a workplace or in the course of their employment or in connection with the use of machinery are exposed, and he shall take such steps as may under the circumstances be necessary to make such condition safe.

Regulation 13H: Housekeeping

(1) A user of machinery shall provide and maintain sufficient clear and unobstructed space at every machine to enable work to be carried out without danger to persons.

(2) An employer shall -

(a) with the exclusion of workplaces where building work is performed, make at least 2.25 square meters of effective open floor area available for every employee working in an indoor workplace;

(b) make available and maintain an unimpeded work space for every employee;

(c) keep every indoor workplace clean, orderly and free of materials, tools and similar things which are not necessary for the work done in such work place;

(d) keep all floors, walkways, stairs, passages and gangways in a good state of repair, skid-free and free of obstructions, waste or materials;

(e) keep the roof and walls of every indoor workplace sound and leak-free;

(f) board over or fence, or enclose with rails or guards, or take other measures which may be necessary under the circumstances to ensure the safety of persons, all openings in floors, all hatchways and all stairways and any open sides of floors or buildings through or from which persons are liable to fall: Provided that such boarding or guarding may be omitted or removed for the time and to the extent necessary for the access of persons or the movement of material; and

(g) erect a catch platform or net above an entrance or passageway or above a place where persons work or pass, or fence off the danger area if work is being performed above such entrance, passageway, place or danger area and there is a possibility of persons being struck by falling objects.

(3) No employer shall require or permit any person to, and no person shall, dispose of any article from a high place except by hoist or chute unless arrangements have been made to secure the safety who may be struck by falling objects.

Regulation 13I: Precaution against flooding:

(1) Where a substantial risk exists that a workplace may be flooded, the employer shall take measures to be informed forthwith of any imminent flooding.

(2) Every employer shall take measures to be informed forthwith of any imminent flooding from constructions for conserving water, or which may cause water to converge or accumulate on his premises, and shall, prior to the erection of such a construction, give notice in writing to all persons situated in the danger zone below such construction of the possibility of flooding owing to such construction.

Regulations 13J: Fire precaution and means of egress;

(1) In order to expedite the evacuation of a workplace in case of fire, every employer shall ensure that -

(a) any emergency escape door from any room or passage or at a staircase shall, as far as is practicable, be hung so as to open outwards;

(b) every door of a room in which persons may be present, and every door of a passage or at a staircase serving as a means of exit from such room, shall be kept clear and capable of being easily and rapidly opened from inside so as to ensure quick and easy evacuation;

(c) the provisions of paragraphs (a) and (b) shall also be complied with in respect of the outer escape exit from the workplace;

(d) staircases and steps leading from one floor to another or to the ground shall be provided with substantial hand-rails;

(e) staircases intended to be used as fire escapes shall -

(i) be constructed of non-combustible material;

(ii) be kept clear of any material or other obstruction; and

(iii) not terminate in an enclosed area;

(f) staircases, passages and exits intended for escape purposes shall be of a width and of a gradient which will facilitate the quick and safe egress of the number of persons intended to make use of them; and

(g) having regard to the size, construction and location of a workplace, the number of persons, and the activity therein, such workplace is provided with at least two means of egress situated as far apart as is practicable.

(2) Having regard to the size, construction and location of the workplace, and the amount and type of flammable articles used, handled or stored on the premises, an employer shall provide on the premises an adequate supply of suitable fire-fighting equipment at strategic locations or as may be recommended by the fire chief of the local authority concerned, and such equipment shall be maintained in good working order.

**Regulation 14: Offences and penalties**

Any person who contravenes or fails to comply with any provision of regulation 2(1), 2(2), 2(4), 2(5), 2(6), 2A, 2C, 3, 4, 5, 6, 7, 8(1), 8(2), 8(3), 8(4), 9, 10(1), 10(2), 10(3), 10(4), 11(1), 12, [13A, 13B, 13C, 13D, 13E, 13F, 13G], 13H, 13I or 13J shall be guilty of an offence and liable, on conviction to a fine or to imprisonment for a period not exceeding six months and, in the case of a continuous offence, to an additional fine of R200 for each day on which the offence continues, or to additional imprisonment of one day for each day on which the offence continues: Provided that the period of such additional imprisonment shall in no case exceed 90 days.

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