

## DEPARTMENT OF LABOUR

Government Notice. R: 2281

16 October 1987

### Environmental Regulations for Workplaces, 1987

The Minister of Manpower has, in terms of section 35 of the Machinery and Occupational Safety Act, 1983 (Act 6 of 1983) made the regulations contained in the Schedule hereto.

#### SCHEDULE

##### Definitions

1. In these regulations "the Act" means the Machinery and Occupational Safety Act, 1983 (Act 6 of 1983), and any expression to which a meaning has been assigned in the Act shall have the meaning so assigned and, unless the context indicates otherwise -

"acclimatised" means physiologically adapted to a particular thermal environment and work rate;

"attenuation" means the proven capability of hearing protectors to reduce the equivalent noise level to which the wearer thereof is exposed;

"building work" means work defined as such in regulation 1 of the General Administrative Regulations promulgated in terms of section 35 of the Act and published under Government Notice R. 2206 of 5 October 1984;

"dB (A)" means a unit of measurement of sound pressure level as contemplated in SABS 083;

"directional luminaire" means a luminaire from which the light radiation is confined to a well-defined narrow beam;

"equivalent noise level" ... replaced by "equivalent sound pressure level";  
[substituted by G.N.R.489 of 18 March 1994]

"equivalent sound pressure level" is the value of the equivalent continuous sound level which would deliver the same amount of sound energy as the actual fluctuating sound, measured over the same time period, and

"equivalent noise level" has a corresponding meaning;

[inserted by G.N.R.489 of 18 March 1994]

"exposed" means exposed whilst at work, and "exposure" has a corresponding meaning;

[added by G.N.R.489 of 18 March 1994]

"exposure limit" means a value as defined in the Asbestos Regulations, 1987, promulgated in terms of section 35 of the Act and published under Government Notice R 773 of 10 April 1987;

“hearing protectors” means ear muffs or ear plugs of a type approved by the chief inspector and in respect of which an efficiency test as prescribed by SABS 572 has been conducted by the South African Bureau of Standards or an approved inspection authority;

“heat stroke” means a pathological condition arising from thermoregulatory failure of the human body;

“illuminance” means the intensity of light falling on a surface, measured in lux;

“luminaire” means a light fitting which supports a lamp and provides it with electrical connections;

“noise zone” means an area where the equivalent noise level is equal to or exceeds 85 dB (A) when measured in accordance with SABS 083;

“regional director” means the regional director as defined in regulation 1 of the General Administrative Regulations published under Government Notice No. R.2206 of 5 October 1984 and amended by Government Notice No R.2131 of 1990;

[inserted by G.N.R.489 of 18 March 1994]

“respiratory protective equipment” means a device as defined in the Asbestos Regulations, 1987, promulgated in terms of section 35 of the Act and published under Government Notice R. 773 of 10 April 1987;

“SABS 083” means the South African Bureau of Standards’ Code of Practice for the Measurement and Assessment of Occupational Noise for Hearing Conservation Purposes, SABS 083;

“SABS 1451: Part I” South Africa Standard. Standard Specification for Hearing Protectors, Part I: Ear muffs;

[inserted by G.N.R.489 of 18 March 1994]

“SABS 1451: Part II” South African Standard. Standard Specification for Hearing Protectors, Part II: Ear plugs;

[inserted by G.N.R.489 of 18 March 1994]

“SABS 572” ... deleted

[deleted by G.N.R.489 of 18 March 1994]

“time-weighted average” means the average of a number of representative measurements that are taken over a period of time and that are calculated as follows:

$$\text{Time-Weighted average} = \frac{x_1t_1 + x_2t_2 + x_3t_3 + \dots + x_n.t_n}{t_1 + t_2 + t_3 + \dots + t_n}$$

where  $x_1$ ,  $x_2$ , etc., are the observed measurements during the corresponding periods  $t_1$ ,  $t_2$ , etc., minutes, and  $t_1 + t_2 + t_3 + \dots + t_n$  is the total time in minutes over which the measurements are taken;

“WBGT index” means a number which characterises the thermal conditions in the environment to which that number applies; it is calculated by adding seven tenths of the reading in degrees Celsius obtained with a naturally ventilated wet-bulb thermometer to one fifth of the reading in degrees Celsius obtained with a globe thermometer and adding that sum to one tenth of the reading in degrees Celsius obtained with a dry-bulb thermometer; the index may also be obtained by using

an electronically integrating direct-reading instrument which has been designed, built and calibrated for that particular purpose;

“working plane”, means a horizontal plane at the level where work is performed.

### Thermal requirements

2. (1) Subject to the provisions of subregulation (2), no employer shall require or permit an employee to work in an environment in which the time-weighted average dry-bulb temperature taken over a period of four hours is less than 6°C, unless the employer takes reasonable measures to protect such employee against the cold and further takes all precautions necessary for the safety of such employee: Provided that, where outdoor work is performed, the employer shall take such measures and such precautions in an environment in which the actual dry-bulb temperature is less than 6°C at any time.

(2) No employer shall require or permit an employee to work in a refrigerated environment in which the actual dry-bulb temperature is below 0°C unless -

(a) the maximum exposure of the employee does not exceed the periods as indicated in the following table :

| Temperature °C                                  | Maximum exposure  |
|---|---|
| 0° to -18°                                      | No limit.   |
| Lower than -18° but not lower than -34° degrees | Maximum continuous exposure during each hour = 50 minutes. After every exposure in a low-temperature area at least 10 minutes must be spent, under supervisions, in a comfortably warm environment. |
| Lower than -34° but not lower 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.  |

(b) the employee is provided with the following protective clothing:

- (i) A nylon freezer suit or equivalent and, where the said temperature is below -34°C, such suit or equivalent shall be of double layer;
- (ii) a woolen Balaclava or equivalent;
- (iii) fur-lined leather gloves or equivalent;
- (iv) waterproof outer gloves with knitted woolen or equivalent inners as well as a waterproof apron where wet or thawing substances are handled;
- (v) woolen socks; and
- (vi) waterproof industrial boots or equivalent;

Provided that an employee who works in a low-temperature area in which the temperature is not lower than - 18°C for periods not exceeding five minutes in

every hour need only be provided with an ordinary overall, gloves shoes, or equivalent;

(c) the employee is, beforehand and thereafter, at intervals not exceeding one year, certified fit to work in such environment by a registered medical practitioner or a registered nurse according to a protocol prescribed by such practitioner, and such employee is issued with a certificate to that effect; and

(d) all the clothing worn by the employee is dry prior to entering the low-temperature area.

(3) Where hand-held tools which vibrate at a frequency of vibration of less than 1 000 Hz are used at an actual dry-bulb temperature below 6°C, the employer shall provide an employee operating such tools with lined gloves, and ensure that he wears them.

(4) Where the time-weighted average WBGT index, determined over a period of one hour, exceeds 30 in the environment in which an employee works, the employer of such employee shall -

(a) if practicable, take steps to reduce the said index to below 30; or

(b) where it is not practicable to reduce the said index to below 30 and where hard manual labour is performed-

(i) have every such employee beforehand and thereafter, at intervals not exceeding one year, certified fit to work in such environment by a registered medical practitioner or a registered nurse according to a protocol prescribed by such practitioner, and every such employee shall, if found fit to work in such environment, be issued with a certificate to that effect by such practitioner or nurse;

(ii) ensure that every such employee is acclimatised to such working environment before he is required or permitted to work in such environment;

(iii) inform every such employee of the need to partake of at least 600 millilitres of water every hour;

(iv) train every such employee in the precautions to be taken to avoid heatstroke; and

(v) provide the means whereby every such employee can receive prompt first-aid treatment in the event of heatstroke:

Provided that, where the question arises as to whether any particular type of work does in fact constitute hard manual labour, the decision of an inspector shall be decisive.

## **Lighting**

3. (1) Every employer shall cause every workplace in his undertaking to be lighted in accordance with the illuminance values specified in the Schedule to these regulations: Provided that where specialised lighting is necessary for the performance of any particular type of work, irrespective of whether that type of work is listed in the Schedule or not, the employer of those employees who

perform such work shall ensure that such specialized lighting is available to and is used by such employees.

(2) The chief inspector may, by notice in the Gazette, from time to time modify the Schedule to these regulations as he deems necessary.

(3) With respect to the lighting to be provided in terms of subregulation (1), the employers shall ensure that -

(a) the average illuminance at any floor level in a workplace within five meters of a task is not less than one fifth of the average illuminance on that task;

(b) glare in any workplace is reduced to a level that does not impair vision;

(c) lighting on rotating machinery is such that the hazard of stroboscopic effects is eliminated; and

(d) luminaires and lamps are kept clean and, when defective, are replaced or repaired forthwith.

(4) With a view to the emergency evacuation of indoor workplaces without natural lighting or in which persons habitually work at night, every employer shall, in such workplaces, provide emergency sources of lighting which are such that, when activated, an illuminance of not less than 0.3 lux is obtained at floor level to enable employees to evacuate such workplaces: Provided that where it is necessary to stop machinery or shut down plant or processes before evacuating the workplace, or where dangerous materials are present or dangerous processes are carried out, the illuminance shall be not less than 20 lux.

(5) An employer shall ensure that the emergency sources of lighting prescribed by subregulation (4) -

(a) are capable of being activated within 15 seconds of the failure of the lighting prescribed by subregulation (1);

(b) will last long enough to ensure the safe evacuation of all indoor workplaces;

(c) are kept in good working order and tested for efficient operation at intervals of not more than three months; and

(d) where directional luminaires are installed, these are mounted at a height of not less than two meters above floor level and are not aimed between 10° above and 45° below the horizontal line on which they are installed.

(6) An employer engaged in building work shall cause all rooms, stairways, passageways, gangways, basements and other places where danger may exist through lack of natural light, to be lighted such that it will be safe.

## **Windows**

4. (1) In order to effect visual contact with areas outside a workplace, where employees work the majority of their shift in a room of which the floor area is less than 100 square meters, the employer of such employees shall cause every such room to be provided with windows in such a way that -

(a) the total glazed area of such windows is not less than three fifths of the square root of the floor area of the room, both areas measured in square meters;

(b) the window sills are not higher and the window heads are not lower than one and a half meters above the floor level of the room; and

(c) such windows are glazed with transparent material.

(2) Unless an inspector otherwise directs, the provisions of subregulation (1) shall not apply under conditions where natural light will have an adverse effect on the process or material used in a room, or where the process in a room has to be conducted under critical conditions of light, temperature, humidity or air movement, or where the judgement of texture or colour in a room has to be done under conditions of constant lighting quality and intensity, or where, for reasons of safety, privacy or security, compliance with the intended provisions becomes impracticable.

(3) Where the penetration of direct sunlight into any workplace may pose a threat to the safety of persons in such workplace, the employer concerned shall ensure that such workplace is screened to avoid such penetration, but retaining, as far as is practicable, outside visual contact.

## **Ventilation**

5. (1) An employer shall ensure that every workplace in his undertaking is ventilated either by natural or mechanical means in such a way that -

(a) the air breathed by employees does not endanger their safety;

(b) the time-weighted average concentration of carbon dioxide therein, taken over an eight-hour period, does not exceed one half per cent by volume of air;

(c) the carbon dioxide content thereof does not at any time exceed three per cent by volume of air;

(d) the prescribed exposure limits for airborne substances therein are not exceeded; and

(e) the concentration therein of any explosive or flammable gas, vapour or dust does not exceed the lower explosive limit of that gas, vapour or dust.

(2) Where the measures prescribed by subregulation (1) are not practicable, or where there is a danger of unsafe air in the breathing zone of an employee, the employer shall provide every such employee with, and ensure that he correctly uses, respiratory protective equipment of a type that reduces the exposure of the employee to a safe level and the employer shall, further, inform him of the dangers of and the precautionary measures against excessive exposure.

(3) The provisions of subregulation (1) (b) and (c) shall not apply in respect of workplaces where the ambient pressure differs by more than 20 percent from atmospheric pressure at sea level.

## Housekeeping

6. (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.

## Noise and hearing conservation

7. (1) This regulation shall apply to all employers (herein referred to as employer) at a workplace where the equivalent noise level (equivalent sound pressure level) resulting from activities at such workplace, to which any person in such workplace is exposed, is 85 dB (A) or higher.

(2) Subject to the provisions of subregulations (3) and (4), no employer shall require or permit an employee to work in an environment in which he is exposed to an equivalent noise level equal to 85 dB(A) or higher.

(3) The employer shall reduce the equivalent noise level to below 85 dB(A) or, where this is not reasonably practicable, he shall reduce the level to as low as

is reasonably practicable and take all reasonable steps to isolate the source of the noise acoustically.

(4) Where the equivalent noise level in any workplace cannot be reduced to below 85 dB(A), as contemplated in subregulation (3), the employer shall -

(a) demarcate the boundaries of all noise zones in such workplace by posting up notices to that effect in conspicuous places along such boundaries and at all entrances to and exits from any room where the whole of such room constitutes a noise zone; and

(b) prohibit any person from entering a noise zone unless such person wears hearing protectors.

(5) In the case of building work where it is not reasonably practicable to comply with the provisions of subregulation (4)(a) owing to the nature or extent of the premises, the employer shall post up such notices at all exits from and entrances to such premises or where this is not reasonably practicable, display such notices in a conspicuous place as close as possible to the actual workplace or in such place as an inspector may direct.

(6) Whenever an inspector is of the opinion that the employer has omitted or failed to reduce the equivalent noise level in a noise zone to as low as is reasonably practicable or to isolate the source of the noise acoustically, he may require such employer, by notice in writing, to take such further steps as such inspector considers reasonable and practicable for the purpose of conserving the hearing of employees entering or working in such noise zone.

(7) The employer shall provide, free of charge, hearing protectors to each employee who works in or, to any person who is required or permitted to enter a noise zone, and no employer shall require or permit any person to work in or enter such noise zone, and no person shall work in or enter such noise zone, unless he wears such hearing protectors in the correct manner: Provided that where the equivalent noise level to which employees are exposed, is such that the attenuation of the hearing protectors does not reduce the said noise to below 85 dB(A) the employer concerned shall limit the time during which employees work in that noise zone in such a way that they are not exposed to an equivalent noise level equal to 85 dB(A) or higher.

(8) The hearing protectors which the employer shall provide in terms of subregulation (7), shall be -

(a) for the sole use of a specific person: Provided that if an inspector is satisfied that the employer has taken adequate precautionary measures to ensure that the common use of hearing protectors will not result in the spreading of infectious or contagious diseases, he may in writing, authorize the common use of hearing protectors;

(b) maintained by the employer in an efficient and hygienic condition at all times; and

(c) stored in a clean, dust-free container provided by the employer when not in use.

(9) The employer shall properly instruct any person who is required to wear hearing protectors in the use of such protectors and inform him of noise zones where the wearing thereof is compulsory.

(10) The employer shall -

(a) ensure that every employee employed in a noise zone is subjected to audiometric examinations conducted in accordance with section 7 of SABS 083, by an audiometrist approved by the chief inspector;

(b) keep records of the results of each audiometric examination and make such records available for inspection by an inspector if he so requires; and

(c) keep such records for a minimum period of 30 years after termination of employment: Provided that if the employer ceases activities all such records shall be forwarded to the regional director.

(11) In order to comply with the provisions of subregulation (4)(a), the employer shall obtain the services of an approved inspection authority, or an employee whose ability is verified by an approved inspection authority to ensure that noise zones are determined in accordance with section 4 of SABS 083.

### **Precautions against flooding**

8. (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.

### **Fire precautions and means of egress**

9. (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.

### **Offences and penalties**

10. Any person who contravenes or fails to comply with any provision of regulation 2, 3(1), 3(3), 3(4), 3(5), 3(6), 4(1), 4(3), 5(1), 5(2), 6, 7, 8 or 9 shall be guilty of an offence and liable on conviction to a fine not exceeding R1 000 or to imprisonment for a period not exceeding six months and, in the case of a continuous offence, to an additional fine of R5 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.

### **Withdrawal of regulations**

The following regulations are hereby withdrawn:

(a) Regulations B.1 (1), B.1 (2), B.1 (3), B.1 (4), B.2, B.5, B.11, B.13, B.15 and B.17, published under Government Notice R. 929 of 28 June 1963, as amended by Government Notice R. 2237 of 30 November 1973;

(b) regulations C.10, C.11 and C.12, published under Government Notice R.929 of 28 June 1963; and

(c) regulation D.4, published under Government Notice R. 1934 of 13 December 1963, as amended by Government Notice R. 3475 of 9 October 1969.

### **Short title**

12. These regulations shall be called the Environmental Regulations for Workplaces, 1987.

**Schedule**  
**Minimum average values of maintained illuminance**  
**(Measured on the working plain)**

| <b>Location/Industry</b>                 | <b>Place or type of activity</b>  | <b>Lux</b> |
|--|---|------------|
| <b>Abattoirs(See also outdoor areas)</b> | Cold store, casting & stunning pens   | 100        |
|  | Bleeding area, slaughtering   | 150        |
|  | Dressing, evisceration, washing, tripery and skin sorting   | 200        |
|  | Inspection and grading  | 300        |
|  | Boning, cleaning, grinding, packing, & cutting  | 200        |
|  | Manufacture of by-products  | 100        |
| <b>Ablutions</b>                         | Wash-rooms, toilets & changing rooms  | 100        |
| <b>Abrasive blasting</b>                 | Sand or other   | 200        |
| <b>Aircraft manufacture</b>              | Stock park production   | 300        |
|  | Drilling, sheet aluminium layout, template work, wing section, cowling, welding, sub-assembly, landing gear, fuselage, final assembly | 200        |
|  | Maintenance and repairs (hangers)   | 200        |
|  |   |            |
| <b>Assembly plants</b>                   | Rough work, eg frame assembly, heavy machinery assembly   | 100        |
|  | Medium work, eg machined parts, engine assembly, vehicle body assembly  | 200        |
|  | Fine work, eg radio & telephone equipment, typewriter & office machinery assembly   | 500        |
|  | Very fine work, eg small precision assembly   | 1000       |
| <b>Bakeries</b>                          | Mixing & make-up rooms, oven rooms, wrapping rooms  | 100        |
|  | Decorating and icing  | 200        |
|  | General working areas   | 100        |
| <b>Banks</b>                             | Counters (See also Offices)   | 300        |
|  | General working areas   | 200        |
| <b>Blacksmith</b>                        | General working area  | 75         |
|  | Tempering   | 50         |
| <b>Boiler houses</b>                     | Coal and ash handling   | 75         |
|  | Boiler rooms  | 100        |
| <b>Bookbinding</b>                       | Folding, pasting, punching, stacking  | 200        |
|  | Cutting, assembly, embossing  | 300        |

|   |   |     |
|---|---|-----|
|   | Finishing, blocking, inlaying and inspection  | 500 |
| <b>Boot and shoe</b>  | Sorting and grading   | 500 |
|   | Clicking & closing: Preparatory operations  | 500 |
|   | Cutting table & presses, stitching  | 500 |
|   | Bottom stock prep, lasting, bottoming, finish   | 500 |
|   | Shoe rooks  | 500 |
|   |   |     |
| <b>Box, carton &amp; paper bag making</b>                                     | Corrugated boards, cartons, containers & bag manufacture, coating & laminating  | 150 |
|   | Associated printing   | 200 |
| <b>Brewing, distilling &amp; softdrinks</b>                                   | General working area  | 100 |
|   |   |     |
|   | Brewing, bottling & canning plants  | 300 |
|   | Bottle inspection   | 300 |
| <b>Building &amp; construction</b>  | Industrialized building plants  | 200 |
|   | Concrete shops  | 150 |
|   | General working areas   | 20  |
|   | Walkways and access   | 5   |
| <b>Canning &amp; preserving</b>   | Inspection of products  | 300 |
|   | Preparation, kettle areas, mechanical cleaning, dicing, trimming  | 200 |
|   | Canned and bottle goods: retorts  | 150 |
|   | High speed labelling lines  | 200 |
|   | Can and bottle inspection   | 300 |
|   | Automatic processes   | 25  |
| <b>Carpet making</b>  | Winding, beaming  | 150 |
|   | Designing, Jacquard card cutting, patter work, tufting, topping, cutting, hemming, fringing                                     | 200 |
|   | Weaving, mending, inspection  | 300 |
|   | Dyeing  | 400 |
| <b>Cement, asbestos, etc. gypsum, talc, etc, products &amp; moulded goods</b> | Fiberising, mixing, shredding, agitating, flat & corrugated sheets & moulding goods mnf   | 200 |
|   |   |     |
|   | Pipe & pole manufacture: mixing, spinning, reinforcing, stripping   | 150 |
| <b>Cement manufacture</b>   | Control room, milling, conveying, drying, pumping, burners platform, coal plant milling feeding, bagging, bulk filling, loading | 150 |
|   |   |     |
|   | Vertical control panel face   | 200 |

|  |   |      |
|--|---|------|
| <b>Ceramics</b>                                | See Pottery & clay products   |      |
| <b>Chemical works (See also Outdoor areas)</b> | Hand furnaces, boiling tanks, stationary driers, stationary or gravity crystallizers, mechanical driers, evaporators, filtration plants, mechanical crystallizing, bleaching percolators, nitrators, electrolytic cells | 100  |
|  | Controls, guages, valves, etc   | 100  |
|  | Control rooms: Vertical control panels  | 200  |
|  | Control desks   | 200  |
|  | General working areas   | 100  |
| <b>Clothing</b>                                | Matching up   | 300  |
|  | Sorting, cutting, sewing  | 300  |
|  | Pressing, cloth treating  | 200  |
|  | Inspections, hand tailoring   | 500  |
| <b>Cold stores</b>                             | General working areas   | 100  |
| <b>Confectionery (chocolates &amp; sweets)</b> | Mixing, blending, boiling   | 100  |
|  | Husking, winnowing, fat extraction, crushing, refining, feeding, bean cleaning, sorting, milling, cream making  | 150  |
|  | Hand decorating, inspection, wrapping, packing.   | 200  |
| <b>Court rooms</b>                             | Seating   | 100  |
|  | Court   | 300  |
| <b>Dairies</b>                                 | General working areas   | 150  |
|  | Bottle inspection   | 300  |
|  | Bottle filling  | 300  |
|  | Despatching   | 100  |
| <b>Die-sinking &amp; engraving</b>             | General   | 200  |
|  | Fine  | 500  |
|  | Hand engraving  | 500  |
| <b>Dry cleaning</b>                            | See Laundering and dry cleaning   |      |
| <b>Dye works</b>                               | Reception, 'grey perching'  | 500  |
|  | Wet processes   | 150  |
|  | Dry processes   | 150  |
|  | Dyers offices   | 500  |
|  | Final perching (examination)  | 1500 |
| <b>Electrical goods manufacture</b>            | Impregnating processes, mica working  | 150  |

|   |   |     |
|---|---|-----|
|   | Coil and armature processes : general   | 200 |
|   | fine (instrument coils)   | 400 |
| <b>Electricity generating stations (See also Outdoor areas)</b> | Turbine halls (operating floor)   | 200 |
|   | Blowers, auxiliary generators   | 100 |
|   | Transformer chambers, etc   | 75  |
|   | Cable tunnels   | 50  |
|   | Battery and charging equipment rooms  | 100 |
|   | Boiler front (operating floor)  | 150 |
|   | Between boilers (operating floor), stairs, & operating platforms, & precipitator high voltage chamber | 100 |
|   | Pulverizers, feeders, ash plant, conveyors (tunnel, junction tower)                                   | 75  |
|   | Boiler house and turbine house basements  | 100 |
|   | Pump houses & rooms, water treatment plant  | 100 |
|   | Overland conveyor housing walkways  | 50  |
|   | Control rooks: vertical control panel face  | 200 |
|   | rear of control panel   | 100 |
|   | control desks   | 200 |
|   | Computer room   | 500 |
|   | Switch houses & rooms   | 150 |
|   | Relay and telecommunication rooms   | 200 |
|   | Nuclear reactors and steam raising plants   | 150 |
|   | Reactor areas, boilers, galleries   | 150 |
|   | Gas circulator bays   | 150 |
|   | Reactor charge / discharge face   | 150 |
|   | High voltage substations  | 100 |
| <b>Fire stations</b>  | Appliance rooms   | 100 |
|   | External rooms  | 30  |
| <b>Forging</b>  | General   | 100 |
| <b>Foundries</b>  | Charging floor, tumbling, cleaning, shaking out, rough moulding and core making                       | 100 |
|   | Fine moulding and core making , inspection  | 200 |
| <b>Furniture factories</b>                                      | Raw materials store   | 50  |
|   | Finished goods store  | 75  |
|   | Wood machining and assembly   | 150 |

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|--|--|-----|
|  | Rough sawing and cutting   | 150 |
|  | Machining, sundry & assembly of components   | 250 |
|  | Cabinet making: veneer sorting & preparation   | 500 |
|  | : veneer pressing  | 250 |
|  | : components store   | 75  |
|  | : fitting & final inspection   | 400 |
|  | Upholstery: cloth selection  | 750 |
|  | : filling, covering  | 250 |
|  | : slipping   | 400 |
|  | : cutting, sewing  | 400 |
|  | Mattress making: assembly  | 250 |
|  | : tape edging  | 500 |
|  | Tool rooms : general   | 250 |
|  | : benches  | 400 |
|  | Spray booths: colour finishing   | 250 |
|  | : clear finishing  | 150 |
| <b>Garages</b>                               | Parking areas (interior)   | 50  |
|  | Washing, polishing, greasing   | 100 |
|  | Servicing pits   | 100 |
|  | Repairs  | 200 |
|  | Work bench   | 250 |
|  | Apron fuel pumps   | 100 |
| <b>Gasworks (See also<br/>Outdoor areas)</b> | Retort houses, oil gas plants, purifiers, coke<br>screening and coke handling plants                       | 50  |
|  | Governor, meter, compressor, booster, and<br>exhauster houses  | 75  |
| <b>Gauge &amp; tool rooms</b>                | General  | 500 |
| <b>General factory areas</b>                 | Canteen / dining rooms   | 100 |
|  | Cloak rooms  | 100 |
|  | Entrances  | 100 |
|  | Rest rooms   | 100 |
|  | First aid rooms  | 100 |
| <b>Glass processing</b>                      | Furnace rooms, bending, annealing ovens,<br>mixing rooms, forming (blowing, drawing,<br>pressing, rolling) | 100 |
|  | Cutting to size, grinding, polishing, toughen  | 150 |
|  | Finishing (bevelling, decorating, etching,<br>silvering)   | 200 |

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|   | Brilliant cutting   | 500  |
|   | Inspections: general  | 150  |
|   | : fine  | 500  |
| <b>Glove making (See also Clothing)</b> | General working areas   | 300  |
| <b>Hat making (See also Clothing)</b>   | Stiffening, braiding, cleaning, refining  | 200  |
|   | Forming, sizing, punching, flanging, finishing, ironing   | 100  |
|   | General working areas   | 100  |
| <b>Hosiery &amp; knitwear</b>           | Circular and flat knitting machines, universal winders, cutting out, folding and pressing   | 200  |
|   | Lock stitch and overlocking machines  | 300  |
|   | Mending: light goods  | 800  |
|   | : dark goods  | 1000 |
|   | Examining and hand finishing: light goods   | 400  |
|   | : dark goods  | 800  |
|   | Linking or running up   | 300  |
| <b>Hotels &amp; restaurants</b>         | Entrance halls  | 100  |
|   | Reception and accounts  | 200  |
|   | Stairs, corridors   | 100  |
|   | Laundries   | 150  |
|   | Kitchens  | 150  |
|   | General working areas   | 50   |
| <b>Inspection areas (engineering)</b>   | Rough work, eg counting, rough visual checks  | 100  |
|   | Medium work, eg 'go-no go' gauges   | 200  |
|   | Sub-assemblies  | 200  |
|   | Fine work, eg radio & telecommunications eqpt, 500 calibrated scales, precision mechanisms, instruments   | 500  |
|   | Very fine work, eg gauging & inspection of small intricate parts  | 1000 |
|   | Minute work   | 1500 |
| <b>Iron and steel</b>                   | Slab yards, melting shops, ingot stripping, soaking pits, blast furnace working areas, pickling & cleaning lines, mechanical pump houses, slapping & large section rolling mill | 75   |
|   | Moulding preparation, light section, wire and   | 100  |

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|   | cold strip mills, mill inspections and conditioning, sheet & plate finishing, tinning, galvanizing and roll shops |      |
|   | Plate inspection  | 200  |
|   | Tinplate inspection & pulpits (control rooms)   | 200  |
|   | General working areas   | 75   |
| <b>Jewellery &amp; watchmaking</b>            | Fine processes  | 500  |
|   | Minute processes  | 3000 |
|   | Gem cutting, polishing & setting  | 1000 |
| <b>Laboratories &amp; test rooms</b>          | General laboratories, balance rooms   | 200  |
|   | Electrical & electronic instrument labs   | 300  |
|   | Calibrated scales, precision mechanical instruments   | 300  |
| <b>Laundering &amp; dry cleaning</b>          | Receiving, sorting, washing, drying, ironing, (calendering), despatch   | 150  |
|   | Dry cleaning, bulk machine work   | 150  |
|   | Hand ironing, pressing, inspection, mending   | 200  |
|   | Spotting  | 250  |
| <b>Leather &amp; tanning</b>                  | Vats, cleaning, tanning, stretching, cutting, fleshing and stuffing   | 100  |
|   | Finishing, staking, splitting   | 150  |
|   | Pressing and glazing  | 300  |
|   | Cutting, scarfing and sewing  | 500  |
|   | Grading and matching  | 500  |
| <b>Libraries, museums &amp; art galleries</b> | Shelves   | 100  |
|   | Binding   | 300  |
|   | Cataloging, sorting   | 200  |
|   | General working areas   | 100  |
| <b>Lifts</b>                                  | Car interior  | 100  |
|   | Motor rooms   | 300  |
| <b>Machine shops &amp; fitters benches</b>    | Rough bench & machinery work, rough checking and stock parts  | 100  |
|   | Medium bench and machine work, ordinary automatic machines, rough grinding, medium buffing and polishing          | 200  |
|   | Fine bench & machinery work, fine automatic machines, medium grinding, fine buffing & polishing                   | 500  |

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|                                  | Extra-fine bench & machine work, fine grinding  | 800  |
| <b>Materials handling</b>        | Wrapping, packing, labelling, despatch  | 150  |
|                                  | Sorting stock, classifying, loading   | 100  |
| <b>Milling (flour)</b>           | Cleaning, grinding, rolling, purifying, silks and packing                               | 150  |
|                                  | Wetting tables, product control   | 200  |
| <b>Motor vehicle manufacture</b> | General sub-assemblies, chassis assembly, trim. shops, body sub-assembly, body assembly | 200  |
|                                  | Upholstery  | 400  |
|                                  | Final inspection  | 300  |
| <b>Offices</b>                   | Spray booths (See paint shops & spraying booths).                                       |  |
|                                  | Entrance halls and reception areas  | 100  |
|                                  | Conference rooms, general offices, typing & filing                                      | 300  |
|                                  | Computer and business machine operators   | 500  |
| <b>Outdoor areas</b>             | Drawing offices   | 500  |
|                                  | Abattoirs: lairage  | 20   |
|                                  | : race  | 50   |
|                                  | Ash handling, precipitator & fan area   | 20   |
|                                  | Bulk loading / unloading areas where manual operations are performed                    | 50   |
|                                  | Bulk loading / unloading areas where operations are performed mechanically              | 10   |
|                                  | Cool-water screens  | 20   |
|                                  | Fuel pumps  | 100  |
|                                  | Storage areas (excluding dumps)   | 5  |
|                                  | Water clarification plant & storage tanks (operating areas)                             | 50   |
|                                  | Marshalling yards   | 10   |
|                                  | Main entrances and exits  | 20   |
|                                  | Transformer and reactor terrain   | 20   |
|                                  | High voltage yard, distribution & substation  | 10   |
|                                  | Gangways, catwalks, stairways, etc  | 20   |
|                                  | Conveyor structure  | 10   |
|                                  | <b>Paint manufacture</b>  | Filling, blending, dispersion & reactor platform |
| Batch mixing                     |   | 300  |
| Colour matching                  |   | 300  |

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| <b>Paint shops and spraying booths</b>     | Rubbing, dipping, ordinary painting, spraying and finishing   | 200  |
|  | Fine painting, spraying and finishing   | 300  |
|  | Retouching and matching   | 500  |
| <b>Paper &amp; paper board manufacture</b> | Paper and board making: Machine houses, calendering, pulp mills, preparation plants, cutting, finishing, trim.                            | 150  |
|  | Inspection and sorting (overhauling)  | 200  |
|  | Paper converting processes: general   | 150  |
|  | : associated printing   | 200  |
| <b>Passages &amp; lobbies</b>              | All areas   | 75   |
| <b>Pharmaceutical &amp; fine chemical</b>  | Raw material storage  | 150  |
|  | Control laboratories and testing  | 200  |
|  | Pharmaceutical manufacture:   |  |
|  | grinding, granulating, mixing, drying, tableting, sterilizing, washing, preparation of solutions, filling, labelling. capping, inspection | 200  |
|  | Fine chemical manufacture: plant processing   | 150  |
|  | : fine chemical finishing   | 200  |
| <b>Photographic<br/>Plastics</b>           | Safety light: dark room   | 5  |
|  | Manufacture (See Chemical Works)  |  |
|  | Processing:   |  |
|  | calendering, extrusion  | 200  |
|  | moulding - compression, injection, blowing  | 150  |
|  | Sheet fabrication:  |  |
|  | shaping   | 150  |
|  | trimming, machining, polishing  | 200  |
|  | cementing   | 150  |
|  | <b>Plating</b>  | Vats & baths, buffing, polishing, burnishing |
| <b>Post offices</b>                        | Counters  | 200  |
|  | General working areas   | 100  |
| <b>Pottery and Clay products</b>           | Grinding, filter pressing, kiln room, moulding, pressing, cleaning, trimming, glazing, firing   | 200  |
|  | Enamelling, colouring, decorating   | 300  |
| <b>Printing -</b>                          | Type foundries:   |  |
|  | Matrix making, dressing type, hand and machine casting  | 150  |
|  | Font assembly, sorting  | 300  |

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|   | Printing plants:  |     |
|   | Machine composition, imposing stones  | 150 |
|   | presses   | 200 |
|   | composition room  | 300 |
|   | proof reading   | 300 |
|   | Electrotyping:  |     |
|   | Block-making, electroplating, washing, backing  | 150 |
|   | Moulding, finishing, routing  | 200 |
|   | Photo-engraving: Block making, etching, masking   | 200 |
|   | Finishing, routing  | 300 |
|   | Colour printing: inspection areas   | 500 |
| <b>Refrigeration</b>                          | Chilling and cold rooms, icemaking  | 100 |
| <b>Rubber processing</b>                      | Stock & fabric preparation  | 150 |
|   | Dipping, moulding, compounding, calendering   | 150 |
|   | Tyre and tube making  | 200 |
|   | Curing and inspection   | 300 |
| <b>Schools &amp; educational institutions</b> | Stairs, corridors   | 100 |
|   | Class and lecture rooms   | 200 |
|   | General working areas   | 100 |
| <b>Sheet metal</b>                            | Benchwork, pressing, punching, shearing stamping, spinning, folding                           | 150 |
|   | Scribing  | 200 |
|   | Sheet inspection  | 300 |
| <b>Shops, store rooms and warehouses</b>      | Stair, corridors  | 100 |
|   | General working areas   | 100 |
| <b>Soap manufacture</b>                       | All processes, eg kettle houses & ancillaries batch or continuous soap rooting, soap stamping | 150 |
|   | General areas   | 100 |
|   | Vertical control panel face   | 200 |
|   | Edible product processing & packing   | 150 |
| <b>Stairs, escalators &amp; ramps</b>         | General   | 100 |
| <b>Storage battery manufacture</b>            | General   | 100 |
| <b>Structural steel</b>                       | General   | 100 |

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| <b>fabrication</b>                        | Marking off   | 200 |
| <b>Sugar</b>                              | Manufacture: crushing, settling, evaporating, boiling, curing, drying, packing        | 100 |
|   | Refining: centrifuging, metering, filtering, condensing                               | 100 |
|   | Planning, mixing, drying  | 200 |
|   | Grading, colour inspection  | 500 |
| <b>Surgeries, hospitals &amp; clinics</b> | Stairs, corridors   | 100 |
|   | General working areas   | 100 |
| <b>Tailoring</b>                          | Hand tailoring  | 500 |
| <b>Telephone exchanges</b>                | Manual exchange rooms (on desk)   | 100 |
|   | Main distribution frame rooms in automatic exchanges                                  | 200 |
|   | Battery rooms   | 100 |
| <b>Textile (cotton or linen)</b>          | Bale breaking, blowing, carding   | 100 |
|   | Roving, slubbing, spinning (ordinary counts), winding, hackling, spreading, cabling   | 100 |
|   | Warping, slashing, dressing, dyeing, doubling(fancy), spinning (fine counts)          | 150 |
|   | Heading (drawing in)  | 500 |
|   | Weaving: patterned cloth  | 500 |
|   | plain 'grey' cloth  | 500 |
|   | Cloth inspection  | 500 |
| <b>Textile (jute)</b>                     | Weaving, spinning flat, jacquard carpet looms, top winding                            | 150 |
|   | Yarn calender   | 100 |
| <b>Textile (silk or synthetic)</b>        | Soaking, fugitive tinting, conditioning or setting of twist                           | 150 |
|   | Spinning  | 300 |
|   | Winding, twisting, rewinding & combing, quilling, slashing                            | 200 |
|   | Warping   | 200 |
|   | Healding (drawing in)   | 500 |
|   | Weaving, finishing  | 500 |
|   | Inspection  | 500 |
| <b>Textile (woollen)</b>                  | Scouring, carbonizing, teasing, preparing, raising, brushing, pressing, back-washing, | 100 |

|   |  |      |
|---|--|------|
|   | gilling, crabbing and blowing  |      |
|   | Blending, carding, combing (white), tentering<br>drying, cropping            | 150  |
|   | Spinning, roving, winding, warping, combing<br>(coloured), twisting          | 300  |
|   | Healding (drawing in)  | 500  |
|   | Weaving:   |      |
|   | fine worsteds  | 500  |
|   | medium worsteds, fine woollens   | 300  |
|   | Heavy woollens   | 200  |
|   | Burling, mending   | 500  |
|   | Perching:  |      |
|   | 'grey'   | 500  |
|   | Finals   | 1500 |
| <b>Theatres, cinemas &amp;<br/>halls</b>                                  | Stairs, corridors  | 100  |
|   | Booking offices  | 200  |
|   | Projection rooms   | 150  |
| <b>Tobacco</b>  | Primary manufacture: weighing, blending,<br>conditioning, threshing, cutting | 100  |
|   | Cigarette making: manufacturing processes,<br>filter plug-making             | 500  |
|   | Inspection (catcher)   | 500  |
|   | Cigarette or tobacco packing   | 500  |
| <b>Upholstering</b>   | Furniture and vehicles   | 200  |
| <b>Warehouses &amp; bulk<br/>storage (See also<br/>Material handling)</b> | Small materials, racks, packing & despatch                                   | 150  |
|   | Issue counters   | 200  |
|   | Loading bays, large materials  | 75   |
|   | Inactive storage   | 20   |
| <b>Welding &amp; soldering</b>  | Gas & arc welding, rough spot welding  | 150  |
|   | Medium soldering, brazing & spot welding (eg.<br>domestic hardware)          | 500  |
|   | Fine soldering & spot welding, eg. instruments<br>radio set assembly         | 500  |
|   | Very fine soldering & spot welding eg electronic<br>printed circuits         | 1500 |
| <b>Woodworking &amp;</b>  | Rough sawing & bench work, sizing, planing,                                  | 150  |

|                   |  |     |
|-------------------|--|-----|
| <b>sawmilling</b> | rough sanding  |     |
|                   | Medium machine & bench work, gluing,<br>veneering, cooperage | 200 |
|                   | Fine bench & machine work, fine sanding and<br>finishing     | 200 |

### **Incorporation of Safety Standards**

#### **MACHINERY AND OCCUPATIONAL SAFETY ACT, 1983**

Under the powers vested in me by section 36(1) of the Machinery and Occupational Safety Act, 1983 ( Act 6 of 1983), I, Pieter Theunis Christiaan du Plessis, Minister of Manpower, hereby incorporate the South African Bureau of Standards Code of Practice for the Measurement and Assessment of Occupational Noise for Hearing Conservation Purposes, SABS 083-1983 and the South African Bureau of Standards Specification for the Acoustical Properties of Ear Protectors, SABS 572-1973, into the Environmental Regulations 1987.

P.T.C. DU PLESSIS  
Minister of Manpower