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A10/4/3/4

Circular Instruction No. 171

THE DETERMINATION OF PERMANENT DISABLEMENT RESULTING FROM HEARING LOSS CAUSED BY EXPOSURE TO EXCESSIVE NOISE AND TRAUMA

COMPENSATION FOR OCCUPATIONAL INJURIES AND DISEASES ACT, No. 130 of 1993

1. The following instructions are issued to clarify the position in regard to claims for impairment of hearing:

- An occupational disease due to excessive noise in industry, and
- An occupational injury due to factors other than excessive industrial noise [head trauma (resulting from e.g. blows to the head), or acoustic trauma causing the immediate loss of hearing produced by one or more exposures to sudden intense forms of acoustic energy such as explosions, gunfire or blasts]. Such “accidents” may cause binaural (both ears) or monaural (one ear) impairment of hearing.
- In loss of hearing “by accident” in either one or in both ears the impairment may be caused by either conductive loss when the middle ear is injured or by perceptive loss when the inner ear is injured or by a combination of both conductive and perceptive loss when both the middle and the inner ear are injured – the so-called “mixed deafness”.
- Impairment of hearing claimed to result from exposure to excessive noise in industry (occupational noise of an excessive nature) usually manifests itself over a number of years and results in binaural impairment of hearing.
- The provisions of Section 65(4) of the Act referring to prescription shall be strictly applied with due regard to the provisions of Section 38 of the Act.
- The date of the commencement of the disease shall be the date of the first audiogram showing an increase from the baseline in the percentage loss of hearing (PLH) by 10% or more. The PLH values are calculated using the results of the baseline audiogram and the diagnostic audiogram using the attached tables. Annexure A
- Persons to be submitted for compensation consideration would be:
 - Employees whose PLH has deteriorated by more than 10% PLH from the baseline audiogram; or
 - Employees who have more than 10% PLH and for whom no baseline is available (see section 5).
- A medical opinion must be provided by either:
 - An ENT-specialist if the case is complicated or the degree of disablement is expected to exceed 15% (PLH > 30 % from baseline); or
 - An Occupational Medical Practitioner if the case is uncomplicated and the degree of disablement is expected to be 15% or less (PLH 30% from baseline).

2. BINAURAL HEARING IMPAIRMENT

- In cases where binaural hearing impairment is claimed as a result of mechanical or acoustic trauma, the principles as laid down under paragraph 1.4, 1.5 and 1.6 for occupational hearing loss due to excessive noise in industry apply, with the exception

that the ENT-Surgeon /Occupational Medical practitioner should certify that the impairment found on examination is compatible with the nature of the injury sustained or is due to acoustic trauma of the nature and intensity experienced by the employee and that no other cause(s) for the impairment of hearing were found on examination.

3. MONAURAL HEARING IMPAIRMENT

- o Noise-induced hearing loss affects both ears to more or less an equal degree and the impairment is due to a perceptive loss. If, therefore, the loss of hearing is monaural, it must be assessed whether the loss is commensurate with noise exposure to one ear more than the other such as gun shots in security workers. The assessment of permanent disablement for the loss of hearing in one or both ears as detailed takes cognisance of such additional factors as tinnitus, unhealed perforations of the tympanic membranes with possible recrudescence of infections following thereon and/or mastoidectomies. In the event of recurring infections in the two latter instances, medical treatment should be provided and the employee should receive periodical payments.

4. DOCUMENTATION TO ACCOMPANY A CLAIM FOR COMPENSATION

Claims will be submitted either to the Compensation Commissioner or to the Mutual Association as applicable. Over and above the standard documentation required i.e. Employer's Report of an Occupational Disease/Injury(W Cl.1/2) and Notice of an Occupational Disease/Injury and Claim for Compensation(W Cl.14/3), the following documents are required:

- o **Claimant's service record** - this should confirm in writing exposure to excessive occupational noise. The intensity and duration of exposure should be commensurate with the hearing impairment.
- o It should be proved that the noise was of such a nature and intensity and exposure to it of such duration, as to be likely to have caused permanent noise-induced hearing impairment. The compensability of a claim can only be considered where noise level readings exceed the maximum laid down by the South African Bureau of Standards (S.A.B.S. 083-1983) and which is known as the N85 Noise Rating Curve Level.
- o **Medical opinion** – this should state that the hearing loss is compatible with noise induced hearing impairment. In atypical cases an appropriate explanation should be provided.
- o **Audiograms** – two audiograms conducted by the diagnostic audiologist should be submitted. The audiograms should be performed after at least 24 hours have elapsed from the last exposure to excessive noise. The audiograms may be done on the same day but at different sittings. The audiograms must not differ by more than 10 dB at any frequency. The better diagnostic audiogram will be used to calculate PLH for compensation purposes. If required, a third audiogram shall be performed. If this is still not within the 10dB limit then the assessment shall be delayed for a period of 6 months. If audiograms of the required quality are still not obtained after 6 months then referral to an ENT-specialist will be made in order to determine hearing loss.
- o **A copy of the baseline audiogram** (and calculated PLH)-This is important as the baseline PLH will be subtracted from the better diagnostic audiogram PLH to determine the hearing loss for which the Commissioner, Mutual Association or Employer Individually Liable, is responsible.
- o **Proof of employee's identity** – the audiologist performing the audiogram should attest in writing to the employee's identity.

5. CALCULATION OF PERMANENT DISABLEMENT

- The better of the two diagnostic audiograms will be used: Ensure that all documentation (4) is present and correct.
- Calculate (from PLH tables – Annexure A) a PLH for each of the following frequencies: 500, 1000, 2000, 3000 and 4000 Hz (Air conduction results to be taken except if specified otherwise by the medical officer).
- Sum the values for each frequency to obtain the PLH.
- If a baseline PLH is available this value is subtracted from the PLH obtained from 5.3.
- If a baseline PLH is unavailable the PLH in 5.3 is taken as the value from which permanent disability will be calculated.
- Permanent Disablement is calculated by halving the value of the PLH obtained in either: 5.4 (if a baseline PLH is available) or 5.5 (if a baseline PLH is unavailable).

Annexure A

Determination of percentage loss of hearing

Using the hearing threshold levels (HTL) determined by baseline, periodic screening, exit or diagnostic audiometry (as applicable), determine the contribution to percentage loss of hearing (PLH) from hearing losses at the frequencies of 0,5; 1; 2; 3 and 4 kHz, using Tables A1-1 to A1-5, respectively. Then sum the contributions from the stated frequencies to determine PLH.

Table A1-1

Contribution to PLH by hearing losses at 0,5 kHz

HTL in worse ear (dB)	4 Contribution to PLH by hearing loss at 0,5 kHz in better ear and given hearing loss at 0,5 kHz in worse ear																
	Hearing threshold level in better ear (dB)																
	≤15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	≥95
≤15	0.2																
20	0.4	0.6															
25	0.6	1.0	1.4														
30	1.0	1.4	2.0	2.8													
35	1.3	1.8	2.5	3.4	4.5												
40	1.7	2.2	3.0	3.9	5.1	6.4											
45	2.0	2.6	3.4	4.3	5.5	6.8	8.1										
50	2.3	2.9	3.7	4.7	5.8	7.1	8.4	9.7									
55	2.5	3.2	4.0	5.0	6.1	7.3	8.6	9.9	11.2								
60	2.7	3.4	4.2	5.2	6.3	7.5	8.8	10.0	11.3	12.6							
65	2.8	3.5	4.4	5.4	6.5	7.7	8.9	10.2	11.5	12.7	14.0						

70	2.9	3.7	4.5	5.5	6.6	7.8	9.1	10.3	11.6	12.9	14.2	15.5					
75	3.0	3.8	4.7	5.7	6.8	8.0	9.2	10.5	11.8	13.1	14.5	15.7	16.9				
80	3.1	3.9	4.8	5.8	6.9	8.1	9.3	10.6	12.0	13.3	14.7	16.0	17.2	18.2			
85	3.2	4.0	4.9	5.9	7.0	8.2	9.4	10.7	12.1	13.5	14.9	16.2	17.4	18.4	19.1		
90	3.4	4.1	5.0	6.0	7.1	8.3	9.5	10.8	12.2	13.6	15.0	16.3	17.6	18.5	19.2	19.7	
≤95	3.4	4.2	5.1	6.1	7.1	8.3	9.5	10.8	12.2	13.6	15.0	16.4	17.6	18.6	19.3	19.7	20.0

Table A1-2

Contribution to PLH by hearing losses at 1 kHz

HTL in worse ear (dB)	5 Contribution to PLH by hearing loss at 1 kHz in better ear and given hearing loss at 1 kHz in worse ear																
	Hearing threshold level in better ear (dB)																
	≤15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	≥95
≤15	0.5																
20	0.8	1.2															
25	1.2	1.8	2.7														
30	1.8	2.6	3.8	5.3													
35	2.6	3.5	4.7	6.3	8.5												
40	3.2	4.2	5.6	7.4	9.5	12.0											
45	3.8	4.8	6.3	8.1	10.4	12.8	15.3										
50	4.2	5.4	6.9	8.9	11.0	13.2	15.8	18.2									
55	4.7	5.9	7.5	9.3	11.4	13.7	16.1	18.6	21.0								
60	5.0	6.3	8.0	9.8	11.9	14.1	16.5	18.9	21.3	23.6							
65	5.3	6.6	8.3	10.1	12.2	14.4	16.8	19.2	21.6	24.0	26.3						
70	5.6	6.9	8.6	10.4	12.5	14.7	17.0	19.4	21.9	24.3	26.7	29.1					
75	5.7	7.1	8.7	10.7	12.8	15.0	17.3	19.7	22.2	24.6	27.2	29.6	31.8				
80	5.9	7.4	9.0	11.0	12.9	15.6	17.6	20.0	22.5	25.1	27.6	30.0	32.3	34.1			
85	6.2	7.5	9.3	11.1	13.2	15.5	17.7	20.3	22.7	25.4	27.9	30.5	32.7	34.5	35.9		
90	6.3	7.8	9.5	11.3	13.4	15.5	17.9	20.3	22.8	25.5	28.2	30.6	33.0	34.8	36.2	36.9	
≤95	6.5	8.0	9.6	11.4	13.4	15.6	17.9	20.3	22.8	25.5	28.2	30.8	33.2	35.0	36.3	37.1	37.5

Table A1-3

Contribution to PLH by hearing losses at 2 kHz

HTL in worse ear (dB)	6 Contribution to PLH by hearing loss at 2 kHz in better ear and given hearing loss at 2 kHz in worse ear																
	Hearing threshold level in better ear (dB)																
	≤15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	≥95
≤15	0.3																
20	0.5	0.8															
25	0.8	1.1	1.7														
30	1.1	1.5	2.3	3.2													
35	1.5	2.1	2.9	3.8	5.1												
40	2.0	2.6	3.3	4.4	5.7	7.2											
45	2.3	2.9	3.9	5.0	6.2	7.7	9.2										
50	2.6	3.3	4.2	5.3	6.6	8.0	9.5	11.0									
55	2.9	3.6	4.5	5.6	6.9	8.3	9.6	11.1	12.6								
60	3.0	3.8	4.7	5.9	7.1	8.4	9.9	11.3	12.8	14.1							
65	3.2	3.9	5.0	6.0	7.4	8.6	10.1	11.4	12.9	14.4	15.8						
70	3.3	4.1	5.1	6.2	7.5	8.9	10.2	11.7	13.1	14.6	16.1	17.4					
75	3.5	4.2	5.3	6.5	7.7	9.0	10.4	11.9	13.4	14.9	16.2	17.7	19.1				
80	3.6	4.4	5.4	6.6	7.8	9.2	10.5	12.0	13.5	15.0	16.5	18.0	19.4	20.4			
85	3.6	4.5	5.6	6.6	8.0	9.2	10.7	12.2	13.7	15.2	16.7	18.2	19.5	20.7	21.5		
90	3.8	4.7	5.7	6.8	8.0	9.3	10.7	12.2	13.7	15.3	16.8	18.5	19.8	20.9	21.6	22.2	
≥95	3.9	4.8	5.7	6.9	8.1	9.3	10.7	12.2	13.7	15.3	17.0	18.5	19.8	21.0	21.8	22.2	22.5

Table AI-4

Contribution to PLH by hearing losses at 3 kHz

HTL in worse ear (dB)	7 Contribution to PLH by hearing loss at 3 kHz in better ear and given hearing loss at 3 kHz in worse ear																
	Hearing threshold level in better ear (dB)																
	≤15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	≥95
≤15	0.1																
20	0.2	0.3															
25	0.3	0.5	0.7														
30	0.5	0.7	1.0	1.4													
35	0.7	0.9	1.2	1.7	2.3												
40	0.8	1.1	1.5	2.0	2.5	3.2											
45	1.0	1.3	1.7	2.2	2.7	3.4	4.1										
50	1.1	1.4	1.9	2.3	2.9	3.5	4.2	4.8									
55	1.2	1.6	2.0	2.5	3.0	3.6	4.3	4.9	5.6								

60	1.3	1.7	2.1	2.6	3.1	3.7	4.4	5.0	5.6	6.3							
65	1.4	1.8	2.2	2.7	3.2	3.8	4.4	5.1	5.7	6.4	7.0						
70	1.5	1.8	2.3	2.8	3.3	3.9	4.5	5.2	5.8	6.5	7.1	7.7					
75	1.5	1.9	2.3	2.8	3.4	4.0	4.6	5.2	5.9	6.6	7.2	7.8	8.4				
80	1.6	2.0	2.4	2.9	3.4	4.0	4.7	5.3	6.0	6.6	7.3	8.0	8.6	9.1			
85	1.6	2.0	2.5	3.0	3.5	4.1	4.7	5.4	6.0	6.7	7.4	8.1	8.7	9.2	9.5		
90	1.7	2.1	2.5	3.0	3.5	4.1	4.7	5.4	6.1	6.8	7.5	8.2	8.8	9.2	9.6	9.8	
≤95	1.7	2.1	2.6	3.0	3.6	4.1	4.7	5.4	6.1	6.8	7.5	8.2	8.8	9.3	9.6	9.8	10.0

Table A1-5

Contribution to PLH by hearing losses at 4 kHz

HTL in worse ear (dB)	8 Contribution to PLH by hearing loss at 4 kHz in better ear and given hearing loss at 4 kHz in worse ear																
	Hearing threshold level in better ear (dB)																
	≤15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	≥95
≤15	0.0																
20	0.1	0.1															
25	0.1	0.2	0.3														
30	0.2	0.3	0.5	0.8													
35	0.3	0.5	0.7	1.0	1.5												
40	0.4	0.6	0.9	1.3	1.8	2.5											
45	0.5	0.8	1.1	1.5	2.1	2.7	3.5										
50	0.7	0.9	1.3	1.7	2.3	2.9	3.6	4.4									
55	0.8	1.0	1.4	1.9	2.4	3.1	3.8	4.5	5.2								
60	0.9	1.2	1.5	2.0	2.6	3.2	3.9	4.6	5.3	6.0							
65	0.9	1.2	1.6	2.1	2.7	3.3	3.9	4.6	5.3	6.0	6.7						
70	1.0	1.3	1.7	2.2	2.7	3.4	4.0	4.7	5.4	6.1	6.8	7.5					
75	1.1	1.4	1.8	2.3	2.8	3.4	4.1	4.8	5.5	6.2	6.9	7.6	8.2				
80	1.1	1.4	1.9	2.3	2.9	3.5	4.2	4.9	5.6	6.3	7.0	7.7	8.4	8.9			
85	1.2	1.5	1.9	2.4	3.0	3.6	4.2	4.9	5.7	6.4	7.1	7.8	8.5	9.0	9.5		
90	1.2	1.6	2.0	2.5	3.0	3.6	4.3	5.0	5.7	6.5	7.2	7.9	8.6	9.1	9.5	9.8	
≤95	1.3	1.6	2.0	2.5	3.1	3.7	4.3	5.0	5.7	6.5	7.2	8.0	8.7	9.2	9.6	9.8	10.0