

# COMPENSATION FOR NOISE INDUCED HEARING LOSS

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Of the lesser known health hazards in the mines, noise and resulting noise-induced hearing loss (NIHL) have received little attention in the media, despite being perhaps the most prevalent of all industrial hazards. Noise in the underground mining environment has been investigated by the Chamber of Mines (COM) in South Africa but the results of these investigations are not generally available and the extent and the prevalence of the noise hazard is not known to mineworkers.

The National Union of Mineworkers (NUM), wishing to establish for itself what the noise hazard to its members is, approached the Technical Advice Group (TAG) to conduct a survey into noise and NIHL in the South African gold mines.

Published studies have shown that 2.5% of the entire mining population suffers from compensatable NIHL. The NUM survey has confirmed this, and shows a higher prevalence amongst drillers.

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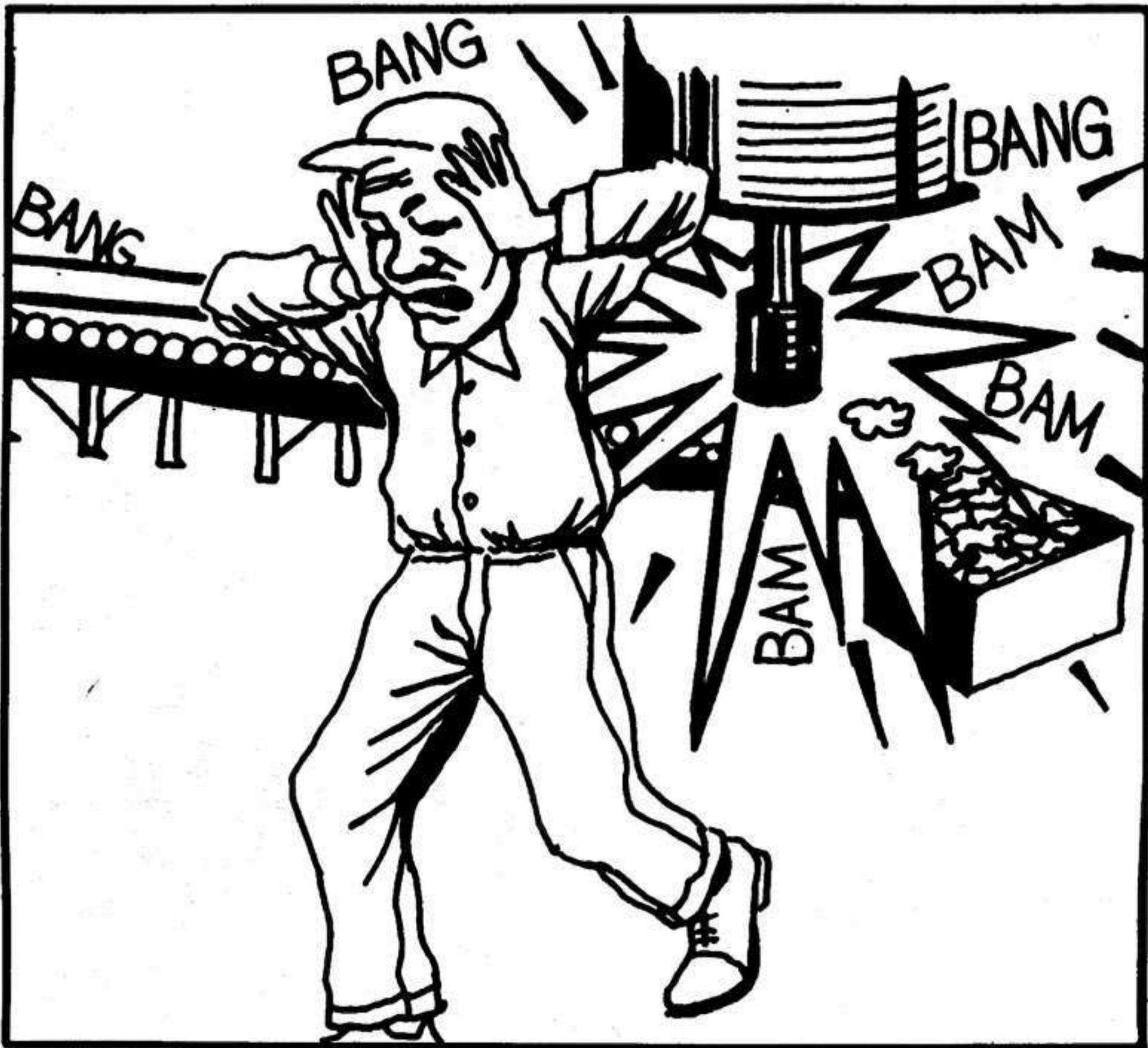
## What is noise-induced hearing loss?

Noise-induced hearing loss (NIHL) is a common occurrence in industry, particularly in the mining industry due to the high levels of noise. It is defined as a permanent hearing impairment due to continuous exposure to noise over a long period. Exposure to a single loud blast which results in a hearing loss is referred to as acoustic trauma.

NIHL affects people gradually: there is no marked reduction in hearing ability in the early stages, only a deterioration in the quality of perception. This may mean that some speech sounds situated in the higher frequencies bands (ie: "s" and "t") become distorted, and the affected person may begin to rely more heavily on visual cues. By the time it is recognised, permanent damage has already begun. The phenomenon of individual susceptibility to noise has been recognised as contributing to the degree of hearing loss in relation to the time exposure.

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Thus the importance of NIHL as a recognised occupational disease has been underplayed by employers and state health authorities. Workers themselves have not paid much attention to this occupational disease for the following reasons: fear of dismissal, being unaware of the condition in its early stages, fear of loss of wages due to transfer of jobs.



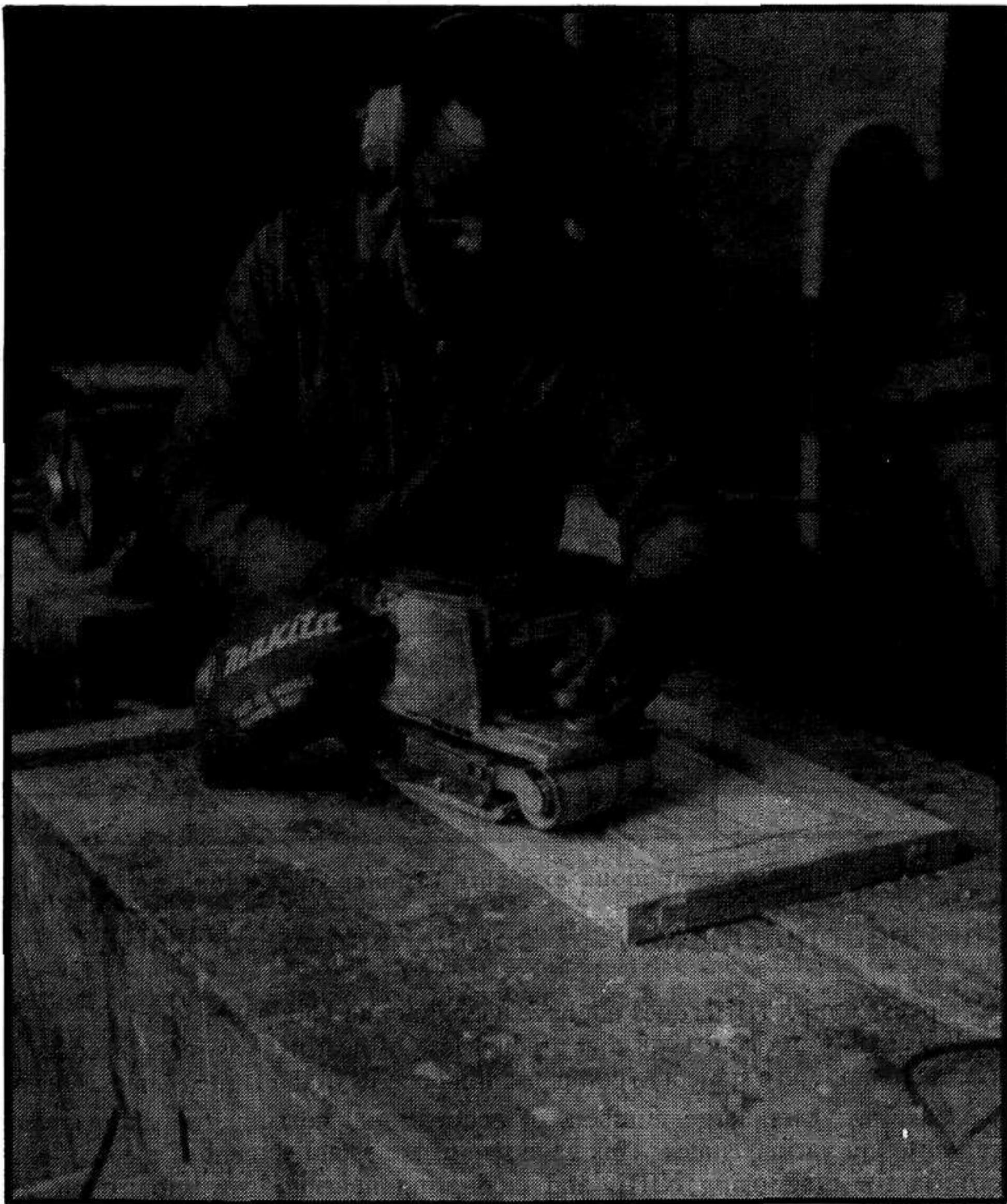
NIHL is due to continuous exposure to noise over a long period

## International history of compensation for NIHL.

Compensation for NIHL does not have a lengthy international history.

It was only in May 1948 that gradual loss of hearing was recognised as an occupational injury subject to compensation benefits in the United States. During the ensuing years, large numbers of occupational hearing loss claims were submitted in various states. This gave rise to the establishment of medico/legal criteria for diagnosing NIHL and evaluating hearing loss impairment for compensation purposes. It also established the ruling that compensation for hearing loss was payable even if no loss of pay was incurred or predicted.

In Britain, the scheme for the payment of disablement benefit for occupational deafness, which operates under the industrial injuries provision of the Social Security Act of 1975, was introduced on 3 February 1975. The Act implies that the benefit paid for occupational deafness is disablement benefit, and that injury benefit is not payable. The effects of occupational exposure to noise were publicised widely for the first time in 1963 by the Health and Safety Executive in a booklet called, "Noise and the Worker".



**Effective hearing protection should be implemented**

## Compensation for NIHL in South Africa.

In South Africa, compensation for NIHL was first introduced under the Workmen's Compensation Act (WCA) in 1969. If employer negligence was established, the claimant could apply for "increased compensation".

According to Rand Mutual Assurance (RMA), a worker can only claim for increased compensation for NIHL if he/she has been diagnosed as having a NIHL, and after 6 months, at a re-test, the audiogram shows an increase in the hearing loss.

The RMA indicated that it was the responsibility of the medical doctor, employer and the worker to ensure that the worker does not return to the same noisy environment after being diagnosed as having a NIHL. On these grounds it would be difficult for the worker to establish employer negligence. This avenue has never been tested in South Africa as regards NIHL.

There are no provisions within the WCA for ensuring that the noise conditions in the workplace are improved. However, in the SABS 083-1983 document on the code of practice for the Measurement and Assessment of Occupational Noise for Hearing Conservation purposes, the following recommendations are made:

- In areas where the noise levels exceed 85dB Neq, the best practicable means to reduce the noise below this limit must be taken, eg: by acoustically enclosing the machines.
- Where the reduction of the noise to below 85dB is not possible, hearing protectors (complying with SABS 572) must be worn by all workers who enter that area.
- All such workers will be subjected to regular audiometric tests as hearing protectors do not provide adequate protection under all circumstances.
- All noise zones are clearly demarcated and notices advising workers to wear hearing protectors are placed along the boundaries of the noise zones.

## Why should NIHL be compensated?

When NIHL became a compensatable disease, it was recognised as an "impairment". NIHL decreases the quality of life of the sufferer by permanently damaging the ability to hear sound and to communicate with human beings and the surrounding world. In a work situation hearing loss creates other harmful side effects like the reduced ability to hear warning shouts or sirens in the event of an accident. This is particularly important in underground mining where accidents are commonplace and the ability to communicate can become an issue of life or death.

Compensation in its present form remains a double edged sword: while it provides recognition of the sufferer's situation and can ameliorate some of the hardships, it also curtails employer liability because it limits the amount of reparations for which employers are responsible.

Compensation does not recognise the functional disability caused by NIHL and thus does not take into account the loss of quality of life for the affected worker. In addition, compensation can never bring back hearing.

A worker has to sustain a substantial hearing loss before he is eligible for compensation. This means that the amount of compensation paid out is low, as fewer workers will satisfy the conditions for compensation. The cost then to the employer is minimised.

Compensation can also limit the implementation of effective hearing conservation programmes by providing an "alternative" avenue for employer responsibility. In real terms it may be "cheaper" for the employer to pay out for compensation than to ensure a safer workplace which would mean reducing noise levels and ensuring the implementation of effective hearing protection.

Although compensation "is inherently biased and inadequate" (D. Rosengarten, p.7) and in South Africa is further discredited by its blatant racist character, its achievement was an important milestone in the struggle by workers for safe and healthy conditions at work.

It recognises that workers have a right to be compensated for ill-health caused by working conditions and that there is an onus on employers and the state to minimise the harmful effects. However, it does not provide sufficient impetus, in the form of employer liability, to ensure that all occupational health hazards are eradicated.

## Comparing compensation schemes

The following table demonstrates the different formulas used in different countries to determine the average hearing loss and how that relates to the computation of the percentage disability (PD). Included are conditions required for the worker to be eligible for compensation.

Country	Formula	PD	General
UK	Average of 3 frequencies: 1, 2, 3 kHz.	A.H.L of 50dB=20%	Total of 20 yrs exposure to qualify for compensation.
USA	Average of 4 frequencies: .5, 1,2,3kHz. % H.L. is computed according to AAOO formula.	100% H.L = 35%	Compensation based on loss or reduction of function of body. Benefits can be paid based on lost wages.
Canada	Average of 3 frequencies: .5, 1,2kHz.No percentage H.L. computed.	Total H.L. in both ears=15%	Compensation calculated for projected loss of earnings.
Denmark	Use clinical tests to assess hearing handicap.		Compensation based on speech perception and not pure-tone hearing thresholds.



**Compensation can limit the implementation of effective hearing conservation programmes**

## **Calculation of Compensation in South Africa**

In South Africa, compensation for hearing loss is calculated according to the AAOO (1959) formula which uses the 3 frequencies of 500, 1000 and 2000Hz and does not include 3000Hz as recommended in the newly revised AAOO (1979) formula. The major difference between countries occurs when calculating the percentage disability (PD).

1. The air conduction hearing threshold levels are measured at 500, 1000, 2000, 3000 Hz for each ear. This gives the average hearing level for each ear.
2. The average hearing level is equal to 1.5% for each dB that the above average exceeds the 25dB low fence (re: ANSI-1969). This computation gives the percentage hearing loss.

3. The binaural percentage hearing loss is computed by multiplying the percent hearing loss of the better ear (lower percentage) by five, adding it to the percent hearing loss for the worse ear, and dividing the total by 6.

$$\% \text{ hearing loss} = \frac{5 \times \%HL \text{ (better ear)} + \%HL \text{ (worse)}}{6}$$

Disability is a concept relating to decreased ability to perform one's daily work.

Any worker with a percentage hearing loss under 25% is not eligible for compensation. The WCA, referring to compensation for impairment of hearing in cases which constitute a "disability", states that "an impairment up to 25% is generally regarded as a mild loss of hearing which is not disabling for employment". A worker with a 26% hearing loss can claim to have 1% permanent disability.

Total hearing loss in both ears equals a 50% disability.

The compensation is proportional to the percentage disability and monthly earnings at the time of the application. It does not take into account the actual loss of earnings or compensate for loss of quality of life.

## Conclusions

It is clear that there is little agreement internationally on how to compensate the worker with a NIHL. Perhaps this is due to the poor understanding of the extent to which a hearing loss affects the quality of life. This lack of understanding is shown not only by the percentage disability assigned to hearing loss (in terms of percentage disability of the whole body) but also the formula used to compute average hearing loss. This is particularly so in South Africa.

Recent studies have shown that no longer can the speech frequencies only be defined as 500 - 2000Hz but that 3000Hz and 4000Hz are important for speech discrimination. It is common knowledge that workers with a NIHL have the greatest amount of hearing loss at the higher frequencies. A hearing disability is primarily a communication disability and perhaps the rationale behind the average hearing loss formula should be re-examined, with more serious consideration given to the Danish approach.

The value placed on hearing is minimal compared to that of any other part of the body. A worker who loses a thumb has 25% disability. In order to obtain the same percentage disability for hearing, a worker has to show a 58% hearing impairment which means an average hearing loss in both ears of about 70dB. The percentage disability assigned to hearing loss should take into account the loss of quality of life.

Furthermore, compensation should be provided when there is loss of earnings and the loss of earnings should be based on the projected loss of earnings.

**This article was written by the Technical Advice Group (TAG)**

## Examples of Compensation in Different Countries

Audiogram: Hertz:	125	250	500	1 000	2 000	3 000	4 000	6 000	8 000
Right ear:	25	30	40	50	60	65	80	80	70
Left ear:	30	30	40	50	60	60	75	80	65

The worker is assumed to earn R400.00 per month or approximately R92.40 per week.

Country	A.H.L.*	Disability	Compensation	Special Compens.
South Africa	50	9%	R1800.00	Increased comp if worker can prove employer negligence
Canada	50.50	6.5%		If loss of earnings occur, comp equals the projected loss of earning
USA (New York)	52.5		R5729.	
UK		29%	18.96 pounds per week or R62.56 per week	Compensation called weekly disablement pension. This is independent of monthly wage. Reviewed annually

\* A.H.L.: Average Hearing Loss. The definition is different for different countries