The Statutory Noise Level in South Africa

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SUMMARY

Noise legislation in South Africa was introduced in 1974. However, in industry, compliance with the recommended maximum equivalent noise level of 85 dB(A) is poor. The subject of noise exposure is reviewed briefly and a tentative proposal for a temporary raising of the statutory limit is put forward.


In 1974, legislation was introduced in South Africa for purposes of hearing conservation. Under the terms of the Factories, Machinery and Building Work Act, factory areas where equivalent noise levels are equal to or greater than 85 dB(A) must be demarcated as noise zones, and no one must be allowed to enter these areas unless he is wearing approved hearing protection. It is also stipulated that the employer shall attempt to reduce the noise levels to acceptable limits (implied by engineering means).

On numerous occasions we have been asked by interested parties why the statutory noise level in South Africa is lower than that in countries such as the UK and the USA, where the levels relate to 90 dB(A). It is not widely realized, however, that countries such as Austria, Sweden and Germany have also legislated for the lower limit of 85 dB(A), and that the subject of noise legislation is far from being a 'closed book' in the countries which opt for a higher index.

In this article we take a brief look at various aspects of the topic and put forward our personal views with regard to local legislation.

The British Occupational Hygiene Society (BOHS) Standards for wide-band and impact noise restrict occupational exposure so that hearing handicap should not occur in more than 1% of persons exposed to noise for a working lifetime of 30 years (48 working weeks of 40 hours' exposure). The amount of noise received by those exposed should not exceed a noise immission of 105 dB.

Noise immission level (NIL) is calculated from the expression

\[ \text{NIL} = L_{eq} + 10 \log_{10} \left( \frac{T}{T_o} \right) \]

where \( L_{eq} = \) equivalent-continuous noise level,
\( T = \) duration of exposure (years) x correction factor for exposures differing significantly from 48 weeks of 40 hours
\( T_o = \) reference duration (1 year).

For a working life of 30 years, therefore, the \( L_{eq} \) corresponding to an NIL of 105 dB is 90 dB(A).

Records of average starting and retiring ages for Blacks in South Africa are not readily available and overall noise exposure periods for this population group must be estimated. However, the Factories, Machinery and Building Work Act stipulates that no person under the age of 15 years shall be employed. If one assumes that retirement age is 65 years, the maximum possible exposure period to industrial noise is 50 years (this figure is a considerable overestimate of the working lifetime of Blacks in industry, since the contract system usually dictates several breaks in service).

The Industrial Conciliation Act relating to the iron, steel, engineering and metallurgical industry states that 'the ordinary hours of work shall not exceed 45 in any 1 week'. In conjunction with a mandatory 3-week holiday, the maximum annual work period in South Africa is, therefore, 49 weeks of 45 hours (2205 hours).

From equation (1), at an \( L_{eq} \) of 85 dB(A), the NIL corresponding to a 50-year working life (2205 hours per annum) is 102.6 dB. If the permissible weekly overtime of 10 hours is taken into account, an NIL of 103.5 dB obtains. Both NILs are below the BOHS maximum of 105 dB.

There does not appear to be a universally accepted definition of hearing impairment. The BOHS Standards consider handicap to arise at a noise-induced hearing loss of 40 dB (calculated as the mean of audiometric frequencies 0.5, 1, 2, 3, 4 and 6 kHz), while the South African Bureau of Standards (SABS) defines hearing impairment as a threshold shift of more than 25 dB (derived from the arithmetic average of audiometric frequencies 0.5, 1 and 2 kHz). The UK 'Code of Practice for Reducing the Exposure of Employed Persons to Noise', formulated by the Department of Employment, does not indicate the degree of protection afforded by its recommended maximum \( L_{eq} \) of 90 dB(A) for an 8-hour working day.

It is of interest to note, in passing, that the International Organization for Standardization (ISO) Standard 1999 (compatible with SABS 083-1970) appears to overestimate the risk of hearing loss from exposure to industrial noise.

Our experience with in-factory conditions in industry in South Africa would indicate that compliance with existing noise legislation is, at best, minimal. While the reduction of noise levels, by engineering means, is feasible (although it entails critical analysis of the state of existing plants), to reduce ambient levels to less than 85 dB(A) is most certainly not economically feasible in the short term.

It should be made clear that we endorse the principle of setting as low a limit as possible to protect the worker who is exposed to noise, but due emphasis must be placed on its practical attainment. To set a low statutory limit is a token gesture to hearing conservation, if there is no
We invite comment on this article, with a view to airing the current consensus of opinion in industry.

REFERENCES

Diabetic Diarrhoea and Steatorrhoea
A Case Report and Review of the Literature

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SUMMARY
A case of severe diabetic steatorrhoea is presented in a young Black male with poorly controlled diabetes, symptomatic peripheral neuropathy, evidence of autonomic neuropathy with gastroparesis and raised faecal fat excretion. A pancreatic function test was negative as were tests of small-bowel structure and function. There was resistance to all therapy. The literature on diabetic diarrhoea and steatorrhoea has been reviewed, and it is concluded that they are expressions of the same entity which remains a clinical problem for which there is at present no effective management.


Both diarrhoea and steatorrhoea are recognized complications of diabetes mellitus. Despite this the aetiology and treatment remain a problem. In this report we describe a young patient with diabetic steatorrhoea.

CASE REPORT
A 25-year-old Black man was admitted to an outlying hospital in diabetic coma. On recovery he gave a 2-month history of severe diarrhoea and a shorter history of a cough with sputum. Acid-fast bacilli were isolated from his sputum, and antituberculous therapy was instituted. The diarrhoea proved resistant to diagnosis and treatment and he was referred to a larger hospital where the diarrhoea was identified as steatorrhoea (faecal fat excretion 70 g/d). A barium meal revealed a large atonic stomach with partial obstruction of the distal duodenum, and the small-bowel follow-through was normal. Further investigations were unhelpful and since the diarrhoea remained uncontrolled, he was transferred to Groote Schuur Hospital.

On admission he gave a history of up to 30 loose yellow stools daily, mainly after meals and at night, and occasionally associated with abdominal cramps. There were no upper gastro-intestinal symptoms. He was not impotent, had suffered no visual loss, but complained of night sweats, muscle cramps and paraesthesia of his legs...