BIAP recommendation n° 09/2 : Preserving hearing at work

Introduction

The purpose of this recommendation is to provide useful elements to the multidisciplinary groups and the scientific activities they undertake. The objective here is to achieve as " closed " a Man-Environment cycle as possible, in order to develop human prevention and risk prediction in groups of subjects exposed to pathological sound levels.

The resolution must be a pragmatic and accessible one, since it aims at protecting workers from the dangers they face by being exposed to high levels of noise at the workplace. This text complements the BIAP Recommendation n° 09/10-1, adopted at the Lagos Convention (Portugal). It includes three main parts:

-sonometric programme

-audiometric programme

-interpreting results

1. Sonometric programme

This programme is used to measure the various equivalent acoustical levels at different work stations (expressed in dBA), in order to identify high risk, probable risk and zero risk areas.

The equivalent continuous acoustical level (expressed in dBA, LAeq, T), the level of exposure to standardized noise for an 8-hour workday period (LEX,8h) or the weekly level of exposure (LEX,d), according to national regulations, shall be measured at each work station, over a period of time equivalent to the exposure cycle. The measuring shall be done by means of a noise exposure monitor or noise dosimeters based on the " principle of equal energy ".

The microphone shall be placed (preferably in the absence of the worker) at a spot which corresponds approximatively to the spot where the most exposed ear of the worker is situated. If the presence of the worker is necessary, the microphone shall be placed at a certain distance of his/her head, in order to reduce as much as possible the possible effects of diffraction and distance on the measured results. A distance of 0.1 meter seems appropriate. If the microphone has to be placed on the worker himself/herself, the measured results shall have to be balanced in order to account for the interferences and thus ensure that the final result will correspond to that of a non-disturbed environment. (For more information, see ISO standard 1999: 1990.- Acoustics- Determining profesional noise exposure levels and assessing hearing damages due to excessive noise, as well as Council Directive of May 12, 1986 on the workers's protection against risks due to exposure to excessive noise levels, published May 24, 1986, n° L 137/28- 34).

If the noise is of an impulsional type, the peak level of acoustical pressure, Lpp, must be established.

For the selection of adapted ear protection equipment, a complementary measuring of the noise harmonic index I, expressed in dBC, shall be carried out.

2. Audiometric programme

The audiometric measuring must be carried out in an environment which corresponds to the criteria of ISO standard n° 6189. We also recommend to examine the person's case history and carry out an otologic examination (otoscopy and air conduction pure tone audiometry) before he/she actually starts working at a specific work station. Examinations shall be conducted at regular intervals, according to national regulations, in order to update measured exposure levels and periods. Audiometries shall be carried out according to the criteria of the ISO standard n° 6189 or the BIAP recommendation n° 09/10-1.

3. Interpreting results

The individual interpretation shall be carried out by comparing actual measured losses with the distribution of expected losses according to age, former exposure and individual levels of exposure. The distribution can be done on the basis of the model proposed in ISO Standard 1999:1990.

The concept of " individual sensitivity to auditory trauma " is defined as the percentage of the population (sharing identical characteristics with the subject) whose losses are lower than the individual's. The programme aims at determining the subject's sensitivity -as early as possible and during his/her evolution- so as to extrapolate and determine the risk of trauma at retirement age.

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