# Noise Awareness Information For the CERN Data Centre

## Introduction

Due to the measured noise levels in the Data Centre computer rooms the decision has been taken by HSE to make the wearing of ear protectors compulsory for all people entering the computer rooms to comply with the CERN Safety Rule. The only exception to this rule is for guides and visitors, who nonetheless should be given the choice to wear them too. This short document is intended to inform you on the potential risks on your health of exposure to a noisy environment, as well as, information related to the differing protective ear wear recommended.

## Noise Risks

As well as performing irreversible harm to hearing, exposure to a noisy environment can also lead to adverse effects on the nervous, cardiovascular and digestive systems as well as leading to tiredness and stress. The defined noise level at which an effect on health begins is 80 dB(A). In the computer rooms levels of up to 85 dB(A) have been measured and as such the requirements to wear protective ear wear to comply with the CERN Safety Rules related to noise exposure.

To give an indication of the noise level in the computer rooms some example noise levels are given below:

* 0 dB(A) – start of audible range
* Respiration – 15 dB(A)
* Normal conversation – 60 dB(A)
* Petrol lawn mower – 85 dB(A)
* Pain threshold – 120 dB(A)
* Airplane taking off – 130 dB(A)

As another way of interpreting this, in terms of the ease of conversation, if you can talk normally with someone at 1m then the ambient noise is below 70 dB(A) but if you need to significantly raise your voice it is probably above 80 dB(A). If you need to shout then it is above 90 dB(A).

## Effect of Distance

The noise level drops off with the separating distance but not linearly. If at 1m from a noise source the level is 85 dB(A), moving 1 m further away will reduce the level by 6 dB(A) to 79 dB(A), but to reduce the level a further 6 dB(A) will require doubling the separating distance to 4m and for a further 6 dB(A) to 8m, etc. Hence, one way to reduce the effect when working in a noisy environment is to stay as far away from noise sources as practical when working.

## Effect of Duration of Exposure

The impact of noise on health is related to the duration of the exposure. For every increase in the noise level of 3 dB(A) the recommended maximum duration of the exposure is halved, e.g. if the allowable exposure at 85 dB(A) is 8 hours, the corresponding recommendation for 88 dB(A) would be only 4 hours and for 91 dB(A) 2 hours, etc.

## Available Protection

Disposable earplugs are provided at all entrance doors to all computer rooms. Information is available next to the dispensers on how to insert these correctly to achieve the maximum protection, which is a noise attenuation of 33 dB(A). For people working more regularly in the computer rooms, you might wish to have ear muffs, which can be purchased from the CERN Stores (SCEM 50.48.01.015.8 at around CHF 18), which similarly provide noise attenuation of 32 dB(A). Other protection possibilities exist and can be found under: SCEM 50.48, but these provide lower noise attenuation than the two mentioned above. One of these, SCEM 50.48.01.E, which provides moulded ear protectors, requires a specialised fitting.

## Hearing Tests

It is recommended that all people with long-term access to the computer rooms, as well as those with temporary access but who access the computer rooms on average more than twice a month, fill in the ‘work involving exposure to noise’ in the Identification of Occupational Hazards form (OHS-0-0-3). This will lead to a hearing test being performed during the regular Medical Visits.