



CATS Hearing Conservation

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Hearing conservation review and guidance.

Working in the transport environment can expose staff to a different level of noise due to the use of lights and sirens as well as the noise levels that the team are exposed to when using helicopters. The Control of Noise at Work Regulations 2005 requires us to assess the risks in relation to noise at work and if there is an identifiable problem to provide hearing protection in the circumstances where we cannot reduce the noise levels.

How is noise measured?

Noise is measured in decibels (dB). An 'A-weighting' sometimes written as 'dB(A)', is used to measure average noise levels, and a 'C-weighting' or 'dB(C)', to measure peak, impact or explosive noises.

Comparative Noise Levels:

[Each 10-decibel increase in sound level is approximately a doubling of loudness.]

Sound	Decibel Level	Time Permitted	
Rustling Leaves	20 dB	No Limit	
Whispering	25 dB	No Limit	
Library	30 dB	No Limit	
Refrigerator	45 dB	No Limit	
Average Home	50 dB	No Limit	
Clothes Dryer	60 dB	No Limit	A clothes dryer sounds twice as loud as the ambient noise in an average home.
Washing Machine	65 dB	No Limit	
Car	70 dB	No Limit	A car engine sounds twice as loud as a clothes dryer.
Busy Traffic	75 dB	No Limit	
Mini Bike	80 dB	No Limit	Mini-bike another doubling of perceived sound.
Electric Shaver	85 dB	No Limit	
Screaming Child	85 dB	8 Hours	Screaming child again twice as loud as the mini-bike, another 100% increase.
Passing Motorcycle	95 dB	8 Hours	
Jack Hammer	100 dB	2 Hours	Jackhammer another doubling of the noise level.
Helicopter	105 dB	1 Hour	Helicopter is 50% louder than a jackhammer.

(8 hours a day 5 days a week over 40 years)

What are the action levels and limit values?

The Noise Regulations require that we take specific action at certain action values. These relate to, the levels of exposure to noise averaged over a working day or week; and the maximum noise (peak sound pressure) to which the team are exposed in a working day. (See above)

The values are:

Lower exposure action values:

- Daily or weekly exposure of 80 dB;
- Peak sound pressure of 135 dB;

Upper exposure action values:

- Daily or weekly exposure of 85 dB;
- Peak sound pressure of 137 dB.

There are also levels of noise exposure which must not be exceeded:

Exposure limit values:

- Daily or weekly exposure of 87 dB;
- Peak sound pressure of 140 dB.

Outline of the Risk Assessment

As controlling noise risks and noise exposure is fundamental to protecting staff, a risk assessment was undertaken under the guidance of the health and safety team at GOSH to ensure that we comply with the above regulations.

Sound instrument to measure the decibels was used and each call siren and horn siren were measured from within the back of the ambulance as well as within the technician cab.

The measurements are outlined below:

- 1st siren 76 dB in cab and back of ambulance
- 2nd siren 76 dB in cab and back of ambulance
- 3rd siren 75 dB in cab 70dB in back of ambulance
- 4th siren 88 dB in cab 80dB in back of ambulance.

The only siren that was above the exposure levels (4th siren or air horn) is used in short; sharp bursts when traffic needs to be cleared whilst out on a category one transfer. This siren registered at **88dB** (cab only). But as it is only used in short bursts it is deemed an “acceptable level” due to the infrequent use and exposure time.

On reviewing the noise level measurement in the cockpit of a Sea King the reading showed **95 dB** (105 dB external to the aircraft)

A study carried out by the Department of Audiology of the University of Ghent Holland on behalf of the Ministry of Defence, revealed that the cheap non-linear earplugs are as effective as the expensive electronic ear caps if they are inserted properly into the ear. Through the use of simple earplugs the noise level is reduced to a much more comfortable **55 dB** in the cockpit of the Sea King helicopter.

CATS average 25 rotary wing transfers a year with the RAF. Because of the measured noise levels exceeding **75dB** it is CATS policy to provide ear protection whilst working within this environment. ***It is mandatory for all team members including the patient to wear the ear protection provided for use.***

Average Exposure Time

It was Necessary to utilise the permanent team members log books to try and understand a reasonable estimate of exposure time to the noise emitted through the use of lights & sirens over a calendar year.

This would allow for more meaningful understanding of whether we complied or not with the recommendations laid down by law (Noise regulations 2005)

On reviewing the 3 Advanced Nurse Practitioners diaries in relation to PIC transfer over 1 year (n= 276) there were an average of 92 transfers per team member per annum.

The average retrieval time takes 5 hours and within this time frame the stabilisation time is averaged at just less than two hours.

It is reasonable therefore to assume that exposure time over any given year at the above noise levels is **less than 1 hour per day**, well within the national guidance (Noise regulations 2005).

CATS/GOSH duty to staff:

Utilising the information above it is reasonable to assume that none of the CATS staff are likely to be exposed to the “*above the upper action values*” therefore hearing checks are not a mandatory requirement.

However if a member of the team is at risk for any reason e.g. they already suffer from hearing loss or are particularly sensitive to damage then annual hearing checks will be offered.

Hearing protection in the form of earplugs will provided when flying with the RAF.

How to correctly fit your earplugs:

1. Insert memory foam earplugs by holding the plug between your thumb and index finger.
2. Squeeze the earplug and roll it between the two digits, compressing the foam should reduce the diameter to something reasonably narrow.
3. Then, reach over your head and pull upward on the top of your ear, opening the ear canal. With the other hand, insert the rolled plug lengthwise as far as is comfortable.
4. Place the earplug into your ear canal. As the foam begins to expand, it will conform to the shape of your ear, sealing the canal and blocking out or muffling surrounding noises.
5. Keep the earplug from pushing out of the canal as it expands by applying light pressure on the end for 10 seconds or so.

Further information

www.hse.gov.uk.

Noise at work Guidance for employers on the Control of Noise at Work Regulations 2005