

# ***How Loud Is Too Loud?***

***By Betty Power***

Unless we are fortunate enough to live and work in an environment of peaceful, natural beauty, it is likely that most of us would agree that today's world is a much noisier place than ever before. Our hearing is constantly exposed to a chronic din at the least, and noisy workplaces the worst - some by choice, others by chance: DIY, wearing personal headphones, smoking (!), children's toys, the sounds from the street and underground...

Organisations have been established to raise public awareness of the dangers of noise and noise pollution, to help young and old understand the mechanics of the ear, and what they can do to prevent premature hearing loss. In May 2005, a European-wide Awareness Campaign was launched to raise awareness of one of Europe's most persistent workplace health problems – noise at work.

As music educators, what are we doing to safeguard our students' hearing in the classrooms, in the practice rooms, in the concert halls? What are you doing to protect your own hearing in your working environment? We have a responsibility to learn about the long-term effect of loud music on children's hearing, and what we can do to ensure that the musicians of tomorrow will still be able to function in the future. Schools, youth orchestras, conservatories all have a vital role to play in providing information on hearing damage and protection, which could start as early as age seven, e.g. simply by eliminating fear of hearing tests.

## **Did You Know That.....?**

- Students often play in environments with worse acoustics than professionals, but that the inner ear of the child is more sensitive to noise and may be susceptible to hearing loss for noise exposures that are safe for adults.
- Noise levels when teaching are theoretically much lower than when in performance but still significant. (A peripatetic brass teacher was successful in a legal case against his local authority for hearing damage which was apparently caused by working in small practice rooms!)
- Modern instruments are getting louder.
- Research in audiology (hearing science) has documented a higher incidence of permanent hearing loss in classical musicians than rock/pop musicians – incidence increase of 30% in rock/pop musicians and 52% in classical musicians!
- Over 80% of musicians when tested following a performance had a temporary music induced hearing loss – damage will be permanent if exposed to loud noise too long or too often. Effects of too much noise may last for a few hours or even a few days.

## **How Loud Is Too Loud?**

Protecting your hearing starts with understanding how noise works. The classic "formula" for assessing the risk of hearing loss is the intensity of the noise, measured in decibels (the danger starts at 85 decibels, roughly the sound of a lawn mower), multiplied by duration, the time of exposure. In other words, the louder the noise, the less time you should be exposed to it. Prolonged exposure to any noise above 85 decibels can cause gradual hearing loss.

Some common noise levels:

- Whispering: below 35 dB
- Talking with friends: 50-60 dB
- Hair dryer low speed / 82 dBA
- Flute playing lively folk tunes / 88 dBA
- Underground train at 200 ft / 94 dBA
- Output of bagpipes / 109 dBA
- Music in a disco: 110-120 dB (amplified at 8 feet)
- Symphonic music peak, some health clubs & aerobic studios : 120 dBA
- Noise levels surpassing 140 dB will result in immediate and irreversible damage.

**An EU directive has determined the legal limit for sound exposure is 85dB.**

## **What's That You Say? Signs of Hearing Loss**

- Reduced understanding of speech and accessibility to sounds
- Tinnitus (i.e. ringing, or other perceptions of sound in the ear) that is associated with hearing loss and pitch perception problems, i.e. "A" heard as a "B"

Children might describe the following experiences:

- Feels like you're hearing through cotton wool
- Difficulty understanding what people are saying
- Ears feel like they want to "pop"
- Hear ringing, or high whistling sound in ear

**What Is Being Done** to reduce the risk of hearing loss due to exposure to loud music?

The professionals....

- Last year the Musicians Benevolent Fund in cooperation with the Association of British Orchestras began a series of training seminars for orchestral players and management dealing with the issue of noise damage in orchestras. Initiated in response to the research project 'A Sound Ear' which was commissioned by the Association of British Orchestras in 2001. This thought-provoking report tackled the issues of potential hearing damage to orchestral musicians and the training seminars go some way to offering solutions. Many orchestras world-wide are affected by laws regarding noise levels and other countries look to the ABO for guidance on the subject. (The complete report, "A Sound Ear", is available through the Association of British Orchestras (£10) and online ABO website "Symposia")
- May 2005, the San Francisco Opera began providing each of its regular musicians a pair of custom-fitted "musicians' earplugs", originally created by Etymotic Research for members of the Chicago Symphony Orchestra. This new benefit program is in conjunction with H.E.A.R. (Hearing Education and Awareness for Rockers, a San Francisco-based non-profit hearing preservation organisation). Hear Tomorrow seeks to educate and promote awareness of the danger to our hearing from continued exposure to loud sounds.

## What can we do for children?

- 1) Reduce noise levels at source: raise the brass, reduce the amount of 'noisy' repertoire, choose lighter repertoire for smaller venues, hold sectional rehearsals whenever possible, establish the (correct) use of ear plugs and/or screens, never double rank the brass when it's noisy repertoire, re-design pit orchestras
- 2) In extreme situations, reduce noise levels at individual level by using hearing protection devices, e.g. ear-plugs or in-the-ear sound monitors
- 4) Teach children that their ears are their most important musical instrument.
- 5) Ensure that students receive age-appropriate hearing-health information at all stages of their development. Refer them to up-to-date websites, leading news articles to help them understand that investing in hearing health is just as important as investing in healthy eating and daily exercise! And that NOW is the most important time.
- 6) Enlist the advice of an accoustical consultant at your school or music organisation, to approximate the noise risks. (NOTE: Danish primary schools have installed noise monitors in their classrooms.)

## LINKS

### 1) For Parents, Teachers, Adults:

Vairous online factsheets available:

[http.](http://)

[http://www.rnid.org.uk/information\\_resources/factsheets/medical/factsheets\\_leaflets/?ciid=214708](http://www.rnid.org.uk/information_resources/factsheets/medical/factsheets_leaflets/?ciid=214708) to find out about:

- how we hear
- different kinds of hearing loss
- hearing loss caused by noise
- tinnitus caused by noise
- how can I prevent noise-induced hearing loss and tinnitus?
- what are the Noise at Work Regulations?
- can I get compensation for noise exposure?
- equipment to protect your hearing
- reusable earplugs
- where can I buy ear protectors?

### 2) For KS1-2:

"Keeping Ears Safe From Noise":

[http://www.cyh.com/cyh/kids/detail.html?topic\\_id=1554&11=2](http://www.cyh.com/cyh/kids/detail.html?topic_id=1554&11=2)

**3) For Teens:** [www.hear.net](http://www.hear.net) a non-profit hearing information source for musicians and music-lovers

### 4) For Music Professionals:

British Performing Arts Medicine Trust (BPAMT)  
196 Shaftesbury Avenue, London WC2H 8JF  
Telephone: 020 7240 4500 (London) or 0845 602 0235 (outside London).

Fax: 020 7240 3335

Email: [bpamt@dial.pipex.com](mailto:bpamt@dial.pipex.com)

Website: British Performing Arts Medicine Trust website

The Musicians' Union, 60-62 Clapham Road, London SW9 0JJ

Telephone: 0207 582 5566

Fax: 0207 582 9805

Email: [info@musiciansunion.org.uk](mailto:info@musiciansunion.org.uk)

Website: Musicians' Union website (external link, opens new browser window)

*(This article first appeared in the British Kodály Academy Newsletter)*

## **TECHNOLOGICAL DEVELOPMENTS**

*(As printed in **Hearing Health**, volume 19:2, Summer 2003)*

Sennheiser is taking a step toward taming fatigue-inducing ambient noise for commuters, travelers and pedestrians in urban or noisy settings. **PXC 250 "Streetwear" mini-headphones** for portable music players reduce noise above 1,200 Hz by 15 to 25 decibels. The foldable set tucks away into its own bag and comes equipped with Noise Guard™ compensation that can be switched on to lessen environmental noise on aircraft, trains and other motorized vehicles. It has the ability to cut sounds below 1,000 Hz, such as engine noise, by 15 decibels.

**SoundEar®** from SoundShip, a Danish company, is a noise indicator that uses a unique light display to warn of exceeding pre-set decibel limits. Awarded the Danish Design prize in 2000, the wall-mounted model is universally used in Swedish school cafeterias and in many European classrooms and workplaces. Recently introduced in the U.S., it seems an eminently sensible approach to teaching about the dangers of exposure to loud noise as well as safeguarding against them.

**PocketEar®**, a nifty little personal noise monitor, lights up when sounds exceed a decibel setting selected from three choices on the meter. It comes with a neckstrap, keeping it handy for checking for warnings, and also acts as a carrying case for earplugs! Great for concerts or workplaces that have variable noise levels.

## **RECENT NEWS....**

The article below is from **www.hearnet.com** - a GREAT informational website for teenagers about hearing loss associated with listening to loud music – even includes an online assessment of your hearing and information on ordering special ear-plugs.

*Apple Introduces Software to Limit iPod Volume  
March 2006*

*Apple has introduced a free software update that gives iPod users the ability to set maximum volume limits on iPod devices. Using a combination code, the update allows users and parents to set volume caps on the iPod and lock them in. The new volume limit update works with all earphones and accessories plugged into the iPod headphone jack as well as the iPod Radio Remote. The software update is available as a free download for the iPod nano and fifth generation iPod. iPod users can download the free update at*

*[www.apple.com/ipod/download](http://www.apple.com/ipod/download).*

*H.E.A.R. believes that limits on volume level and time spent listening are important factors to protecting your ears from hearing damage. We congratulate Apple for their efforts to help guide people to use their iPods in a responsible manner that may prevent permanent hearing loss.*

*Internet Reference : [http://www.hearnet.com/features/articles/artist\\_article\\_iPods.shtml](http://www.hearnet.com/features/articles/artist_article_iPods.shtml)*

## **Deaf by 1000 tunes**

***JUST five minutes a day at full blast on an iPod can cause irrevocable hearing damage, say Harvard researchers who claim to have created the world's first detailed guidelines on safe levels for MP3 players.***

If you don't relish swapping your iPod for a hearing aid, the researchers, from Harvard Medical School, say you need to limit your listening to about four and a half hours a day at 70 per cent volume, or 90 minutes at 80 per cent.

The audiologists tested the stereo's sound levels by putting standard Apple earphones on a dummy head with microphones in its ears. They compared the results with data on ear damage from industrial noise. The scientists also studied the listening habits of 100 students and found that they are, in fact, pretty sensible about their volume levels — unless they are out and about in a city.

When the students were in quiet environments, only 6 per cent turned their players to risky levels. But when they were on busy streets or noisy trains, eight out of ten pushed the sound up to dangerous levels to block out the world.

The researchers, who have submitted their studies to the American Journal of Audiology, say screaming guitars do the same damage as banjos: they found no differences in risk between rock, R&B, dance or country and western music.

**<http://www.timesonline.co.uk/article/0,,8122-2412325.html>**