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## Ear Sense: Pending Legalities On The SPL Front

A look at standards in Europe, what they might mean, and strategies of protection



By Fred Ampel



Figure 1: Sound exposure time versus level. (Graphic from a presentation by Dr. de Laat at the 114th AES Convention in Amsterdam.)

In most cases, hearing damage is a preventable disease/condition, and the methods of preventing it are both available and relatively easy to implement. That is, if the pro audio industry wants to do so.

In our previous installments (Live Sound February & April 2003 issues), we've explored in some detail what the performance audio industry is currently creating for its customers. Based on this data, it should be clear that we're exposing audiences, performers and ourselves to sound pressure levels that are both excessive and dangerous.

Of course, SPL abuse doesn't occur 100 percent of the time at 100 percent of concert events, but it does occur in such a significantly high percentage that it warrants some serious consideration of what actions are needed to control ourselves before someone else decides we need outside "guidance."

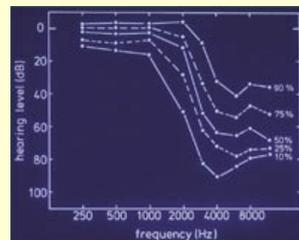


Figure 2: Noise induced hearing loss, N=266.

Given the 90-plus dB levels that seem to be the norm, let's look at **Figure 1** and **Figure 2**. (All of these figures were supplied by Jan A.P.M. de Laat, PhD, Department of Audiology, Leiden University Medical Center.)

The percentages shown in **Figure 2** (see page 65) indicate the percentage of the tested population (in this case, 266 individuals) who showed the given level of hearing loss, i.e., 90 percent, 75 percent and so forth. While the data was not specifically taken from patrons who attended live performances, this kind of damage has been seen in such populations. In other words, 20 dB to 25 dB losses in sensitivity above 4 kHz is not something to take lightly.

### READING THE CODES

To see how things might well play out in the U.S. with regard to future SPL regulations, let's look at the situation in the U.K., where legislation and workplace protection requirements have been in place for some time. In 1989, the first version of the Noise at Work Regulations was created and put into practice. Already existing at that time was a comprehensive Code of Practice regarding noise at work, but it was largely ignored, indicated by numerous reports and studies done from its outset.

However, recently the Code of Practice was updated to coincide with new versions of the regulations and "harmonization" (at least in theory), with the revised regulations being put into place within the European Union (EU). Adoption is probably within the next two years or so, although the "pubs and clubs" industry may be given additional time to comply with the revised rules. However, this is not guaranteed.

These new regulations refer to a measure, called Daily Personal Noise Exposure Limit (or LEP-d), that seeks to clarify and more accurately quantify how much potentially damaging "noise" an individual is exposed to. If the currently pending rules are adopted the exposure limits would be set as follows using an A-weighted scale for measurement:

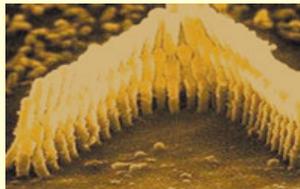
- 90 dB - 8 hours**
- 93 dB - 4 hours**
- 96 dB - 2 hours**
- 99 dB - 1 hour**
- 102 dB - 30 minutes**
- 105 dB - 15 minutes**

Within the new rules are regulations regarding "action levels" which are defined as the exposure points at which various kinds of fines, legal actions, demands for protection, mandatory hearing screenings and so forth might occur. All of these burdens would (and can) be imposed upon the employer by governmental authorities or brought about by complaints by employees. Three "Action Levels" are specified in the regulations:

- 1) First Action Level of 85 dB(A)**
- 2) Second Action Level of 90 dB(A)**
- 3) Peak Action Level of 200 Pascals (equivalent to 140 dB re 20(Pa).**

The First and Second Action Levels are based around the previously mentioned LEP-d. This is total exposure over an entire working day, taking into account the varying noise levels in the working environment throughout that day and how long a person is exposed to them. In calculating the level of LEP-d, no account is taken of any ear protectors (ear plugs or ear muffs) being worn.

Under these rules, the potential to seek damages offered to both employees and (feasibly) to customers is awesome. While it remains to be seen if anyone can successfully bring such actions, the attempts will and have been made.



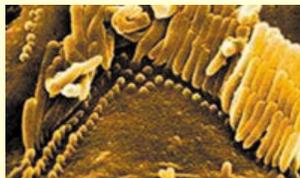
For those with sensitive stomachs, perhaps don't look at the following images. These are medical photos depicting the hair cells in the average human ear. The top figure shows what these hair cells look like when "normal," while the lower figure shows them after exposure to long-term, high-level sound.

#### DOING ENOUGH?

Part of the complexity surrounding this issue is that English common law includes the concept, which is applicable here, of "due care" that must be taken by both employer and employee to avail themselves of solutions to the danger involved. The question remains (most probably to be decided in a courtroom), however, as to what actually constitutes such due care.

Is it simply enough to send around brochures, post signs and put warnings up? This is largely the approach taken within our industry to date, and it's probably going to be sufficient. Is it enough to design a system in a public place so that employees are not necessarily exposed to "actionable levels" and how precisely would that be verified? Studies have been done and data collected, but there is still a huge vague area open to interpretation, which normally implies that somebody will hire sufficiently powerful legal talent to help the process along.

Realistically, it would seem that the personnel behind any major event, facility or venue would have to demonstrate how they will comply with noise restrictions. Further it would also be likely to expect a demonstration of acceptable techniques to be employed to minimize noise spill and exposure. This, while keeping customers happy.



The damaged, destroyed hair cells no longer produce any electrical output that the brain can recognize as sound. And this condition is permanent. This additional information is included in case there are any doubters regarding the data we've presented in this series of articles. For the uninitiated, just a few hours above 100 dB are enough to leave the listener with measurable loss. (Graphics supplied by Jan A.P.M. de Laat, PhD, Leiden University.)

It seems vital that anyone in the possible "line of fire" of legal action for SPL abuse should insure that appropriate hearing protection equipment is available for both employees and customers, and that operational policy mandates their use. While it's not reasonable to think that anyone can be forced to use this protection, mandating its use could help relieve the legal burden.

Backed up by educational and informational programs on the subject of hearing protection, and perhaps the threat of disciplinary action that "encourages" protection equipment, it's then feasible to show that reasonable precaution is being encouraged and used.

(The Rhode Island nightclub tragedy only serves to further bring forward the notion that common sense must be explained to some people.)

While none of this should, in any way, be misconstrued as legally valid advice (consult with a licensed and appropriate legal professional), the odds say that being able to present a detailed documentation of reasonable caution will be a solid first line of defense in any legal action. No guarantees, but acting "prophylactically" improves your position measurably.

#### ABOUT THE PESKY PUBLIC

Convincing the paying public to use hearing protection is where the powers of persuasion must be honed to a fine edge. Every venue or act should be strongly urged to make hearing protection (often available free through groups like House Ear Institute) available to any ticket holder upon entrance.

Obviously this can't be forced, and politically, it may not be viable to provide such protection (a client could misinterpret these actions). The venue probably has the first liability in this scenario, but anything that the sound company and its personnel can do to document its hearing protection procedures and recommendations will help in defense against actions taken by those lovely ticket holders.

If a client is supportive, by all means do something and/or get the venue into this process! The sound company and the act will look better, as well as reduce the size of their target zones for any wallet-seeking lawyer guided missiles.

It's incumbent upon sound companies to ask every venue what its hearing protection policy, if something is being done, and if not, why not. Again politics come into play, but there are sensible ways of approaching venue management on the topic, just as other safety issues like pyro and rigging are discussed. After all, this is a health and safety issue, not just a legal one.

While some of these issues are outside the control of even the biggest, most powerful sound companies, at least individually, as an industry it's not outside our control. We need to act in concert (no pun intended) on this and bring as much pressure to bear on as many aspects of this problem as we can. Only together do we have a chance of keeping our businesses alive and functioning, and keeping the music fun!

#### GETTING INFORMED

Start now to create an action plan requiring employees to take a short class on hearing protection, and document their participation. Most hearing conservation groups or organizations will be glad to help you find a way to do this. Try the following for starters:

[www.nonoise.org](http://www.nonoise.org)

[staff.washington.edu/rneitzel/standards.htm](http://staff.washington.edu/rneitzel/standards.htm)

[www.oshadefenseleague.com](http://www.oshadefenseleague.com)

[www.occupationalhazards.com](http://www.occupationalhazards.com)

[www.cdc.gov/niosh](http://www.cdc.gov/niosh)

[www.hearingconservation.org](http://www.hearingconservation.org)

[www.hei.org](http://www.hei.org)

[www.hearnet.com](http://www.hearnet.com) In Germany, [www.hearsafe.de](http://www.hearsafe.de)

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