Noise standards for electronically amplified music in Flanders (Belgium)

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Summary
In 2009, an increase in reports of hearing loss in young people initiated a process which led to the introduction of noise standards for activities with electronically amplified music in Flanders. A participatory approach was chosen, involving as many target groups as possible. The challenge was to develop regulation which bans excesses but still allows artists and audience to have a complete musical experience. The result is a three-step system which is applicable to all types of activities with electronically amplified music such as festivals, parties, but also dance schools or music in pubs, stores,... In addition to a maximum noise level a number of accompanying measures are introduced. Increasing noise levels imply stricter measures. This approach allows us to differentiate: not all activities with electronically amplified music demand an equally high sound level. This set of noise standards complements the existing regulation limiting nuisance to the neighbourhood. The introduction of the new regulation was accompanied by an extensive information campaign towards organizers, musicians and enforcers. An additional focus was sensitization; a campaign had to raise public awareness of the risk on and the impact of hearing loss. The regulation has been in force for two years now. It is time for the next step in the process: evaluation. The following paper discusses the making and introduction of the regulation, analyzes the noise standards themselves and the considerations that were discussed in the course of the process.

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1. Introduction

In the summer of 2009, a public debate started in Flanders (Belgium) about noise levels at music events and the increasing reports of hearing damage among young people. Since hearing damage is only noticeable immediately in acute cases, it is often assumed that no risk is involved. There are noise standard in relation to working conditions, but none exist for exposure related to leisure time activities. For young people, the main sources of exposure to noise during their leisure time appear to be the use of portable music players and attending noisy music events such as parties, festivals, nightclubs, etc. A consultation launched on this issue led to new noise standards for music events, which entered into force as of 1 January 2013. In Belgium, the three Regions are the competent authority for protection of the environment, for monitoring dangerous, unhealthy and nuisance-causing businesses, and for preventative healthcare. Increasing awareness and disseminating information about the risks involved in high noise levels also falls under their competences. Therefore Flanders has the power to develop regulations related to hearing damage caused by loud music activities. This is not possible for the noise level of portable music players, for example, because the latter concerns product standardization, which is a federal responsibility. For now, with regard to Belgium, regulations related to hearing damage due to music only exist in Flanders.

2. From consultation to regulation

A participatory approach was adopted from the outset. This means that the new regulation was developed following extensive consultation with representatives from various sectors: music (technicians, organizers, interest groups, etc.), healthcare (audiologists, coordinating

organizations, etc.), environment (noise experts, local authorities, coordinating organizations, etc.), youth (coordinating organizations, etc.) and various public services (environment, healthcare, culture, youth, education, etc.). The kick-off was in December 2009 with a Round Table during which all the actors involved engaged in dialogue. The process to develop a new regulation was started based on the results of this consultation and an analysis of foreign legislation and regulations. The preference was given to regulation rather than self-regulation - such as in the form of a charter - because of the extremely large and highly diverse sector concerned. The objective was to produce a regulation that applies to all kinds of activities that use electronically amplified music, ranging from pubs, dance performances or annual markets to nightclubs and festivals. Several consultation meetings were planned and a number of provisional proposals were discussed with the target groups to obtain their feedback. Following an intensive procedure, lasting more than two years, the new noise standards for music activities were finally adopted by the Flemish Government on 17 February 2012 [1].

Figure 1: Kick-off

3. From noise standards that protect the environment to noise standards that protect hearing

Noise standards to protect the environment have long been part of Flemish regulations, but there were no specific standards concerning protection against hearing damage. It was decided to include the section related to hearing damage in the Order of the Flemish Government concerning Environmental Licences, or VLAREM [2,3] for short, as was the case for environmental nuisance caused by noise. VLAREM regulates companies, installations, activities, etc. that potentially cause nuisance or present a risk to man and the environment. Therefore, since 1 January 2013, any activity involving electronically amplified music is classified according to the maximum noise level during the music activity. The regulation differentiates between three situations: music activities with a noise level lower or equal to 85 dB(A) $L_{Aeq,15min}$, music activities with a noise level higher than 85 dB(A) $L_{Aeq,15min}$ and lower than or equal to 95 dB(A) $L_{Aeq,15min}$ and music activities with a noise level higher than 95 dB(A) $L_{Aeq,15min}$ and lower than or equal to 100 dB(A) $L_{Aeq,60min}$. A differentiated categorization was selected because not every activity involving electronically amplified music requires an equally high noise level.

These maximum permitted noise levels are combined with the nature and location of the music activity to define which authorization or licence is needed. As a rule, electronically amplified music up to a maximum noise level of $\leq$ 85 dB(A) $L_{Aeq,15min}$ can be played without any authorization or permit. So, for example, pubs that do not exceed 85 dB(A) $L_{Aeq,15min}$ do not need authorization to play electronically amplified music. Higher noise levels are subject to different rules, depending on the nature of the music activity. Aspects such as the location of the activity play a part in this respect.

If it concerns outdoor activities, activities taking place in a tent, or a limited number of activities a year at an indoor venue, the Mayor and the Board of Aldermen of the municipality involved can grant authorization. With this authorization, electronically amplified music can be played up to a maximum noise level of 100 dB(A) $L_{Aeq,60min}$. This category includes outdoor events such as festivals or parties in tents as well as catering establishments that occasionally host a musical act.

Indoor venues with more than twelve music activities a year with a maximum noise level of $>$ 85 dB(A) $L_{Aeq,15min}$ and $\leq$ 95 dB(A) $L_{Aeq,15min}$ are subject to a reporting obligation. This means that before organizing the event, it must be reported (in a simple administrative procedure) to the licencing authority. In this case, it is also possible to apply for authorization to deviate from the maximum noise level in case of special circumstances and for activities of a short duration lasting a maximum of three hours a day. In these cases, the maximum noise level shall never exceed 100 dB(A)$L_{Aeq,60min}$.

Establishments with more than twelve music activities a year with a maximum noise level of

> 95 dB(A) $L_{Aeq,15min}$ and ≤ 100 dB(A) $L_{Aeq,60min}$ must apply for a full environmental licence. This category includes concert halls where live performances take place.

This tiered approach based on administrative obligations represents an initial method to prevent excessively high noise levels. A number of accompanying measures are also imposed per category, whereby the following principle applies: the higher the noise level, the higher the number of accompanying measures that are imposed. In addition to respecting the standard, organizers of music activities with a maximum noise level of > 85 dB(A) $L_{Aeq,15min}$ and ≤ 95 dB(A) $L_{Aeq,15min}$ must also measure the noise level throughout the entire activity. The measurements are taken from the mixing console or other representative measurement point. The imposed standard applies to this point. Moreover, the person responsible for the noise level must continuously monitor the noise level at the measurement point. Thus the regulator aims to use the regulation to increase awareness in this respect: knowledge of the noise level enables those involved to adopt a judicious approach.

Organizers of music activities with a maximum noise level of > 95 dB(A) $L_{Aeq,15min}$ and ≤ 100 dB(A) $L_{Aeq,60min}$ must take further measures. As well as respecting the standard, they must also continuously measure the noise level at the measuring point and make it visible to the person responsible. In addition to this, the measured noise levels must be recorded and stored in order to be available to the supervisory authority. Given that this situation involves noise levels that can lead to hearing damage among the audience in a relatively short period of time, the organizers are obliged to provide the audience with free earplugs. Establishments that require an environmental licence must also compile a sound plan of the fixed, permanently available sound installation. The aim is to optimize the settings of this installation.

No changes have been made to the regulation on outdoor environmental noise standards. There must be compliance with both standards, the one limiting hearing impairment and the other limiting neighbourhood noise (indoor and outdoor limits). In well-insulated rooms, the impact on the surroundings of the noise level in the establishment will be limited. In other circumstances (moderate to no sound insulation), the impact on the neighbourhood very much depends on the noise level in the establishment and the settings of the sound installation. This means that it cannot be excluded that, in a number of cases, the noise level in the establishment will have to be lowered to limit any nuisance to the neighbourhood.

Figure 2: Mixing console with sound measurement device

4. Considerations for developing the standard

When the standard was being developed, a series of considerations was taken into account. The main ones are briefly described in what follows.

Strengthening the accompanying measures when the maximum noise level is increasing, aims to prevent unnecessarily high noise levels being produced. The effectiveness of the series of measures was taken into account when they were being developed. Imposing a maximum noise level is viewed as the most effective. Subsequently, a choice was made for collective measures, such as measuring and recording the noise level, which benefits all visitors. Personal measures, such as wearing hearing protection, are least effective because they must be carried out separately by each individual. Therefore, these are only introduced for the highest noise levels.

The standard is expressed in the average A-weighted sound pressure level $L_{Aeq,t}$ with an averaging time of 15 or 60 minutes. With an averaging time of 15 minutes, a compromise is sought between a shorter assessment time - with the aim of enforcement - and a longer assessment time necessary to maintain the desired dynamic during a music activity. Live performances in particular need sufficient dynamic throughout the music activity. For the highest noise levels, a choice was therefore made for an averaging time of 60 minutes because many live performances fall under the highest category. Averaging times of 15 and 60 minutes are also applied abroad. It was also considered to impose a standard expressed in the average C-weighted sound pressure level $L_{Ceq,t}$. This was not chosen in the end, mainly because few specific measurement results are available for the C-weighting, which made defining a standard extremely difficult. Moreover, the legislation was designed to prevent hearing damage and it is essentially the higher frequencies that cause initial hearing damage, such as the typical notch at 4000 Hz. In contrast, lower frequencies are often the cause of nuisance in the neighbourhood for which other standards have been included in VLAREM. Furthermore, monitoring the combination of an A- and a C-weighted standard would put more technical demands on organizers and enforcers' equipment.

No uniform method has been developed at the international level to quantify the risk of hearing damage from leisure time activities. When the Flemish standard was defined, the noise levels that present an acceptable risk of hearing damage were examined first. These appeared to involve exposure to an L_{Aeq} of 85 dB(A) for eight hours a day, a level that complies with European Directive 2003/10/EC [4]. Simply adopting this standard for all music activities was not feasible in light of a complete music experience. Therefore it was only adopted as a maximum noise level for music activities that do not require any authorization, declaration or an environmental licence. The maximum noise level of the other categories was further determined based on the studied foreign initiatives and a charter launched by the Federation of Music Festivals in Flanders (*Federatie voor Muziekfestivals in Vlaanderen*) at the beginning of the 2010 festival season.

Lastly, a brief note on measuring noise levels. Organizers must measure noise levels using measuring devices that meet or exceed the requirements in the IEC 61672 standard for Class 2 sound level meters [5]. To measure an average A-weighted sound pressure level ($L_{Aeq,t}$), an integrating sound level meter is required. Since the latter is more expensive, it was decided to also make it possible for organizers to follow the L_{ASmax} for the two lowest categories. This means that the following conditions actually apply to the different categories: maximum noise level $\leq$ 85 dB(A) $L_{Aeq,15min}$ or $\leq$ 92 dB(A) L_{ASmax}, maximum noise level $\leq$ 95 dB(A) $L_{Aeq,15min}$ or $\leq$ 102 dB(A) L_{ASmax} and 100 dB(A) $L_{Aeq,60min}$ or $\leq$ 102 dB(A) $L_{Aeq,15min}$.

5. Providing information and raising awareness

Since the new noise standards apply to a great many, highly diverse music activities, considerable attention was devoted to providing information and support to organizers and enforcers. In 2012, information sessions on the new regulation were organized in all the Flemish Provinces, for organizers as well as enforcers. Approximately 1,400 people attended these sessions. Later that year, a technical manual was made available and an accessible brochure aimed at organizers was published. All the information is bundled on the website of the Environment, Nature & Energy Department [6].

In addition, special attention was paid to raising awareness. In 2011, the "Iets minder is de max" (A little lower rocks) campaign was launched. The campaign was specifically aimed at young people aged between fourteen and eighteen and the objective was to make them aware of the risks of hearing damage in an entertaining manner.

This was followed in 2012 by the "helpzenietnaardetuut.be" (Don't let them go beep) campaign. This campaign targets a wide audience comprising children, young people as well as adults and provides information on how hearing damage is caused in everyday life and how to prevent it. The campaign consisted of a radio commercial that was played on various Flemish radio stations for a week in April and a week in July. The information was also published on the campaign's website [7]. As part of the campaign, a mobile app was developed that allows you to obtain an idea of the noise level at your location using a brief sound level measurement. Depending on the result, you receive advice what measure to take for protecting your hearing. The app only serves to provide an indication and was not developed with

the intention of performing a precise sound level measurement.

Figure 3: Logo of the sensitization campaign against hearing loss.

6. Conclusion

The new regulation for music activities entered into force two years ago. The stream of questions and objections has dried up and people have grown accustomed to the new working method. Meanwhile, a number of concerns have been raised, such as those related to enforcement, the enduring conflict between the complete music experience and nuisance in the surroundings, and the correct use of measuring devices. In 2015, the regulation will be evaluated , during which feedback will first be requested from the local licensing and supervisory authorities since they are largely responsible for the regulation's practical implementation.

References

[1] Order of the Flemish Government amending the Royal Decree of 24 February 1977 establishing noise levels for music in public and private establishments, amending the Order of the Flemish Government of 6 February 1991 establishing the Flemish Regulations concerning Environmental Licences and amending the Order of the Flemish Government of 1 June 1995 concerning General and Sectoral provisions relating to Environmental Safety, specifically maximum noise levels of music in establishments. Belgian Official Gazette of 29 March 2012.

[2] Order of the Flemish Government of 6 February 1991 concerning Environmental Licences. VLAREM I. Belgian Official Gazette of 26 June 1991; amended several times.

[3] Order of the Flemish Government of 1 June 1995 concerning General and Sectoral provisions relating to Environmental Safety. VLAREM II. Belgian Official Gazette of 31 July 1995; erratum published on 29 September 1995; amended several times.

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