

# Article:

## Check out the Noise!

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### Check out those noise measurements!

To most people, a noise dosimeter and a sound meter are used for completely different applications, which can actually mean missing a trick or two! This article takes a look at the efficacy of using sound meters vs. dosimeters for noise at work measurement and whether there is an argument for using both.



The noise at work regulations guidance (Health and Safety Executive, 2005) say that you should use a hand held sound meter to take short  $L_{Aeq}$  (Equivalent Continuous level - a bit like and average) measurements, which you can then use to calculate an employee's daily exposure ( $L_{ep'd}$ ) by combining the measurement from each process or task with the time that task is carried out for – This can be tricky with a calculator and pencil, but there's plenty of software that will do this for you once you have the numbers. The HSE also have a really useful calculator on their web site that makes the job simple.

Alternatively, you can use a noise dosimeter to 'collect' the employee's noise exposure as they wear it. This can be worn for an entire shift, meaning that the number on the screen at the end of the shift is the exposure figure you can use to compare with the regulation action levels. Dosimeters are normally used where an employee is mobile such as forklift drivers or maintenance operatives, making hand-held measurements difficult to say the least – unless you're very fit!

### Getting to the bottom of the differences

There are, of course, problems with both these methods (there would be, wouldn't there!). If you are using a hand-held sound meter, you are only taking short measurements (should be a minimum of at least 5 minutes wherever possible!) and then you are estimating an 8 hour exposure figure, so the potential for error is quite large if you didn't capture the 'representative' noise levels! As for those dosimeters, there can be problems with workers abusing the instruments and there are potential errors from reflections of the sound bounding off the wearer's clothing.

There are other differences that are not so obvious at first glance, according to Liz Brueck of Health and Safety laboratories (Brueck, 2012). In her 2012 study, she took multiple sets of sound meter and dosimeter readings and correlated them to determine potential differences. In the case of the  $L_{Aeq}$  readings, the dosimeter results were actually lower (not necessarily what you'd expect), which has been put down to wearers of dosimeters spending some of their time in quiet environments,

whereas the sound meter operative only measured the higher events. This shouldn't be a problem in itself as the calculation of exposure should take into account the time spent in the noise.

There was also a smoothing effect, however which effectively hides the detail of noisier sites or areas, so this should certainly be investigated with a sound meter.



The peak readings were the other way round, with the dosimeters reporting higher levels. The most likely cause for this is that dosimeter wearers are uncontrolled and could pick up unwanted sounds from accidental (or deliberate) tapping of the microphone, or proximity to disturbance such as air-line exhausts. The study did find that general movement of clothing or activity by the wearer didn't significantly affect the results.

### **So what to do for the best?**

The first thing to look at is to make sure that your dosimeter readings are at least free from deliberate 'messing about'. With a new 'toy' comes the temptation to sing into it, the tap it and to use it as a football! The best way to overcome this is to use the thing more! If you own a dosimeter, then it should really be in use – even if you don't note the readings all the time! With

increased measurements you will increase the reliability.

Then you should consider the peaks you're getting. If the dosimeter is suggesting you don't have a problem, and bearing in mind that they tend to over-report, then you can be confident that you don't. If you're not sure, or if the results are on the borderline, then these should be checked with a hand-held sound meter.

### **Conclusion**

In essence, when you look at the data, you really should be doing both; clearly, using a hand-held meter to estimate the exposure should give you a very similar result to using a dosimeter. If the results are completely different, then you may need to think again. I'm not suggesting you do this every time as you'd end up doing nothing but measuring noise (as much fun as that may be!). Certainly, if you were to carry out this check once in a while, you would have a very good case for backing up the integrity of your measurements and putting the results that bit further from challenge!

## The Author

Simon Bull is a leading expert in the fields of Safety and environmental compliance. He is Managing Director of Castle Group Ltd, Safety and Environmental Compliance specialists and has been involved with health and safety and environmental issues for 20 years. He regularly lectures on a variety of health, safety and environmental subjects and is often asked to speak at regional meetings to groups of professionals.

## References

Brueck, L. (2012, March/April). Can I believe a peak reading from a dosimeter? *Institute of Acoustics Bulletin*.

Health and Safety Executive. (2005). *Controlling noise at work: The Control of Noise at Work Regulations 2005*. HSE Books.

# Simon Bull

## Biography and Fact Sheet

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Simon is a leading expert in the fields of Safety and environmental compliance. He has been involved with health and safety and environmental issues for 20 years, and was instrumental in the early stages of the assessment of hand-arm vibration. He regularly lectures on a variety of health, safety and environmental subjects and is often asked to speak at regional meetings to groups of professionals.

*It is to Castle's credit that they have offered these free seminars. City of York Council has done business with Castle in the past and today's seminar can only reinforce our business relationship. (John Stokes – City of York Council)*

*I was very impressed with your road show on Thursday. It was more informative and professional (and less of a hard sell) than I had thought it might be. I think it showed Castle in a very strong, professional light and I hope they generate the business they deserve to.*

*(Richard C Topliss - Croft Occupational Hygiene Ltd.)*

Simon is Managing Director of Castle Group, specialist Compliance Company and has a passion for good practice within the safety and environmental professions. He has appeared on TV shows including 'Inside out' looking at vibration caused by pot-holes in the road and has been on radio on numerous occasions. He has also been interviewed for articles in numerous journals, magazines and newspapers.

*Simon is very good at thinking on his feet and giving a comprehensive answer to any question put to him. I always know I can rely on Simon for a good, well balanced quote when looking for a reaction to breaking news.*

*(Laura Crothers, Scarborough Evening News)*

Simon is able to provide informed and entertaining comment on many areas of health and safety, or environmental issues and is just as comfortable talking about running a burgeoning business in a struggling economy.

To book Simon for an interview, call him on 01723584250

