

2 + 2 = 5

It's unlikely that a six year old who came up with $2 + 2 = 5$ in a maths class would say to the teacher: "But it is OK, I was working in decibels!". The young are spared the complications of decibels and, perhaps, we would all be better off without them. Life without decibels! We will be free from different reference levels, which confuse comparisons and lead to unremitting errors for those outside the inner circle of acousticians. How much easier it is to add 1Pa and 2 Pa to give 3Pa, rather than to add 94dB and 100dB to give 101dB (approximately).

The old reasoning, that decibels compress the wide range of sound levels into smaller numbers, loses some validity when we consider that most sounds of interest cover, say, a 70dB range, which is about 3000 to 1.

And what about microphones? Which sensitivity do you prefer for a measuring microphone:

50mv/Pa or -26dB re 1V/Pa

They are both the same.

Dynamic microphones might be given as -75dBV/microbar. The nameless "V" here also means a reference level of 1 volt and "microbar" (otherwise known as 0.1Pa or 74dB) shows that this was the test level. It's so much simpler to have the information as 0.18mv/Pa, measured at 0.1Pa, which is what it actually is. Are some microphone manufacturers trying to hide their low output voltages by adopting a sensitivity label which gives a larger number for a lower output? And why do others simply say: "Sensitivity -60dB" leaving the uninitiated completely in the dark.

There is also misunderstanding of underwater decibels. The decibel reference level is one micropascal (μPa), with typical underwater levels of over 200dB. Hang on! 200dB might knock us over and reduce us to a bubbling mass of semi-human remains. But decibels in water are not the same as decibels in air. You also have to consider the acoustic impedances of air and water, which are in the approximate ratio 3600 to 1. Since, for equal pressures, sound intensity levels are inversely proportional to the acoustic impedance of a medium, this gives 36dB difference, whilst the different reference levels account for a further 26dB, making a total difference of 62dB. Attempts to compare the decibel effects of jet engines on humans with those of sonar on whales, just add further confusion.

Even though the solid entrenchment of decibels in standards and legislation means that attempts to replace it will fail, we should insist that decibels are never used without a clearly stated reference level.

HILTON HEAD AIRPORT

Beaufort County(SC) officials want to make sure that all who move near the Hilton Head Island Airport know what they're getting into. Some airport and county government officials want the town to require potential property owners to sign a disclosure agreement saying they are aware they will be under flight paths and subject to noise. If the town approves the measure, it would require all property owners in the airport hazard overlay district — an area extending from the runway encompassing the approach and departure zones for planes — to get a signed disclosure form before the property can be sold. The proposed agreement would only say the owner and buyer acknowledge the possibility for noise and overhead flights.

noise
notes

HEARING LOSS DAMAGES

UK Coal Ltd is to pay £4,500 in damages to a man from County Durham who suffered noise induced hearing loss during a period of exposure with the firms AF Budge and RJB Mining Ltd, which UK Coal Ltd later took over. Mr Burns brought his claim after realising that his hearing had become impaired, struggling to hear normal conversations. Burns worked for RJB Mining Limited from 1984. In 1986 he started to work in the open cast mines, and in 1991 he worked with the drilling team for three years. The company was then taken over in 1995 by UK Coal Ltd, and he was made redundant in September 2005. Burns explains: "The noise was often excessive; you couldn't hear yourself think. Normally on a morning we were provided with sponge type ear protection. However, when you were out with the gangs these were not always available. I got used to the noise but I never realised the lasting and damaging effect that it would have on my hearing". In April 2003 he attended for a routine health check when he was advised that his hearing had deteriorated and that he had high blood pressure. Tom Brennan, Regional Secretary of trade union GMB, comments: "We are very pleased with the outcome of David Burns' case because noise is still one of the most underestimated workplace risks. We hope that other employers that continue to put their employees at risk will take note." Representing David Burns, Michelle Reid-Mitchell from Thompsons Solicitors in Newcastle explains: "RJB Mining should have provided David Burns with suitable equipment to protect his hearing at all times. The compensation he has secured is wholly justified given the lasting damage to his hearing caused by the ongoing exposure to noise at work."

NORWICH STUDENTS

A Norwich woman is so fed up with noisy students, she has launched a petition calling on the government to make landlords responsible for tackling anti-social behaviour by their tenants. Melinda Moore, 47, has set up a petition on the 10 Downing Street website calling for landlords to take more responsibility. She said: "I have reached the end of my tether. I have lived next to students for 11 years but this has been my worst experience I've had. Increasing numbers of tenants, particularly students, are causing noise nuisance with loud music, slamming doors and shouting during the night on weekdays." Mrs Moore blamed the increase in anti-social behaviour on the extension of the licensing hours, and environmental health officers going off-duty at 2am, before most trouble starts.

PREDICTIONS NEED TESTING?

The New South Wales Planning Minister, Frank Sartor, is calling for the Commonwealth to establish an independent umpire to investigate aircraft noise predictions by private airport owners. In September a development company sought an injunction in the Federal Court on figures estimating aircraft noise which were produced by the Canberra Airport. The company is also appealing an earlier decision made by the court, that would effectively stop a housing development at Tralee going ahead. Mr Sartor says the government body Airservices Australia can only check whether the actual numbers are correct, not whether the predictions are accurate. "The current role of Airservices Australia is not appropriate but there ought to be an independent umpire that does not have a conflict that is outside the aviation industry that says whether these predictions are reasonable or not."