

# SONĀRE

*The Environmental Acoustics Magazine*

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*Premiere Issue*  
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# HEARING HEALTH







**W**hether the cause was a rock concert, lawnmower or fireworks, who hasn't experienced the warning signs of hazardous noise levels at some point in their life: not being able to hear a person talking from 3 feet (1 m) away, finding speech and other sounds muffled after leaving a noisy area, experiencing pain or ringing in your ears. Because continued exposure can permanently damage hearing, many countries have standards ensuring the average level to which an employee is exposed during an eight-hour workday doesn't exceed 80 dBA.

But the potential side effects of noise depend on more than just volume. Research shows that sporadic noises—even those of low volume and short duration—also have an impact. Our senses are designed to detect such changes in our environment, making them difficult to ignore—in fact, even while we're asleep. They can elevate heart rate and blood pressure, disrupt sleep, hamper job performance, and also cause fatigue, irritability and stress. These effects are particularly evident in studies done within healthcare environments.

By providing a consistent background sound level, masking alleviates the disruptive impact of intermittent noises (aka 'dynamic range'). It covers noises that are at or below its level. It also decreases the magnitude of change between baseline and peak volumes, creating a less variable, less distracting—and, therefore, more comfortable—acoustic environment. For the same reason, masking is very effective at improving the sleeping environment in homes, hospitals and hotels.

Masking is usually set to between 40 and 48 dBA, but people sometimes ask if it will interfere with communication. To put it in perspective, conversation generally falls into the range of 50 to 60 dBA. The distance between two people talking isn't sufficient for masking to hinder intelligibility or cause them to raise their voices (aka 'the Lombard Effect'). At 45 dBA, you can be 13 feet (4 m) apart and carry on a conversation using a normal voice level. In restaurants, an ambient level of 70-75 dBA still allows comfortably unencumbered conversation.

Also, the decibel scale is logarithmic, so while the difference between two levels might appear small, it's actually exponential. For example, the energy of an 80-dBA sound—the level at which hearing concerns begin, with prolonged exposure—is 1585 times greater than a sound of 48 dBA—the typical maximum masking level for open plan. Expressed in terms of distance, if 80 dBA is equivalent to 1 mile (1.6 km), 48 dBA is only 3.3 feet (1 m).

*When talking  
about acoustics,  
there's a tendency  
to focus solely  
on volume.*

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