

LESNER HEARING CENTER

Newsletter Fall 2019

OCTOBER: NATIONAL PROTECT YOUR HEARING MONTH

Noise-induced hearing loss (NIHL) can be caused by a one-time exposure to very loud sound or by repeated exposure to loud sounds over an extended period. Loud noises can cause permanent damage to the hair cells (sense cells) inside our cochlea. These cells send electrical signals to the brain. Groups of cells detect sound for each pitch (frequency) ranging from low pitch (20 Hz) to high pitch (20,000 Hz). The frequencies between 250 and 8000 Hz are most important for hearing speech. The high frequencies, particularly around 4000 Hz that process voiceless consonants like s, f, p, t, k, are the ones most often damaged by loud noise.

Loudness is measured in decibels (dB) of sound pressure. See the table at the right showing maximum exposure time permissible with increasing loudness. A noise increase of just 3 dB **reduces the permissible exposure time by half!** You can measure loudness with a sound level meter or a sound level meter app on most smart phones.



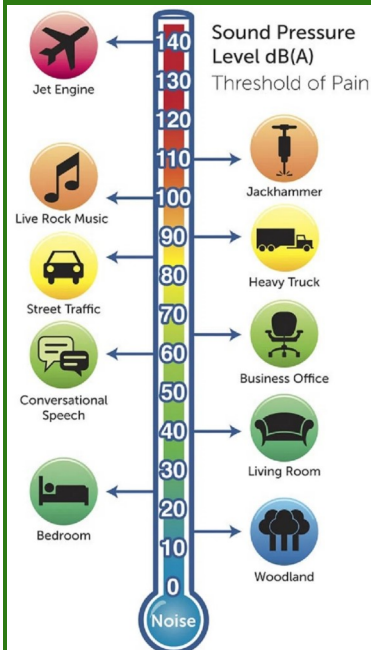
Generally, **noise is dangerous if** you have to shout over background noise to be heard, the noise is painful to your ears, the noise makes your ears ring, or you have “muffled” hearing for several hours after exposure.

There are three **ways to protect your hearing** from damaging noise:

1. **Walk Away:** By moving away, the decibel level of a sound will decrease by 6 dB every time you double the distance from the sound.
2. **Turn It Down:** Turn down the volume on your personal stereo system, car stereo, radio, television, speaker system, or PA system.
3. **Protect Your Ears:** Cover your ears with ear plugs, ear muffs, or even your finger when no other options are available.

It is important to insert ear plugs properly. Bring in your earplugs to your next appointment and we'll practice with you! If you need hearing protection but still want clarity in speech or music, talk to us about custom musician's earplugs. We make custom motorsport earplugs for motor cyclists/dirt bikers and custom shooters plugs for hunters. If your partner snores or your neighbors are loud, ask us about custom sleep plugs.

NOISE THERMOMETER



Permissible exposure time without hearing protection:

85 decibels	8 hours
88 dB	4 hours
91 dB	2 hours
94 dB	1 hour
97 dB	30 minutes
100 dB	15 minutes
103 dB	7.5 minutes
106 dB	<4 minutes
109 dB	<2 minutes
112 dB	~1 minute
115 dB	~30 seconds

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BLUETOOTH HEARING AIDS AND THE BRAIN



Hearing aids sit on the ears for many hours every day. They “talk” to each other wirelessly (between the left and right aids) and to other devices such as a cellphone, tablet, laptop or television.

Do these wireless hearing aids present a health risk?

Short answer: **No.** Wireless hearing aids are safe and strictly regulated medical devices that meet governmental standards for wireless communication in addition to those set forth for medical devices.¹

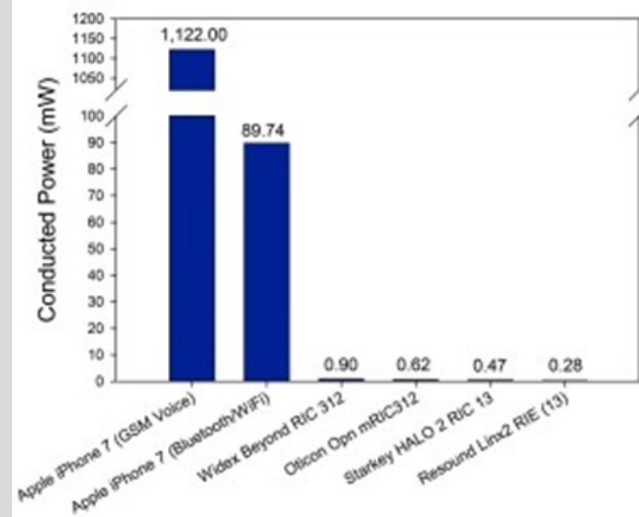
Hearing aids use Bluetooth, a 2.4 GHz radio frequency, to communicate with other electronic devices such as smartphones, tablets or computers. Bluetooth hearing aids emit a form of electromagnetic radiation. There are two types of electromagnetic radiation: *ionizing* radiation and *non-ionizing* radiation.

Ionizing radiation can be dangerous because it can break the bond between atoms which can damage DNA and increase the risk of cancer. Types of ionizing radiation include ultraviolet, X-rays and Gamma rays.

Non-ionizing radiation is not dangerous because it does not have enough energy to break the bond between atoms. Bluetooth devices (i.e., hearing aids) produce non-ionizing radiation which has a thermal or warming effect rather than an ionizing effect.

It is unlikely that a hearing aid would ever get warm enough to cause a localized temperature increase behind or in your ear.

The figure at the right shows the amount of power output for various 2.4 GHz hearing aids and two smartphones. The conducted power of 2.4 GHz hearing aids is significantly lower than those of cellular phones.



Summary of the conducted RF power output measurement of the Apple® iPhone® 7 (model A1660) and various 2.4 GHz wireless hearing aids are plotted. The GSM Voice measurement was made at 1900 MHz.

Studies into non-ionizing radiation from Bluetooth are still ongoing but continue to show that it does not pose a health risk.^{2, 3}

1. Burwinkel JR, Mitchell WJ, Elghannai E, Galster JA. Do Wireless Hearing Aids Present a Health Risk? Hearing Review. 2017;24(6):34-40.
2. US Federal Communications Commission (FCC). Wireless devices and health concerns. November 1, 2016. Available at: www.fcc.gov/file/15273/download
3. World Health Organization (WHO). Electromagnetic fields and public health. May 2006. Available at: <http://www.who.int/peh-emf/publications/facts/fs304/en>

\$200 OFF

A PAIR OF PREMIUM LEVEL HEARING AIDS

OR

FREE ACCESSORY WITH THE PURCHASE OF A PAIR OF PHONAK HEARING AIDS!

Expires December 31, 2019

TESTIMONIALS

"After years of having a hearing issue, I went to a hearing expo and there met Dr. Lesner. I was extremely impressed that she actually listened to me and "got it." Meaning, she was the first doctor/audiologist to really understand my hearing loss. That was over 2 years ago. I finally took the plunge, made an appointment and went in to see her.

My experience was amazing! She fitted me with hearing aids that no one can see and I can actually hear! SO VERY HAPPY! The equipment is exceptional quality, the price was within my budget and so well worth it. Her colleague and assistant are also very knowledgeable and accommodating."

Overall Rating **A**
Hire Again: **Yes**

BF
Fairfax, VA

HAIR PRODUCTS AND HEARING AIDS

Hearing aids are generally resilient, but they can only handle so much. When you apply any hair or head products (e.g., hairspray, gel or lotion) be sure to first apply the products to your hair or head, then wipe your outer ears, THEN put on your hearing aids. Avoid getting dirt, dust or debris on the hearing aid microphones. If you do get debris on your hearing aids, turn them upside down so that the microphones face the ground and gently wipe or brush the hearing aids. Be sure to work over a table so that if you drop the hearing aid, it won't have far to fall.

Feel free to ask us to review cleaning your hearing aids at your next appointment.



COMMUNICATION STRATEGIES

One of the most challenging listening environments is in background noise, especially in loud restaurants. We want to position ourselves in the most optimal way to ease conversation. This position is different for a person with hearing aids and a person without hearing aids.

Hearing aids are designed to **reduce noise from behind** to make it easier to hear people in front. Ideally, a person **with hearing aids** will sit at a corner table or one against a wall with his/her **back to the room** (the restaurant noise **behind you**). Your communication **partners** should face you and have **their backs to the wall**.

It is completely opposite for a person **with normal hearing**. The brain is better at picking out a desired sound from in front when there are no distractions in back. A person without hearing aids should sit against a wall, facing their communication partners and the rest of the restaurant.

It is normal to miss *some* words in these situations, even with normal hearing.

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