

Noise

Noise - Hearing Aids and Hearing Protection

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What are hearing aids?

Hearing aids are devices that fit in or worn on the ear to allow a person who is hard of hearing to amplify sound. Styles of hearing aids include in-the-ear and behind-the-ear.

Hearing aids have five common parts: microphone, amplifier, speaker, battery, and processor (computer chip) that can be adjusted by the hearing care professional to suit the wearer's needs. All hearing aids process sound, which means that when sound arrives at the hearing aid, it has to be sectioned into bands of sound (sometimes referred to as "channels") and digitized before it can be amplified. Although most hearing aids are created with a similar construction, there can be significant differences in the quality of sound capture and speech recognition between different devices.

Hearing aids may also include features such as Bluetooth® or Frequency modulation (FM) compatibility which allow sound to be processed by a device before sending it directly to the hearing aid. Some hearing aids have settings that can be adjusted according to the environment or level of noise.

Is hearing aid use a workplace issue?

Hearing aids allow the wearer to:

- Communicate better
- Improve safety by being able to hear alarms or signals
- Monitor the equipment or environment for changes

Hearing loss and the use of hearing aids may be a concern when individuals have difficulty understanding speech or sounds, especially in difficult listening conditions. These difficulties increase when the ambient (background) noise level is similar to the frequency of speech. For example, a worker may not be able to hear instructions clearly, perceive alarm signals, or locate the source of the sound (especially if the noise source is moving, such as a forklift). It may also be difficult to detect changes in the noise emitted from machinery, which may indicate the machine is in poor repair or may malfunction.

Hearing aids are generally designed to maximize speech perception in a general environment (for example, the hearing aid is adjusted to focus on speech frequencies in front of the user). There is concern in a workplace setting that it may be difficult for the worker to determine where the sound is localized (such as if the workspace is loud or has echoes). Another concern is the hearing aids may over amplify certain frequencies. The overamplification may aggravate hearing loss or create a hazardous situation for workers.

What should be considered when a person who uses hearing aids also may require hearing protection?

The Institut de recherche Robert-Sauvé en santé et en sécurité du travail (IRSST) (2018) reports that only a few scientific studies have dealt with the issue of wearing hearing aids in noisy work environments. As a result, it can vary regarding what the best practice and associated risks will be for each person or situation.

However, the Occupational Health and Safety Administration (OHSA) in the United States released a “Standard Interpretation” (2004) which states that “Hearing aids are not hearing protectors. Employees should actually leave their hearing aids on and wear ear muffs with sufficient attenuation to reduce all workplace noise below 85 dBA TWA. Employees need to be protected from excess noise, but should also be able to hear any machine noises or warning signals necessary.”

Know that:

- Hearing aids do not offer a level of protection and are not considered to be hearing protection devices
- Hearing aids may amplify the sound level of both desired sounds as well as background noise
- Hearing protection devices must be worn (with or without hearing aids) if the noise or sound level is close to or greater than the occupational exposure limits (OEL) for noise
- Being exposed to high levels of noise may further damage to hearing even after some hearing loss has occurred

Organizations should:

Organizations should:

- Reduce noise exposure at the source whenever possible to protect all workers
- Perform detailed noise exposure measurements to determine high noise levels and the attenuation needs for the worker
- Perform [a job safety analysis](#) to determine if the worker needs to wear hearing aids at work
 - what hearing requirements does the worker require (such as the need for verbal communication or to hear audible warning signals)
 - if there are elements such as alarms, signals, or devices that the worker would need to hear for their safety
- Investigate if other noise engineering [controls](#) (e.g., changing a task to eliminate the need to hear a signal) or administrative controls (e.g., limiting exposure time, using a “buddy” system to alert others of an issue) can be used
- Provide alternative methods for alarms, such as those that include both sound and light
- Develop a [hearing conservation program](#)
- Determine if it is possible for the worker to wear both hearing aids and hearing protection (such as ear muffs) without reducing the protection provided by the hearing protection (e.g., the ear muffs are able to cover both the ear and hearing aid without a break in the seal)
- Determine if removal or turning off the hearing aids in order to wear hearing protection will reduce the worker’s safety (e.g., will the worker be able to perform tasks appropriately and receive instructions or signals as needed)
- Consult with a medical professional or audiologist to gain a better understanding of the type of hearing loss and hearing aids used by the worker, and what measures can be taken in the workplace to help ensure the worker’s safety and protect from further hearing loss (e.g., if the worker can be exposed to the noise at the workplace for the entire workday, even when protected)
- Perform [audiogram](#) to monitor for changes in hearing. Those who have hearing loss should be tested approximately every 6 months to monitor for changes in hearing.
- Use other methods of communication, including written text (on paper or electronically; Bluetooth® or FM communication, etc.)
- Provide education and training for persons who are hearing impaired to make sure they understand all instructions or evacuation procedures. For example, it may be difficult to communicate in an emergency
 - Use flashlights to guide persons who are hearing-impaired from the building if power fails or if smoke affects visibility. Stay in physical contact with them until they reach a safe area

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