Factors to consider when selecting hearing protection

Noise-induced hearing loss is 100% preventable and this makes it extremely important for workers to choose the right type of hearing protection for their environment. With so many options available, it can be difficult to determine which style of hearing protection is preferable for each person. Earplugs and earmuffs come in many styles and configurations, including communication headsets, which makes it even more important to take the following into consideration when choosing which type of protection will be best suited for each worker.

Determining noise level and environment

According to CSA Z94.2-14, workers require hearing protection when the average noise levels in an eight-hour shift exceed 85 dBA. In order to determine the extent of worker exposure to noise, every workplace is required to conduct a noise assessment to determine the level of noise in the work environment. Choosing the proper hearing protection for any environment begins here because the selected product must provide adequate protection for the environment that the worker is in. Knowing the exact noise level also prevents the risk of overprotection, which can be dangerous when it leads to other risks such as lack of situational awareness in the workplace.

Other environmental factors must be taken into consideration when choosing hearing protection. These include temperature (extreme heat or cold), humidity and cleanliness levels that could make inserting foam earplugs with clean fingers a challenge.

Selection methods

When choosing hearing protection for workers, it is important to understand that the selection methods for hearing protection were recently updated in CSA Standards Z94.2-14 and Z1007-16. These CSA standards state the following:
The appropriate hearing protector shall be chosen according to one of the four methods. Assigning hearing protection devices is based on attenuation and noise exposure levels.

1. Use of **classes**, which pre-assigns the HPDs according to defined attenuation ranges;
2. Use of a **single number** like NRR or SNR (SF_{84});
3. Use of **Field attenuation estimating system** (FAES) fit testing, and;
4. Use of the **octave-band** approach.

Another factor to keep in mind when choosing hearing protection based on the NRR is that differences of 3 dB or less are insignificant. Because hearing protector ratings are based on the results of hearing tests conducted with human subjects, there is a natural amount of variance between the tests, approximately 3-5 dB.

Know your workers

Once the workplace noise levels are determined, environmental factors are considered and a selection method is implemented, the other key factor to take into account when selecting hearing protection is the individual worker. It's important to keep in mind that like with other types of personal protective equipment, there is not a one-size-fits-all approach to choosing hearing protection.

Training

Employees in a workplace hearing conservation program should be trained on a regular basis to ensure they understand how noise exposure affects their health and how to properly select, wear and care for their hearing protection. If workers aren't trained on how to properly insert earplugs or use earmuffs, they could be at risk for noise-induced hearing loss. Because hearing loss usually occurs gradually, it's important to continually educate and train workers on the importance of properly wearing hearing protection.

Comfort

It's important not to underestimate the value of comfort in selecting hearing protection. If the hearing protection is comfortable to the worker, they are more likely to wear it correctly in noisy environments. For example, an uncomfortable earplug may be removed halfway through a shift, leaving a worker exposed to harmful noise levels. It

is because no two ears are the same shape or size that 3M provides so many options for hearing protection.

Existing hearing loss

Workers who have existing hearing loss also need to be carefully considered. It is important to preserve their hearing while also ensuring they are able to hear critical conversations, workplace alarms, equipment warnings, etc. According to CSA Standard Z1007-16, hearing aids should be removed when working in hazardous noise because they are not intended to be used as hearing protectors and they do not provide protection against noise exposure. If the hearing aid is on, it can actually amplify the already hazardous noise and potentially cause further hearing loss.

The preference for workers with hearing loss is to be provided with an electronic hearing device with external microphones that have adjustable volume levels and is equipped with a limiter. CSA Z1007-16 states that wearing a hearing aid under an earmuff is not recommended unless an audiologist has assessed the output of the hearing aid under the earmuff.

Mobility limitations

Certain workers might have difficulty rolling down earplugs or using the proper insertion technique due to mobility issues. For example, workers with mobility issues in the shoulder region or who have arthritis could be affected and may need additional individual training sessions to find a suitable solution. A possible solution for this issue is the push-to-fit style of earplugs, which can be inserted in the ear without needing to be rolled. Earmuffs can also prove to be successful in meeting needs that can arise from mobility issues.

Personal preference

Limiting hearing protectors to only one option will not address the needs of all workers. Having various types of hearing protection available to workers provides choice and ensures that comfort, personal protective equipment (PPE) compatibility and environmental factors are taken into consideration.

Communicating in noise

It is important to balance workers' needs with the ability to communicate while wearing hearing protection. Enhanced communication is possible even in noisy environments. Protective communication devices help improve safety, productivity and also help reduce the risk of hearing loss. For example, an earmuff with a built-in environmental microphone allows face-to-face conversations and improved situational awareness in the work environment. These solutions also work with existing radio systems.

Fit testing

When the above factors are taken into consideration, chances are increased that workers will properly wear the necessary hearing protection for their environment. However, it can be difficult to accurately measure the amount of hearing protection each worker receives from their hearing protector. An objective way to measure the fit of earplugs or earmuffs is by fit testing workers to determine their Personal Attenuation Rating (PAR). Fit testing workers can also help identify trends and problem areas, also providing an optimal time for one-on-one training to help drive improvement.

The 3M™ E-A-Rfit Dual-Ear Validation System fit tests 3M earplugs and earmuffs to determine a PAR. The test itself is fast, easy and objective with clear and accurate results. A worker can either pass or fail and their PAR is displayed upon completion of the test, indicating their level of protection.

When a worker fails the fit test, it provides employers with an immediate opportunity to take action to either train the worker on proper insertion or choose a device that provides a better fit.

To request a demo of the 3M™ E-A-Rfit Dual-Ear Validation System, please visit 3M.ca/Hearing for more information. For questions about how to choose the right hearing protection for your workers, please visit us online or contact the 3M Canada Safety Centre at 1-800-267-4414.

References

Canadian Standards Association. Z94.2-14 Hearing Protection Devices – Performance, Selection, Care and Use. 2014.

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