



Announcer

It's time for *the IHSA Safety Podcast*.

Ken Rayner:

Welcome to the *IHSA Safety Podcast*. I'm your host, Ken Rayner. On this episode of the podcast, we're joined once again by Jasmine Kalsi IHSA's occupational hygienist.

Welcome back to the podcast, Jasmine.

Jasmine Kalsi:

Thanks for having me, Ken.

Ken Rayner:

Oh, always pleasure to have you here. And today we're going to discuss noise within the workplace specifically and the risk associated with it and the controls employers can implement to help keep their workers healthy and safe. And Jasmine, what I learned in preparing for this podcast is that exposure to noise may sometimes be unavoidable, but hearing loss is 100 per cent preventable if you know what precautions to take. So let's jump into this podcast on noise.

So let's start with the first question. Why is noise a hazard and why should employers and workers pay particular attention to this hazard?

Jasmine Kalsi:

So when workers are exposed to noise for too long or at levels that are too loud, this can cause irreversible damage that results in hearing loss. And this is also known as noise-induced hearing loss, in short, NIHL. So when you look at the stats from WSIB [Workplace Safety and Insurance Board] noise-induced hearing loss is a number one and non-fatal claim in the construction, transportation, as well as utility sectors, all of these sectors which IHSA represents. So the statistic alone stresses the need for awareness and control on this hazard.

Ken Rayner:

Absolutely. Let's just repeat that one more time to make sure that's clear. It is the number one non-fatal claim in the sectors that IHSA supports, construction, transportation and electrical utilities. Wow. Okay. There's a good reason for having a podcast on this topic. So can you tell me about how noise can damage the hearing, and is that damage reversible?

Jasmine Kalsi:

Yeah, so short answer is no. I'll first just walk through on a high level of how noise travels. So our hearing process, it begins when the outer ear directs sound waves into the ear canal and our ear drum vibrates as these waves, the sound waves strike it, and pretty much vibration is transmitted through our middle ear as well as our inner ear. So our inner ear contains fluid as well as these highly sensitive hair cells that can feel vibration. So when we are exposed to noise, these hair cells respond, and this is indirectly responding to the vibration itself. So when you're continually exposed to loud noises, these hair cells can become damaged. And when this happens frequently these hair cells can become permanently damaged. So in other words, it is not reversible.

So over time, exposure to noise can cause noise induced hearing loss, tinnitus, which is the ringing in the ears, as well as is known to cause high blood pressure as well as fatigue.

Ken Rayner:

So when the hair cells become damaged, that's it. As at this point in time in 2023, we do not have a means to be able to reverse that damage.

Jasmine Kalsi:

No.

Ken Rayner:

Wow. Okay. Jasmine, we're constantly exposed to background noise, it's happening all around. So how can an employer determine if the noise level within their workplace is a hazard to the workers?

Jasmine Kalsi:

Yeah. So within Ontario, we have noise exposure limits. So this limit represents what workers are allowed to be exposed to in an eight-hour work shift. The limit is presented in our regulations, so Ontario Regulation 381, which is specifically on noise itself. You can access this online through e-Laws. But in Ontario, our noise exposure limit is set at 85 decibels.

So I'll speak a little bit about decibels in the unit itself. So decibels is a unit to measure noise itself. It's important to keep in mind how decibels work. They are in logarithmic scale. So you need to keep in mind that when you're carrying out any calculations, the log scale must be considered. So for example, you can't add noise levels directly like other numbers. For example, if you have two noise sources in a room that are producing 90 decibels each, the combined output is 93 decibels versus the typical math that we do is 90, 90 is 180 decibels. So the combined output is 93 decibels, which is actually a doubling of intensity.

Ken Rayner:

And is it such where when we have multiple noise sources, is that more detrimental as opposed to maybe a single noise source within a workplace?

Jasmine Kalsi:

Yeah. Again, it depends right on the level of noise that is being produced. But yes, if there are multiple sources of noise, that will contribute to the overall noise that we would be experiencing in terms of hazard.

Ken Rayner:

Okay. How about we get into some of the tasks? So let's look at some examples of things that could produce a loud amount of noise and maybe be over the limits. So what are some of those tasks that you could share where noise might be a hazard to the workers?

Jasmine Kalsi:

So there are a variety of task workers can be carrying out where noise exposure limits can be exceeded. When we consider work that takes place on construction projects or like utility projects, let me give some examples. So backhoes can produce noise levels between 85 to 100 decibels. Compactors are known to be between 90 and 102 decibels. Chainsaws, which are commonly used by utility arborists, have noise levels between 100, and it could go upwards to 115 decibels. Whereas you have air compressors when they're running, they could go from between 84 to 104 decibels. So if we think about it, if workers are operating these types of equipment for the duration of their shift, assuming it is an eight-hour shift, it could be safe to say that they're likely overexposed to noise and controls need to be implemented.

Ken Rayner:

So what are the ways then that employers or supervisors can measure the noise to know if it's a hazard that they need to address because it could be detrimental to the workers' hearing.

Jasmine Kalsi:

So for noise measurement itself there is a particular method to follow, and this would be the CSA's Z107.56, and this is a CSA method that covers the measurement of noise exposure. It provides guidance on the type of equipment to use, what workers you should be considering to test, and as well as how to test itself. So it's a good idea to have this type of assessment done by an occupational hygienist or someone who is knowledgeable and trained in conducting noise measurement. So someone that is familiar with the CSA method itself.

However, if you're ever wanting for a quick snapshot of what noise levels are in the workplace, you can always do a preliminary assessment using your phone. So there's actually an app, it's called the NIOSH Sound Level Meter, and you can find it in the App Store for iPhones. You can download this app and measure noise around in the workplace. So it is a phone application, so there are some limitations to keep in mind as well as accuracy needs to be considered. If you're ever using this app on site, it's suggested to keep an error margin of plus or minus 5 to 10 decibels. But it still can give you an idea if there's a reason for concern, and you can measure your noise and compare it to the noise exposure limits. This can act as your initial trigger for further investigation where you want to bring someone on

site to do the proper CSA method of evaluation. So it could be as your initial risk assessment in the workplace.

If you don't want to use the phone app itself and you just want a general idea if it's loud, another good rule of thumb is that if you are about an arm's distance away from a person and you need to raise or shout your voice to the other person to hear you, that's a good indicator that, hey, maybe the noise levels are loud too.

Ken Rayner:

Okay. So we've established the means to measure the noise to determine whether there's an issue that needs to be addressed. How, Jasmine, would an employer go about establishing controls once they know that there's some issues in the workplace, how do they go about establishing controls to address the hazard of noise?

Jasmine Kalsi:

Yeah, so when considering controls we always want to refer to the hierarchy of controls, and this is something I spoke about in the initial occupational health podcast as well. So if noise cannot be eliminated, we want to look into engineering controls. So this includes modification, retrofitting of equipment. So this can include installing a noise reduction attachment or even noise dampening materials. Engineering controls also include the replacement of worn parts that may be a source of noise itself. But if engineering controls are not feasible or practical or they just don't fall within the budgets, you can also consider administrative controls. And this can include job rotation to reduce the duration of exposure for a worker, posting warning signs of any high noise areas in the work site, creating education and awareness within workers, as well as having maintenance programs.

And as we go through the hierarchy, the last part is the PPE section, the personal protective equipment. And we're all familiar with this. So hearing protection devices are commonly found throughout industry. For the selection, care and the use of these type of devices you can always refer to the CSA Standard Z94.1. I should highlight, it's important to ensure that the right type of hearing protection device is selected. You don't also want to overprotect either. So it's a good idea for employers or supervisors to educate themselves on the differences between the different hearing protection devices as well as the ratings that are associated with them.

On this topic, I just also want to mention and has been brought up by our occupational disease and research group, is the use of music listening devices by workers. So it's commonly observed that earbuds are used on the work site, and there's also a common assumption that these work as an equivalent to hearing protection devices such as earplugs or earmuffs. So I want to stress highly that this is something that does not work the same as a CSA rated device. Earbuds are not rated for hearing protection and can be considered as counterproductive. Sure, you can see these advertised as noise canceling, but to what level? We don't know as they're not rated and they're not tested for it either. But wearing earbuds in the workplace, again, it introduces an additional noise exposure in the workplace. Because right now, noise is then delivered right at your ear at volumes that are at the discretion of the user. So this can also affect the user's hearing ability as well.

Ken Rayner:

Okay. So we've talked about establishing controls. We've talked about measuring. How about evaluation of the effectiveness of the controls that the employers are putting in place? So how does an employer determine whether the controls are working and that the worker's hearing is not being negatively impacted moving forward?

Jasmine Kalsi:

So we have audiometric testing, and this is the way to monitor an individual's hearing ability. This type of testing establishes a baseline measurement of a worker's hearing at the start of the job. And if you do the repeat of testing of regular intervals, it allows you to determine if there've been any changes in the worker's ability to hear. So there are numerous benefits in carrying out this type of testing. Again, it allows the employer to monitor patterns or any trends in hearing loss if more than one worker has been impacted. It allows the employer to just carry a little review of the work tasks and identify any causal factors for hearing loss. It kind of validates the proper use of hearing protection devices on site, making sure you're using the correct type and it also promotes education for workers about noise in the workplace, and it actually motivates for protecting hearing.

So in Canada, however, more than only half the provinces have mandated for the employer to carry out audiometric testing. Unfortunately, in Ontario, it's not mandated in regulations, even though audiometric testing is an effective control in preventing hearing loss. So I'll just give one example. The International Brotherhood of Boilermakers, and this is represented by Blair Allin, who is a Canadian health and safety rep, they carried audiometric testing for its members. They establish a baseline allowing workers to monitor hearing loss during their careers. So part of the clinics, they get custom-fitted noise-canceling earplugs, which is an additional bonus as well. So molds are taken during the clinics with the health and welfare benefits, covering all costs. Testing usually takes between 15 to 20 minutes a member and usually working with the audiologist.

So this clinic itself, it's a great example of taking proactive approach against hearing loss as well as educating and creating awareness within the workforce.

Ken Rayner:

Okay. And a great testament to the Boilermakers and Blair Allen for the work that they're doing. Great job. What resources does IHSA have for noise for the employers, for our members? What should they be looking at when they go to the IHSA website, Jasmine?

Jasmine Kalsi:

Yeah, so we have a variety of resources for noise. Again, you could always visit our occupational health topic page on ihsa.ca. We do have a noise section on it under physical hazards. I'll just give some examples of our resources. We have a safety talk on hearing protection. Within the *Construction health and safety manual* (M029) we do have a chapter on this topic as well. If you're ever interested in getting trained, we have eLearning courses covering the topic of the basics of hearing protection, and we have various articles and publications on noise and hearing itself.

But if there are any specific questions to noise or hearing protection devices, you're always more than welcome to reach out to me directly at jkalsi@IHSA.ca.

Ken Rayner:

Okay. Can you repeat that one more time? Maybe just spell that the email address for our listeners?

Jasmine Kalsi:

Yeah, for sure. So it's kjalsi@ihsa.ca. So it's J-K-A-L-S-I@I-H-S-A.ca.

Ken Rayner:

Terrific. Jasmine, thanks so much again for the third podcast you've done with us. This is terrific. We've got one on occupational health, we've got one on noise, and we've got one on heat stress. So thank you for all the contributions you've made to be able to educate our listeners and make sure we're keeping them safe. So once again, thanks for being with us, Jasmine.

Jasmine Kalsi:

Thank you.

Ken Rayner:

Great. And thanks to our listeners for listening to the *IHSA Safety Podcast*. Be sure to subscribe and "like" us on your podcast channel. And visit us at IHSA.ca for a wealth of health and safety resources and information.

Announcer

The *IHSA Safety Podcast*. For more episodes, tips and all things safety, go to IHSA.safetypodcast.ca. Thanks for listening.