

Reducing noise exposure without hearing protection

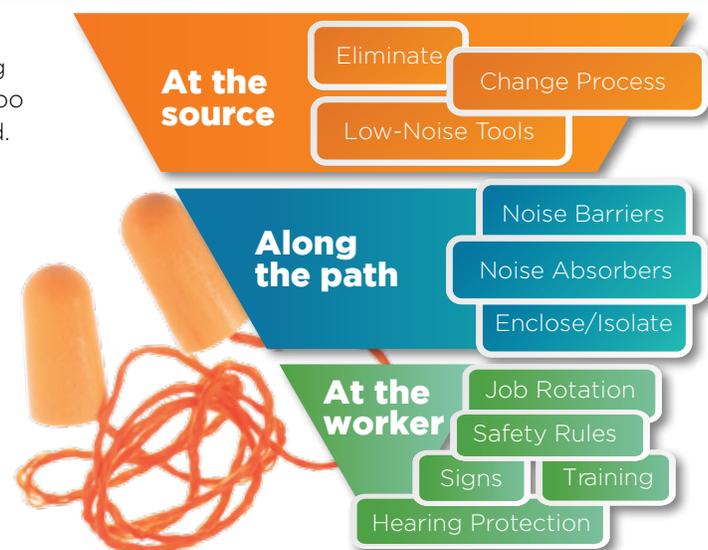
Hearing loss caused by noise is the fastest-growing occupational disease in Ontario. One reason is that it often happens gradually. People may not realize that the loud noise from day-to-day job tasks is damaging their hearing. And by the time they do realize it, it's too late—the damage is permanent and can't be reversed.

Protecting the hearing of workers should be part of a systematic and documented health and safety program that identifies and controls noise in the workplace. Such a program needs to include the following elements:

1. **Assessment** of noise levels in workplace to determine how loud it is and how much the workers are exposed to it
2. **Controls** to prevent noise from being generated in the workplace or from entering it
3. **Audiometric testing** to detect early changes to the hearing ability of workers so that further damage can be prevented and to determine the effectiveness of hearing loss prevention measures in the workplace
4. **Educating workers** on the health effects of noise, the procedures for protecting their hearing during specific job tasks, and the selection, care, use, and fit of hearing protection devices.

Often we think that the only way to prevent exposure to loud noise is by using hearing protection such as earplugs and earmuffs. However, personal protective equipment should be considered a last resort rather than the first choice for protection against noise. A better way is to stop the noise before it's created or to use noise barriers to reduce the amount of noise that reaches the workers. This concept is referred to as the "hierarchy of controls" (Chart 1).

Chart 1: Hierarchy of Controls for Noise Exposure



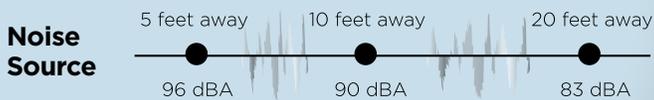
At the source

The best way to control noise is to **eliminate** the hazard altogether. However, this may not always be possible or practical. The next best alternatives are to **substitute** a non-hazardous or less hazardous method, **enclose** or **isolate** the hazard, or **change the work process** to reduce the hazard.

- Substitute noisy tools and equipment with quieter ones. Consider noise levels when buying, leasing, or renting tools and equipment. For example, an electric sander producing 88 dBA is actually twice as loud as one producing 85 dBA and will cause a worker to be overexposed in 4 hours (at 88 dBA) compared to 8 hours (at 85 dBA). In general, newer equipment is quieter than older equipment and electrical tools are quieter than pneumatic or gas-powered ones.

Chart 2: Distances Away From Noise Source

Sound level in decibels (dBA)



- Move sources of loud noise away from workers or move workers away from the noise. As a general rule, each time the distance between a noise source and the worker doubles, the noise level can drop by up to 6 decibels (Chart 2). A reduction of 6 decibels means that the noise is four times quieter.
- Follow a maintenance schedule for tools and equipment. Excessive noise can be produced when there are loose parts such as nuts and bolts, worn out components, unlubricated parts, or a poor-running engine.
- If possible, retrofit equipment to make less noise. For example, lining a large steel bin with hard, dense rubber can reduce the noise when materials are thrown into it. Also, adding noise absorbers to older equipment or replacing old mufflers can make a big difference.
- Change work processes to minimize noise exposure. When planning a job, consider how much noise the different methods will create and choose one that makes less noise. For example, lowering materials into place rather than throwing them will reduce the loud noise caused by the impact.
- Try to schedule noisy jobs at times when more workers are away from the worksite.

Along the path

If the hazard cannot be controlled at the source, the next best alternative is to control it along its path to the worker.

- Install noise barriers or screens between the source of the noise and the workers. Barriers can be made of a variety of materials, from acoustical blankets or curtains, to fencing, to stacks of building materials such as plywood.
- Use sound absorbers to block or reduce noise levels. For example, insulated truck or equipment cabs can reduce the operator's noise exposure by 30 to 50 per cent.
- If possible, enclose noisy work processes or equipment such as generators and compressors in an insulated box or room to minimize the amount of noise that makes its way into the workplace.
- If enclosure is not possible, try isolating workers from the source of the noise by moving them to a separate room or enclosure.
- Close doors and windows. Many people like to drive with the window open to allow fresh air in, but the wind can cause excessive noise inside the cab. If someone is driving for long periods of time, this can be hazardous to their hearing. Equipment operators who work in enclosed cabs should keep the door closed as much as possible to reduce the amount of noise that gets in.

At the worker

If controls cannot be put in place at the source or along the path, the only other alternative is at the worker. Although personal protective equipment (PPE) such as earplugs and earmuffs can be effective, there are other ways to protect workers from loud noise.

- Effective training programs can help workers learn how to protect themselves from workplace hazards such as noise.
- Rotating workers between job tasks can ensure that they are not exposed to sources of loud noise for longer than the maximum recommended time.
- Warning signs can let workers know when they need to take precautions against noise exposure.
- Having standardized work rules in place can ensure that every worker follows the proper procedures to protect themselves against workplace hazards.

If you must use PPE such as earplugs and earmuffs, make sure to consider the following:

- Workers will need training on the proper selection, care, and use of the hearing protection device.
- Workers will need to know when a noise is so loud that they need to wear their hearing protection.
- Supervisors must be prepared to encourage and enforce the use of hearing protection on the worksite.
- Workers will need to hear certain sounds on the worksite such as other people, hazards such as moving vehicles, and warning sounds such as alarms. Make sure the type of earplugs or earmuffs that you use provide "uniform attenuation". This blocks hazardous noise but lets higher frequency noise (voices, alarms, signals, etc.) pass through.

Controlling noise exposure in the workplace is becoming increasingly important because of the large number of hearing loss claims. Too often, employers wait until the problem becomes noticeable before taking preventive measures. Unfortunately, failure to provide timely preventive or control measures will lead to permanent noise-induced hearing loss for workers.

IHSA can help your company control noise exposure. Visit the **Occupation Health** section on our website for e-learning programs on *Basics of Hearing Protection for Workers and Basics of Hearing Protection for Employers*, as well as other helpful resources. You can also contact us to arrange noise assessment services.

Did You Know?



On July 1, 2016, a new noise regulation will come into effect. O. Reg. 381 will set out a maximum time-weighted average limit of 85 dBA of noise exposure over an 8-hour work shift and require employers to implement the hierarchy of controls and to provide adequate training and instruction on hearing protection devices.