Canadian Audiologist
The Official Publication of the Canadian Academy of Audiology

Protect Workers from Chemical-Related Hearing Loss With These 4 Best Practices

Published March 5th, 2024

Workplace Safety & Prevention Services (WSPS)



Workers who are exposed to “ototoxic” chemicals, including certain solvents, are at increased risk of hearing loss, warns Warren Clements, WSPS Occupational Hygiene Specialized Services Lead. And when those same workers are exposed to noise at the same time, the risk doubles.

A 2018 study of 19,000 former construction workers looked at exposure to organic solvents, noise, and smoking and found that each element increased the risk of hearing loss by 15-20%, with an overall hearing loss of 58% observed.[1]

Both noise and ototoxic chemicals can be found in many manufacturing industries, including fabricated metal, paint, paper, machinery, and furniture. Solvents such as toluene, styrene, xylene, and ethylbenzene are known ototoxic chemicals, as well as carbon monoxide, hydrogen cyanide and lead. A host of other chemicals are still under investigation for their ototoxic effects, including arsenic, carbon disulfide, mercury, and pesticides.[2]

“Employers need to be proactive in protecting their workers,” says Warren. “Meeting current legislated noise exposure limits alone is not enough because adverse effects can begin at lower noise exposure levels.”

The American Conference of Governmental Industrial Hygienists (ACGIH), which sets exposure

limits (many of which are adopted in Ontario and other Canadian jurisdictions) says the focus for employers should not only be on “engineering controls, administrative controls and personal protective equipment … to reduce airborne concentrations,” but also on other steps to prevent combined exposure with noise. [3]

What does that look like in the workplace? With Warren’s help we’ve compiled a list of 4 best practices to protect your workers.

How hearing loss occurs

Hearing loss from occupational noise exposure occurs via hair cell damage in the inner ear. Some potential results are acoustic trauma, temporary or permanent hearing loss, tinnitus and vertigo. Hearing loss from ototoxic chemicals happens via biochemical or metabolic processes. The exact mechanism is still being examined.

In 2022, there were 7,311 workers’ compensation claims for hearing loss in Ontario, up from the two previous years.[4] Although the root cause of the hearing loss in these cases is not known, “if an employee gets hearing loss, it doesn’t matter whether it’s the result of noise exposure, chemical exposure or a combination of both, the employer is on the hook,” says Warren.

4 best practices

Mitigating the risk to workers, and to your business, requires a due diligence approach.

1. Determine if you have ototoxic chemicals in your workplace.

Look at the Safety Data Sheets (SDS) of the chemicals you use, says Warren, to see if they are identified as a potential or actual ototoxicant. Relevant SDS sections to evaluate include hazard identification, exposure controls/personal protection, and toxicological information.

2. Carry out a hearing loss risk assessment as part of a four-step process to manage risk.

How many workers are exposed to ototoxic chemicals alone or with noise? Is hearing loss being reported among these groups? What steps can you take to control exposures? How will you evaluate the results?

3. Implement control measures:

1. replace ototoxic chemicals with those that are not ototoxic, where practical
2. reduce exposure levels for the chemical and noise to below legislated limits
3. increase ventilation in areas where the ototoxic chemicals are being used
4. increase awareness about the risks, hazards, and effects of ototoxic chemicals and noise among workers and supervisors, and encourage reporting of hearing-related concerns
5. provide all necessary personal protective equipment (PPE) to prevent inhalation, skin exposure,

or ingestion of the ototoxic chemicals, as well as protection from noise. This may include respiratory protective equipment, chemical-resistant gloves and clothing, ear plugs and/or earmuffs.

4. Develop a hearing loss prevention program.

Include audiometric hearing tests to detect early signs of hearing loss among workers.

SOURCE: Protect workers from chemical-related hearing loss with these 4 best practices (wsps.ca)

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