



# HOW NOISE AFFECTS YOUR HEARING

## VALUE YOUR HEARING

You depend on your hearing for many things:

- to communicate;
- to socialise;
- to learn to keep in touch with the world around you;
- to be warned of impending danger;
- to enjoy music and the sounds of nature.

## NOISE IN NEW ZEALAND WORKPLACES

- Many New Zealanders work in noisy workplaces.
- Noise is a leading cause of hearing loss in adults.
- Noise problems are not confined to big factories — people in small companies, self-employed people and people who work in outdoor occupations are also exposed to excessive noise.

## HOW DOES NOISE HARM THE EAR?

- Noise destroys delicate nerve cells in the inner ear that transmit sound messages to the brain.
- The nerve cells are replaced by scar tissue which does not respond to sound.
- The damage is painless but permanent and there is no cure.
- Hearing aids are of some help but cannot restore normal hearing.

## HOW DOES INNER EAR DAMAGE AFFECT HEARING?

- Noise mostly damages the parts of the inner ear that process high-frequency sound.
- This results in noise-induced hearing loss (NIHL) mainly affecting hearing for high-frequency sounds rather than low-frequency sounds.
- With this type of hearing loss you may fail to hear nearby sounds clearly audible to others, such as the song of a bird or the rustle of a small animal in the grass (faint high-frequency sounds). At the same time you may hear faint low-frequency sounds, such as a car in the distance, just as well as anyone else does.
- To a person with noise-induced hearing loss, many words sound alike and other people's speech sounds jumbled. Typical complaints of a person with NIHL are "Don't shout, I'm not deaf" or "I can hear but I can't understand".
- This can lead to misunderstanding if people mistakenly think a person with this type of hearing loss:
  - Is pretending not to hear;
  - Has low intelligence;
  - Is deliberately being annoying.

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## ARE YOU AT RISK?

Fill out this simple quiz to see if your hearing is at risk.

1. At work, do you have to shout to make yourself understood by somebody about an arm's length away?

**YES** ☐ **NO** ☐

2. Do you get ringing or buzzing in your ears after work, or after particular jobs at work?

**YES** ☐ **NO** ☐

3. Does your family say you have difficulty hearing them when you get home?

**YES** ☐ **NO** ☐

4. Do you have to turn up the volume on the TV or radio after a day at work?

**YES** ☐ **NO** ☐

5. Do you often have to ask people to repeat things they've just said?

**YES** ☐ **NO** ☐

If you have answered "YES" to any of these questions, chances are that noise in your workplace could be putting your hearing at risk.



# HOW CAN HEARING DAMAGE BE AVOIDED?

The best way is to reduce people's noise exposure. The main ways to do this are:

**Quietenning the source of noise.** Big noise reductions can be made, for example, simply by lining metal chutes and bins with scrap rubber conveyor belting.

**Stopping the noise from reaching people.** This can be done by moving a noisy machine away from people, by building a soundproof enclosure around it, or by putting up a barrier between the machine and people.

**Reducing the time people are exposed.** Where possible, people should swap between noisy and quiet jobs so that nobody gets exposed to noise for too long.

**Wearing personal hearing protection when necessary.** If noise exposure is still excessive after all possible control measures have been taken, individual protection like earmuffs or earplugs should be worn. (See Fact Sheets 5 and 6.)

If you can see ways your workplace might be made quieter, suggest them to your employer or supervisor.

## CONTROL NOISE EXPOSURES OUTSIDE WORK

Noise at work is the major cause of noise-induced hearing loss in our society, but non-work noise exposures can also cause damage. It is especially important to control non-work exposures if you already work in a noisy job. Wear hearing protectors whenever you use power saws, drills, sanders, mowers or any other noisy equipment at home.

If you like your music loud, listen to it the safe way:

- Alternate between loud and quiet music.
- Give your ears a complete rest for ten minutes every half hour.
- Watch out for effects such as ringing in your ears or muffled hearing — if you experience such effects, take them as a warning that you are overloading your ears and change your listening habits.

## ARE THERE ANY SIMPLE WAYS TO JUDGE IF A NOISE IS LIKELY TO BE HARMFUL?

The best way is for a trained person to measure the noise, but here are some rough guides. Noise is likely to be harmful:

- When the noise is as loud or louder than heavy city traffic.
- If you have to raise your voice to speak to someone a metre away.
- When things sound different after the noise exposure.
- When you hear ringing or other noises in your ears after the noise exposure.



# RESPONSIBILITIES OF EMPLOYERS AND EMPLOYEES

Employees' health and safety at work is protected by law. Employers have a duty to protect employees and to keep them informed about health and safety matters. Employees have a responsibility to follow work safety guidelines and instructions.

**Employers** have a duty to keep noise exposure within safe limits. The best ways are to reduce the source of noise and the amount of time employees are exposed.

If these methods cannot reduce noise exposure below the legally specified limits, the employer should provide employees with suitable hearing protectors, along with information and instruction on their use.

**Employees'** responsibilities include:

- Valuing their own health and safety along with that of co-workers who may be affected by their actions.
- Using noise controls supplied with machinery or installed in the workplace.
- Reporting damaged noise control equipment and hearing protectors for repair or replacement.
- Using hearing protectors in declared noise zones.

- Have your employees been informed about workplace noise hazards?
- Have your employees been trained in the use of engineering noise controls and hearing protectors as necessary?

## CHECKLIST FOR EMPLOYEES

- Do you know which areas and jobs at your workplace are associated with excessive noise?
- Do you use the noise controls installed in your workplace?
- Do you wear hearing protectors in noisy areas?
- Do you report damaged noise controls and hearing protectors to your employer?

## CHECKLIST FOR EMPLOYERS

- Are you aware of the occupational noise requirements in the Health and Safety in Employment Act and Regulations?
- Have noise levels in your workplaces been reduced as far as practicable?



# HOW MANAGERS AND WORKERS CAN REDUCE NOISE

Co-operation between managers and workers produces the most cost-effective and satisfactory solutions to noise problems in the workplace.

## MANAGERS CAN CONTRIBUTE BY:

- Developing noise management policies, plans and practices in consultation with workers.
- Arranging for a full assessment to be made of noisy areas in the workplace.
- Fully investigating engineering noise control options.
- Discussing control options with workers to ensure minimal adverse effects on ease of operation, maintenance access and productivity.
- Seeking expert advice on noise control when necessary.
- Specifying noise limits when purchasing plant and equipment.
- Signposting noisy areas.
- Providing good-quality hearing protectors.
- Involving workers in the selection of hearing protectors and allowing them to choose those which fit best.
- Always wearing hearing protectors themselves in noisy areas.

## WORKERS CAN CONTRIBUTE BY:

- Taking a cooperative interest in workplace noise problems.
- Helping develop policies, plans and practices for dealing with workplace noise problems.
- Suggesting possible noise controls for machines they operate.
- Assisting plant engineers or consultants develop design solutions.
- Using noise control equipment supplied.
- Taking responsibility for the preservation of their own hearing by using hearing protectors whenever necessary.



# FITTING PERSONAL HEARING PROTECTION

Unless noise exposure at work can be made safe by limiting the level and the exposure time, employers have a responsibility to provide employees with suitable hearing protectors, and employees have a responsibility to use them.

The main types of hearing protector are ear muffs and earplugs. Either type can provide effective protection provided it makes an airtight seal in your ear (plugs) or around it (muffs).

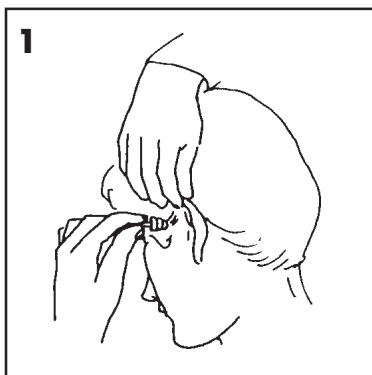
## EARPLUGS

Always read the instructions supplied with the earplugs.

Some earplugs — for example the compressible foam type — come in only one size. If the plugs are made in several sizes, you need the right size for each ear.

## TO FIT THE PLUGS

- Reach around your head and take hold of the back of your ear about half-way down (see diagram 1).
- Gently pull your ear outwards and upwards to straighten your ear canal.



- Insert the plug into your ear canal with the other hand.

## IF THE PLUG IS A COMPRESSIBLE FOAM TYPE

- Roll the plug slowly and smoothly into a thin crease-free cylinder (depending on how small you roll the plug, it can take up to 30 seconds to do this, possibly longer if you haven't done it before).
- Immediately insert the plug well into the ear canal and hold it in place until it has begun to expand and block the noise. Aim to get three-quarters of the length of the plug into the canal.

## POINTS TO REMEMBER

- Plugs can work loose and may need to be repositioned occasionally.
- Remove plugs slowly so that suction does not hurt your ear.

## LOOKING AFTER YOUR HEARING PROTECTORS

- Keep muffs and plugs clean with soap and water.
- As soon as plugs become hard or damaged, get a new pair.
- Don't stretch the headband of your earmuffs — it makes them less effective.
- Replace the cushions on your earmuffs as soon as they start to harden.
- If your earmuffs are damaged, get the damaged part replaced.

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## GETTING USED TO WEARING HEARING PROTECTORS

It takes two to three weeks to get used to wearing hearing protectors. Once you are used to them, you will:

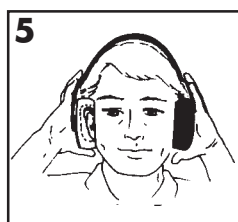
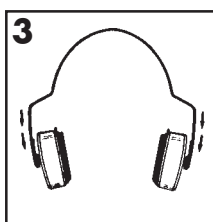
- Feel less stressed while you're working.
- Feel less tired at the end of the day.
- Know your hearing is safe.

## FITTING EARMUFFS

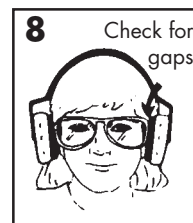
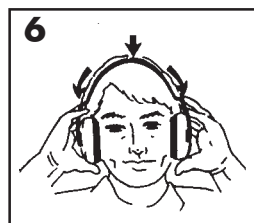
- Inspect the muffs and note which way they are meant to be worn. Some earmuff cups are marked **top or front** and should be worn that way. Oval-shaped cups are meant to be worn so that the oval is vertical (not as in diagram 2).



- Extend the headband to its maximum length (diagram 3).



- Brush as much hair as possible away from the ears (diagram 4).
- Place the muffs over the ears, making sure that the ears fit right inside the cups and are not pressed against the head (diagram 5).



- Holding the cups firmly in place by pressing inwards and upwards with the thumbs, tighten the headband so that it takes the weight of the cups, and holds them firmly in position (diagram 6).
- Now run your fingers around the cushions to check that they are making a good seal against your head everywhere. Some things that can prevent a good seal are prominent cheek bones, an unusually deep groove behind the lower jaw, thick hair, a cap (diagram 7) and spectacle frames (diagram 8).
- If you are unable to get a good seal, try different muffs, change your spectacle frames to a thinner type or try earplugs instead.





# FACTS ABOUT HEARING PROTECTION

## IS THERE ANY DANGER IN PUTTING EARPLUGS IN YOUR EARS?

Earplugs are soft and not long enough to reach far into the ear canal so it is virtually impossible to do any harm. However, if you have an ear infection or have ever had ear surgery, check with a nurse or doctor before using earplugs.

## WHAT IF I DON'T WEAR HEARING PROTECTORS ALL THE TIME?

Taking protectors off even for short periods can cancel their protective effect. To be fully protected, you need to wear protectors all the time you are in loud noise.

## MY HEARING PROTECTORS FEEL UNCOMFORTABLE

Muffs and plugs will probably feel strange when you first start to wear them. However, in about two weeks you really begin to appreciate the relative peace and quiet the protectors create. If you are having problems, speak to your employer or supervisor about trying different protectors.

## IF I WEAR HEARING PROTECTORS, I WON'T BE ABLE TO HEAR MY MACHINE PROPERLY

Your machine will certainly sound different when you wear protection, but you should still be able to detect changes in the noise it makes.

## IS THERE ANY POINT IN WEARING HEARING PROTECTORS IF YOUR HEARING IS IMPAIRED ALREADY?

Your ears will go on being damaged as long as they are exposed to excessive noise. The hearing you have left is precious, and should be protected.

## I WON'T BE ABLE TO HEAR WHAT PEOPLE ARE SAYING IF I WEAR HEARING PROTECTORS

Not so. If your hearing is normal you will find it *easier* to understand what people are saying when you wear protectors because your ears are no longer overloaded. The effect is like wearing sunglasses — you see better when the glare is cut down.

If your hearing is impaired, you may not get this benefit of being able to understand speech better when you wear protectors. Depending on the kind of impairment, you could find it harder to understand speech.

If you have this problem don't give up the protectors — it's important to protect your remaining hearing. Ask people to speak up, or find another way to communicate, e.g. use hand signals, or a note pad.

## WHAT ABOUT NOISE EXPOSURES OUTSIDE WORK?

Noise exposures add up, so you need to watch your noise exposure outside work too. Wear protectors if you use power tools like saws, grinders, motor mowers, or chainsaws.