

**SIM 05 05 01 NIHL Prevention  
Track C Education and awareness**

**Guidelines for Trainers Part 4**

**Use of the handout for trainees**

**"Make Safe Your Ears"**

## **Preface**

These guidelines for trainers are intended to assist in deriving maximal benefit from the booklet "Make Safe Your Ears". The booklet was designed as a handout for trainees participating in hearing conservation training and induction programmes, and has been produced in English and Zulu language versions.

Although some concern may exist around the differing levels of literacy in the target audience, the most noise-exposed mineworkers, it would be for the trainer, where required, to assist trainees in the use of the booklet. The fact that the booklet deals with issues that should be of relevance and interest to noise-exposed workers and makes use of pictorial representations of various work and social situations means that if the booklet challenges some individuals' reading skills it should contribute to the further development of those skills.

Education, motivation and training comprise essential elements of any personal protection strategy, and this is especially true where some employees may be resistant to the use of hearing protection devices (HPDs) as part of the employer's hearing conservation programme. Accordingly, employees need to be made aware of the risks and potential consequences of exposure to dangerous noise, in order that they are motivated to protect their hearing. The next requirement is to train employees in ways of protecting themselves. In response to these needs, the CSIR: Centre for Mining Innovation produced the booklet and these guidelines for its use on behalf of the Mine Health and Safety Council, as outputs of Project SIM 05 05 01, Track C.

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## **1 Introduction and general information to assist trainers**

These guidelines for trainers are intended to assist in deriving maximal benefit from the A-5 booklet, "Make Safe Your Ears", designed as a handout for trainees. The booklet should reinforce information on hearing loss prevention and hearing protection devices (HPDs) already presented during training and induction. In order to provide for different audiences, the booklet has been produced in English and Zulu language versions.

Topics that are dealt with in the booklet include:

- **The risk of hearing loss caused by exposure to loud noise**
- **The negative impact of noise-induced hearing loss (NIHL) on job security and quality of life**
- **How to recognise dangerous noise**
- **Benefits of using HPDs**
- **Various types of HPDs**
- **Correct use and care of HPDs**

Although the booklet may be self-explanatory for some individuals, the trainer should not assume that this is the case for an entire group. As with any training materials or learning activity, optimal effectiveness will only be achieved if appropriate preparation has been made. Depending on time constraints and the extent to which hearing conservation and personal protection have already been dealt with during training and induction, the trainer may choose to:

- i) briefly outline the format and message of the booklet at the time of distribution, relying on members of the group to read the handouts on their own (this approach would only be beneficial where members of the group have already participated in a comprehensive training and induction programme on hearing conservation and have the necessary reading skills);
- ii) work through the booklet page by page, emphasising important points and providing an explanation of those points that cause difficulty/disagreement, or appear to have eluded members of the group; or
- iii) adopt an approach that includes elements of both i) and ii).

These guidelines provide sufficient explanation of the booklet's content for the trainer to follow the second approach, if time allows. Each page of the booklet has a heading that

either summarises or characterises the topic dealt with on that page. Our "narrator" in the booklet is portrayed as a team supervisor, to be seen by the reader as a credible source of information, and answers to questions posed by characters in the booklet, as well as providing an explanation of various points of information.

## **2 Detailed notes for trainers**

### **2.0 Front cover: "MAKE SAFE YOUR EARS"**

The trainer should initiate a discussion introducing the issues of hearing loss prevention and HPDs, encouraging members of the group to point out the various types of HPDs illustrated on the cover of the booklet and drawing attention to the warning sign for hearing protection in the upper-right corner of the cover. If some members of the group are not aware of the sign's meaning, they should be informed, preferably by other members of the group.

### **2.1 Page 1: "WORK SMART AND WORK SAFE – PROTECT YOUR HEARING"**

On page 1 the narrator points out that working smart includes the use of personal protective equipment (PPE) to prevent injury, pointing out the fact that some people fail to protect themselves against loud noise, placing themselves at risk of suffering damage. In the lower-right corner of the page the narrator points out that steps are being taken to reduce noise levels in the workplace but people should still use hearing protection to prevent hearing loss.

### **2.2 Page 2: "BAD HEARING CAUSES PROBLEMS..."**

At the bottom left of the page we see a mineworker who believes that his ears are accustomed to the noise. The narrator at the top left explains that the reason why this person doesn't find the noise to be too loud is because he has already lost some of his hearing. The scenes at the right of the page show how the mineworker's hearing loss is causing problems:

- i) **at work:** he cannot hear what his supervisor is saying to him;
- ii) **in social situations:** he cannot hear what other people are saying; and
- iii) **even when he is alone:** he cannot hear the music from his new radio, although it is clear to the reader that there is music coming out of the radio.

### **2.3 Page 3: "...THESE PROBLEMS CAN HURT YOUR JOB"**

The reader now sees the same mineworker from Page 2 about to undergo his annual medical examination to renew his Certificate of Fitness (COF). After his ears are tested, the OHP

informs

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him that his hearing is so bad he has become a safety risk and will not be given a COF. He now realises that he should have used his HPDs while working in loud noise, but of course it is too late now: **HIS EARS ARE PERMANENTLY DAMAGED.**

#### **2.4 Page 4: "HOW TO RECOGNISE DANGEROUS NOISE"**

Another man now asks a very important question: "How can I tell if the noise is loud enough to damage my ears?" The narrator answers that there are three different ways to recognise dangerous noise:

- 1) the blue-and-white warning sign for hearing protection tells us when the noise is dangerous;
- 2) if it is necessary to shout in order to hear each other the noise is dangerous;
- 3) if a person hears a ringing or buzzing or hissing sound (tinnitus) inside the ears after the shift the noise was dangerous.

At the bottom-left of the page, the reader is reminded that wherever the noise is dangerous people should be wearing HPDs.

#### **2.5 Page 5: "HPDs CAN HELP YOU HEAR BETTER IN THE NOISE"**

At the left of the page, the supervisor asks a mineworker if he needs help with the job, but the mineworker doesn't hear and ends up having to do the work alone. The narrator explains that the mineworker could have had someone help him if he had been able to hear the supervisor.

#### **2.6 Page 6: "CAN A HEARING AID FIX-UP THE DAMAGE IN MY EARS – NO!"**

A mineworker expresses the opinion that a hearing aid can solve the problem of hearing loss that is caused by loud noise. The narrator states that a hearing aid can help a person with weak ears to hear a bit better, in the same way that crutches can help a person with a broken leg to walk, but tells the reader that a person whose ears have been damaged by loud noise has had some of the tiny nerves inside the ear destroyed and that making the sound louder will not help the dead nerves to hear it. For the person with noise-induced hearing loss who wears a hearing aid, some parts of the sound will be made louder, but other parts of the sound will not be heard at all, no matter how much the loudness of the hearing aid is turned up.

This will result in the person hearing things incorrectly. On the right side of Page 6 are two examples illustrating this effect:

- At the upper right of the page a social situation is depicted in which a woman asks a man his name, but he is unable to hear her.

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- At the lower right of the page, the mineworker on the left is speaking to another worker who is wearing a custom-in-the-ear hearing aid. If the reader looks closely at the man on the right the hearing aid in his ear will be visible. (It will probably be necessary to point out the hearing aid to the group.) When the worker on the left tells the one with the hearing aid that it is time to knock-off and go home ("Chiela. Hamba khaya."), the man with the hearing aid only hears part of what the other man is saying (he cannot hear the high-pitched sounds) and he misunderstands what the other man says as "Mamba".

The two situations illustrate the fact that, once noise has destroyed some of the tiny nerves inside the ear, the person will never be able to hear properly again even, as shown in the lower picture, with a hearing aid.

### **2.7 Page 7: "DIFFERENT TYPES OF HPDs"**

The narrator explains that, because on the mine there are different people doing different jobs in different workplaces, there are different kinds of HPDs, which he points out to the reader. In addition to the six types of HPDs, a storage case for earplugs is also pictured.

### **2.8 Page 8: "EARMUFFS"**

The narrator explains that earmuffs are suitable for people who go in and out of noisy areas and draws attention to the strong plastic band that presses the earmuffs tightly around the ears. The three pictures at the upper-right part of the page show how to wear earmuffs without and with a hardhat.

At the bottom of the page the narrator says that earmuffs do not work well for people with large earrings, long hair or glasses, or for people who do hard work where it is hot and humid.

The trainer should point out that some types of safety goggles may also prevent the earmuffs from sealing tightly around the ears.

### **2.9 Page 9: "BAND-MOUNTED PLUGS"**

The narrator points to a pair of band-mounted earplugs and explains that, like earmuffs, they

are easy to put on and take off, making them a good choice for people who often go in and out of noisy areas. He also tells the reader that band-mounted earplugs are more comfortable to wear in hot areas than earmuffs.

The illustrations on the right side of Page 9 illustrate the two ways of wearing band-mounted earplugs, i.e. with the band behind the neck or with the band under the chin.

**The trainer should tell the group that most band-mounted earplugs give better protection when they are worn under the chin, and that when worn behind the neck the band can rub against the collar and transmit the rubbing noise into the ears.**

### **2.10 Page 10: "FITTING AND CARING FOR REUSABLE EARPLUGS"**

On the left side of this page, the narrator shows the reader the reusable or pre-moulded earplug, and points out the little handle which makes it easier to insert and remove the earplug without getting it dirty.

The three illustrations down the centre of the page demonstrate the correct method of fitting earplugs. First, reach over the top of the head and pull the top of the ear outward and back to open the ear canal. Second, while holding the ear canal open, push the earplug into the ear. Third, while continuing to push the earplug into the ear, let go of the ear.

At the right side of the page, the narrator tells the reader about the importance of keeping earplugs clean in order to avoid ear problems, and the correct method of washing, drying and storing reusable plugs is illustrated.

### **2.11 Page 11: "FITTING UNMOULDED EARPLUGS"**

On the left side of the page the narrator tells the reader that unmoulded or disposable earplugs must first be shaped before they can be put into the ears.

The five illustrations at the right of Page 11 demonstrate the importance of having clean hands before shaping the earplug between the thumb and fingers, and the correct method of fitting unmoulded or disposable plugs.

**The trainer should tell the group that disposable earplugs should not be washed when they become dirty, but discarded and replaced with new ones. (This is because most disposable earplugs are made of compressible foam, which absorbs and retains soap and water. The soap can irritate the sensitive skin inside the ear, and the water fills up the noise-absorbing air spaces in the earplugs, thereby making them less effective.)**

### **2.12 Page 12: "YOUR CHOICE OF HPDs DEPENDS ON WHERE YOU WORK"**

At the top of the page the narrator tells the reader that the man on the left operating the grinder uses earmuffs because it is not so hot in the workshop, and that the drill operator on the right works underground where it is hot, so he uses earplugs.

The four illustrations at the lower part of the page demonstrate the correct method of fitting a pre-moulded or reusable plug that does not have a handle. The method is identical to that

for plugs with handles, except for the way of holding the plug while inserting it.

At the lower-right corner of Page 12, the reader is reminded, once again, that earplugs must be kept clean.

### **2.13 Page 13:"FOR EARPLUGS TO PROTECT YOU, THEY MUST FIT PROPERLY"**

The narrator tells the reader how to check that earplugs are fitted correctly, by lightly pressing against each earplug with one finger. He explains that if doing this makes the noise seem much softer, the earplugs are not fitted correctly and should be refitted.

On the right side of the page are two pictures comparing a badly fitted plug with a correctly fitted plug:

- The upper drawing is marked with a large **X** to show that the earplug is not correctly fitted, and the bold black arrows inside the plug show the reader that this plug is not blocking out the loud noise.
- The lower drawing is marked with a large TICK (✓) to show that this plug is fitted correctly, and the grey arrows inside the earplug show that this earplug is softening the loud noise, while still allowing most of the sounds from speech and warning signals to pass into the ear.

At the bottom of the page is a drawing of the ear with bold arrows showing how loud noise enters and travels through the ear. The magnifying glass at the right allows the reader to see the tiny hair-like nerves inside the ear. These nerves send information about the sound to the brain so the person can hear. Loud noise destroys some of these nerves, which causes some of the information to be lost, making it impossible for the person to hear certain sounds.

**The trainer should point out that once these tiny nerves are destroyed by loud noise the hearing loss that results is permanent because the nerves do not grow back.**

**The group should be told that each and every person who has worked in loud noise without HPDs has certainly had some of these nerves destroyed already, and that they should prevent further damage by always using HPDs while working in loud noise.**

#### **2.14 Page 14: "SAFETY RULES FOR EARPLUGS"**

The narrator tells the reader that whatever type of earplugs are being used they should only be removed after the noise stops or after the employees leave the noisy area. He further advises the reader to **remove earplugs slowly and carefully to avoid hurting the ears.**

**The trainer should tell the group that the safest way to remove earplugs is the same way they are inserted, i.e. by first pulling the top of the ear outwards and back to open the ear canal and then releasing the earplug from the ear.**

On the right side of Page 14 are three text boxes. The top text box warns the reader to loosen earplugs before opening ventilation doors or travelling in the cage.

**The trainer should explain that this is to avoid discomfort, pain and possible damage to the eardrums caused by changes in air pressure at ventilation doors or while the cage is travelling. This would not normally be a problem at collieries or other shallow mines.**

The middle text box tells the reader not to wear earplugs if he or she develops a sore in the ear or an ear infection, and to have the sore or infection seen to at the medical station. Once again, the reader is reminded to keep his or her earplugs clean.

The bottom text box tells the reader to report unusually loud noise to the Health & Safety Representative.

**The trainer should point out that if a machine starts to make more noise than normal, it usually means that the machine has become faulty and may be about to break down. Such machines should be reported to the supervisor or, as the text box suggests, to the Health & Safety Representative.**

#### **2.15 Back cover: "TO HEAR OR NOT TO HEAR: THE CHOICE IS YOURS!"**

**The trainer should emphasise the importance of choosing to protect one's hearing by using HPDs where there is loud noise. In doing so, people will not only be protecting themselves against hearing loss and all of its consequences, but also protecting their jobs, and their ability to communicate with friends and their family.**