

# Risks from Noise

In the extractive sector

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# The EU Legislation for noise

**Directive 92/104/EEC** on the minimum requirements for improving the safety and health protection of workers in surface and underground mineral-extracting industries

*“7.3 When workers are employed at workstations outdoors, such workstations must as far as possible be arranged so that workers: ...  
(b) are not exposed to harmful noise levels nor to harmful external influences such as gases, vapours or dust”*

**Directive 2003/10/EC** on the minimum health and safety requirements regarding the exposure of workers to the risks arising from physical agents (noise)

- *Exposure limit values and exposure action values:*
  - **upper exposure action values:  $L_{EX,8h}$  85 dB(A)**
  - **weekly noise exposure level** does not exceed the exposure limit value **of 87 dB(A)**

# What is noise?

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- Sound is what we hear. Noise is unwanted sound.
- Sound is produced by vibrating objects and reaches the listener's ears as waves in the air or other media. When an object vibrates, it causes slight changes in air pressure. These air pressure changes travel as waves through the air and produce sound



# What are the main characteristics of noise?

- There are two important characteristics of noise: frequency and loudness
- The noise levels are described in **decibels (dB)**
- In case two identical tools emit noise of 90 dB (A) in the same workplace their combined noise level is 93 dB (A) not 180 dB (A)
- A 3 dB(A) corresponds to a doubling of sound energy
- A 10 dB(A) ...to 10 times increase of sound energy
- A 20 dB(A) ...to 100 times increase of sound energy



# How can a noisy workplace be identified?



the noise is intrusive



you have to raise your voice to have a normal conversation when about 2 m apart, for at least part of the day



you use noisy powered tools or machinery for over half an hour a day



the type of work is known to have noisy tasks, e.g. drilling



there are noises because of impacts (such as hammering, drop forging, pneumatic impact tools etc), noises from use of **explosives sources** such as cartridge-operated tools or detonators, or guns

# What are the risks arising from noise?



Noise at work can cause hearing damage that is permanent and disabling (not being able to understand speech etc.)



Hearing loss may be gradual (exposure to noise over time) or sudden (exposure to extremely loud noises)



People may develop ringing, whistling, buzzing or humming in the ears and a distressing condition which can lead to disturbed sleep



**Noise can cover other risks present in the workplace**

## Communication in an extractive site is critical!

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- Always remember when you enter an extractive site that:
  - Noise can “mask” other hazards (e.g. noise from drilling may cover electrical hazard)
- In case you are using traditional hearing protection, make sure that allows you to hear your co-workers or near-by equipment



# Sound power level of the extractive equipment

<b>Equipment</b>	<b>Noise level (dB(A))</b>
Trucks	114
Shovels	103
Bulldozers	116
Drilling rigs	95
Graders	106
Primary and secondary crushers (ore)	110
Crushers (overburden)	104
Belt conveyor for ore	65



# Who may be harmed?



PEOPLE WHO WORK WITH HIGH  
SOUND LEVEL EQUIPMENT E.G.  
BULLDOZERS, CRUSHERS

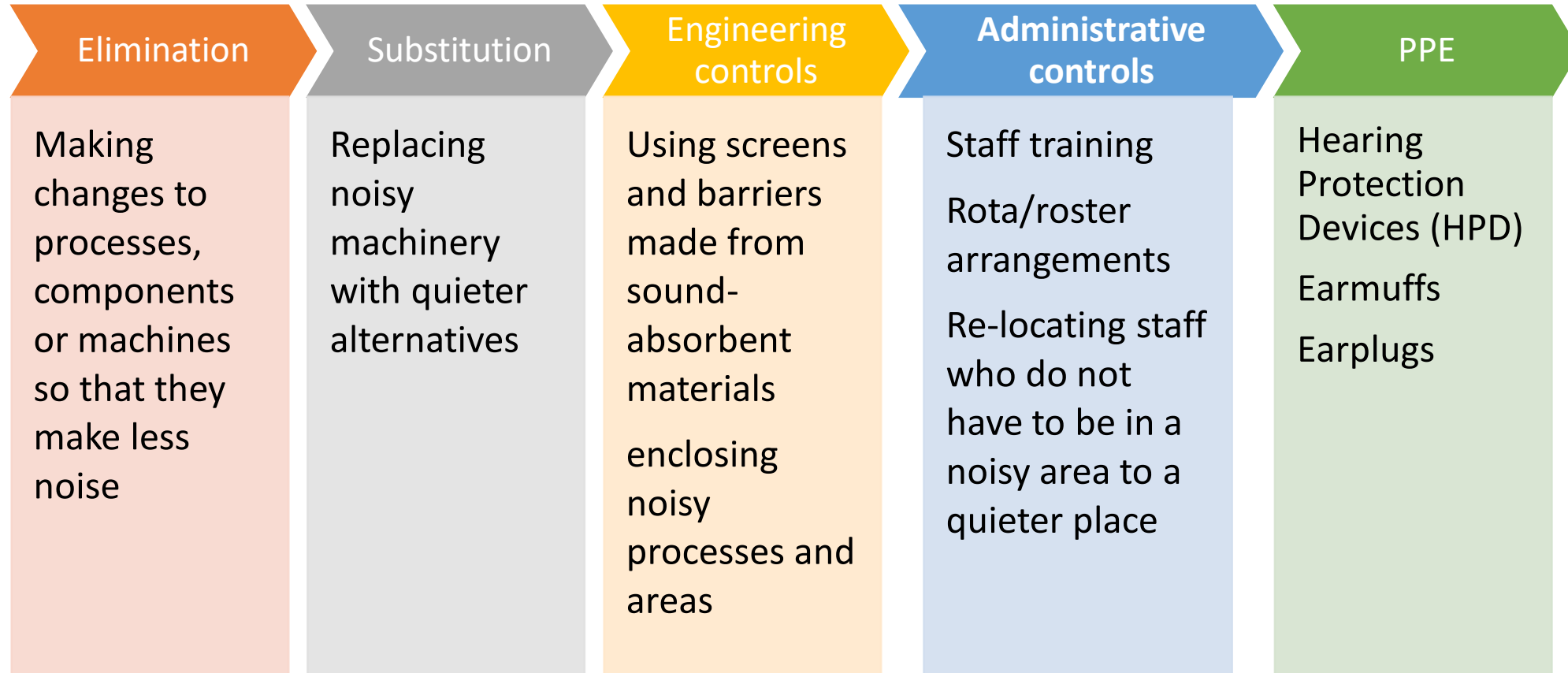


OTHER WORKERS  
(MAINTAINERS ETC.)



CONTRACTORS

# Preferred order of control measures



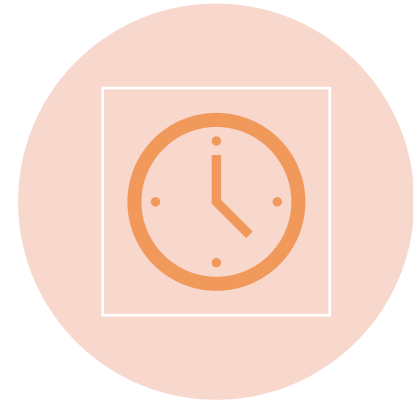
# Hearing Damage Caused by 3 things:



**DECIBEL LEVEL**



**DISTANCE**



**TIME**

# Decibel level

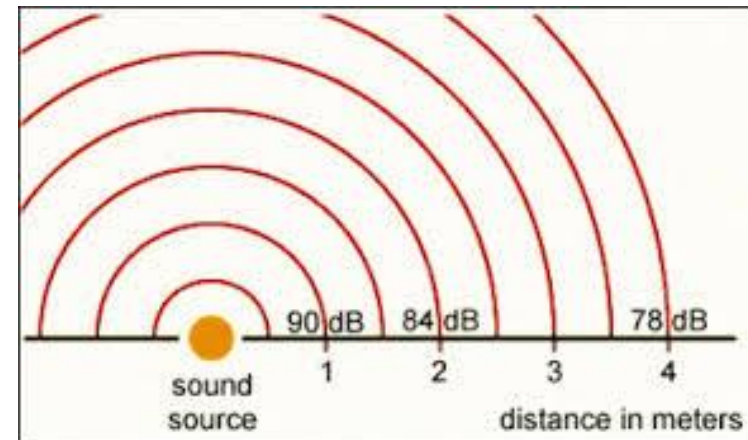


- 50-60dB(A) are considered safe/moderate
- 85-90dB(A) is considered loud → protection is needed
- 90-110dB(A) are considered extremely loud



# Distance

- Decibels decrease with distance from the source of any noise
- Move away from a noise source when you don't need to be around reduces your chance to get injured
- Isolate yourself from external noises when possible (e.g. close the door of the cabinet of your vehicle)



# Time



- Damaging effects of exposure to noise add up in your life
- Risk for permanent damage increases with regular exposure to loud sounds
- Limit exposure to loud sounds!
- Always use appropriate hearing protection

LIMIT EXPOSURE TO	
90dB(A)	8 hours max / day
95dB(A)	4 hours max/day
100dB(A)	2 hours max/day
105 dB(A)	1 hour max/day
110 dB(A)	30 min max/day
115 dB(A)	15 min max/day

# How do we behave in a “noisy environment”?

- **Look after your hearing protection** Your employer should tell you how to look after it and where you can get it from. Make sure you understand what you need to do.
- **Attend for your hearing checks** It is in your interest that any signs of damage to your hearing are detected as soon as possible, and certainly before the damage becomes disabling
- **Report any problems**

# How do we behave in a “noisy environment”?

## Co-operate

- Help your employer to do what is needed to protect your hearing.
- Make sure you use properly any noise-control devices and follow any working methods that are put in place

## Wear any hearing protection you are given

- Wear it properly and make sure you wear it all the time when you are doing noisy work, and when you are in hearing protection zones.
- Taking it off even for a short while really reduces the overall protection you get, meaning your hearing could still be damaged

## Attend for your hearing checks

- Any signs of damage to your hearing in case they are early detected the damage to become disability may be avoided

## Report any problems

- Report problems with noise-control devices or your hearing protection straight away.
- Let your employer and any workplace representative know.



# Ear plugs

Properly fitted



Wrongly fitted



Proper clamping force



Worn-out head bar



Earmuffs





# Disclaimer

This presentation intends to inform and does not replace the training you should receive for your workplace. Always consult your health and safety manager for any questions arise for occupational health and safety issues

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