

Noise Regulations – how to ensure compliance

Thursday 26th June 2025



Rebecca Crosland SHEP Chair

(Head of Health & Safety at BESA)

What is SHEP?



The Safety & Health Engineering Partnership (SHEP) is a collaboration between a number of engineering focussed Trade Associations, and the Health and Safety Executive.

Aim: To help communicate key health and safety messages to SMEs to help them protect their employees and remain compliant with H&S legislation.

'Working together to help prevent workrelated deaths and reduce the risk of injury and ill health to people working in the engineering sector'.

Purpose of today's webinar?

Controlling noise is one of the focus areas of the current HSE work programme.

This SHEP webinar is designed to raise awareness of what the HSE expects employers to do to effectively control exposure to workplace noise.

It will also look at the critical inadequacies in traditional noise risk reduction methods and explain why a more comprehensive, tech-integrated approach is vital.

Questions to be placed in the Chat

AGENDA

Chris Steel

Principal Specialist Inspector (Noise & Vibration)
Health and Safety Executive

Dr David Greenberg

Founder, Director EAVE

What are HSE Inspectors asking when they ask about workplace noise?

SHEP

Chris Steel (20mins)

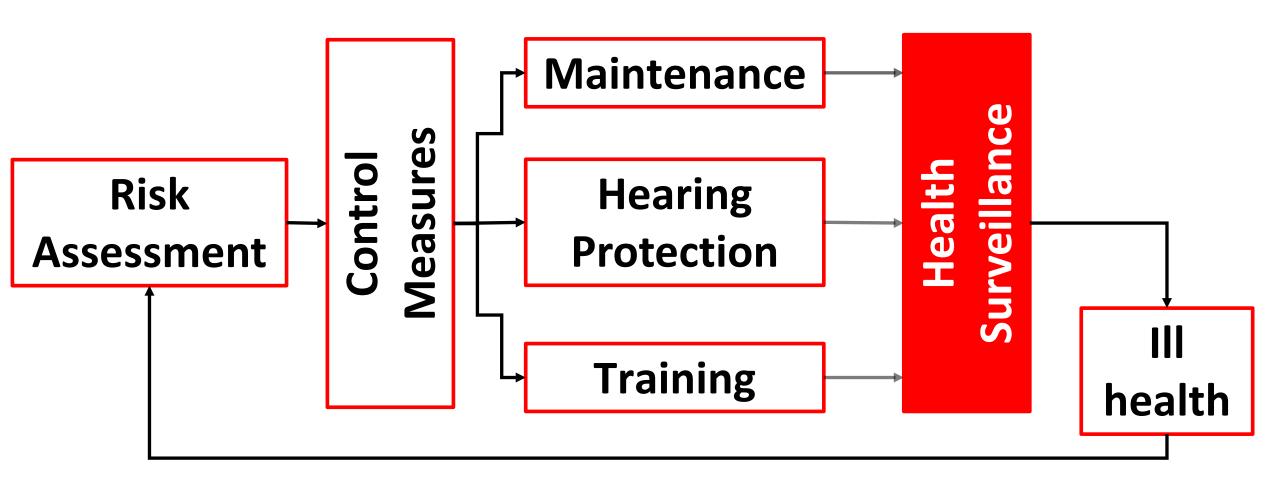


Company using compressed air guns in their production process causing daily exposure so loud you have to shout to be heard.

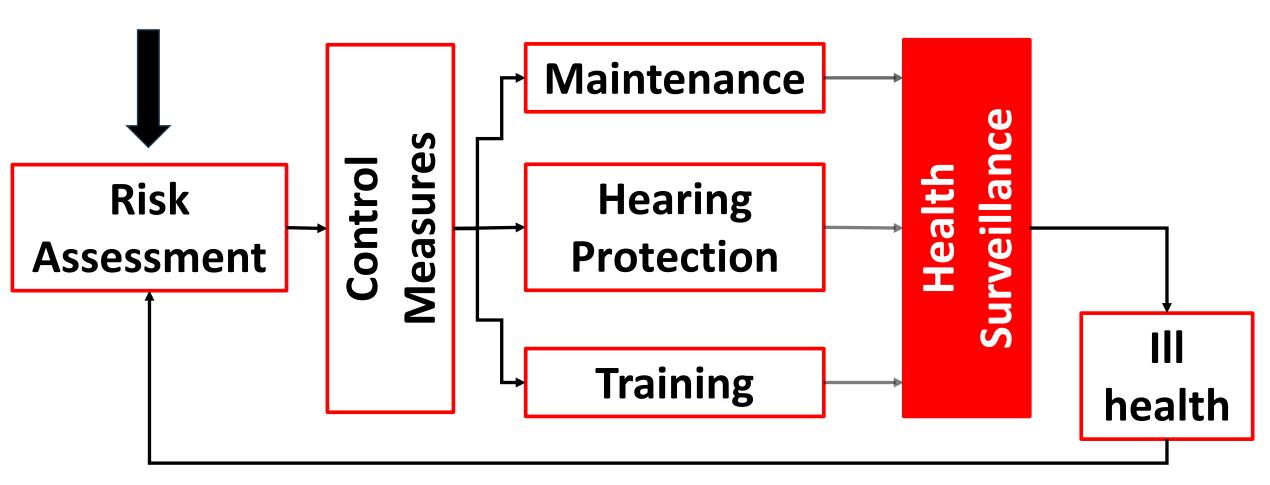
"You need to control this risk, you are getting a NoC letter"

(approx. cost to dutyholder £750)

HSE Inspector









Company using compressed air guns in their production process causing daily exposure of...not sure due to bad consultancy services.

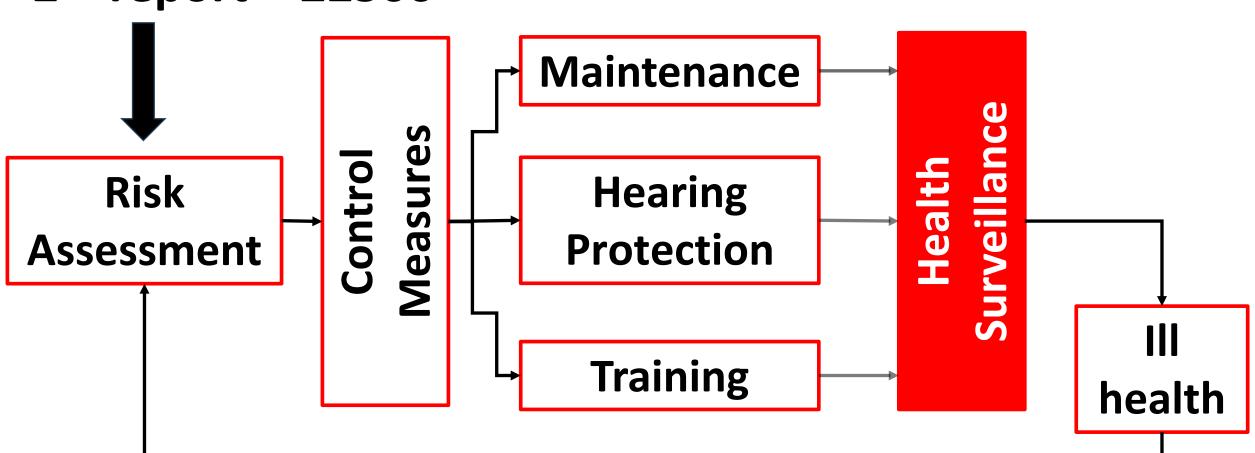
"You <u>still</u> need to control this risk, you are getting a NoC letter"

(approx. cost to dutyholder £750)

HSE Inspector

1st report = £1500 2nd report = £2500





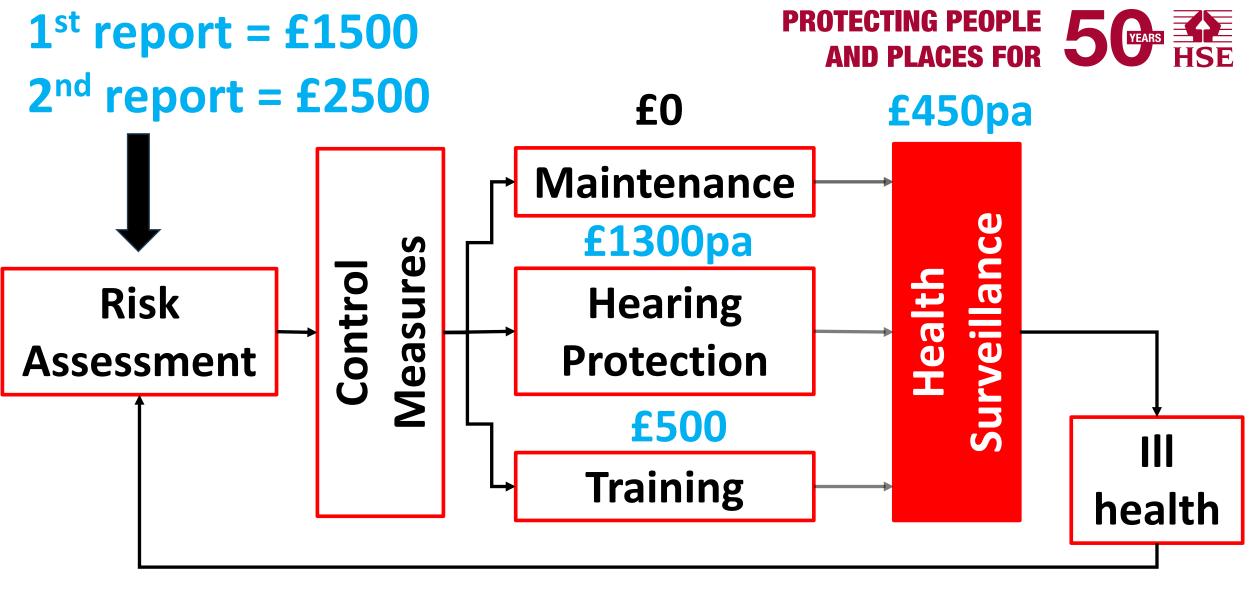


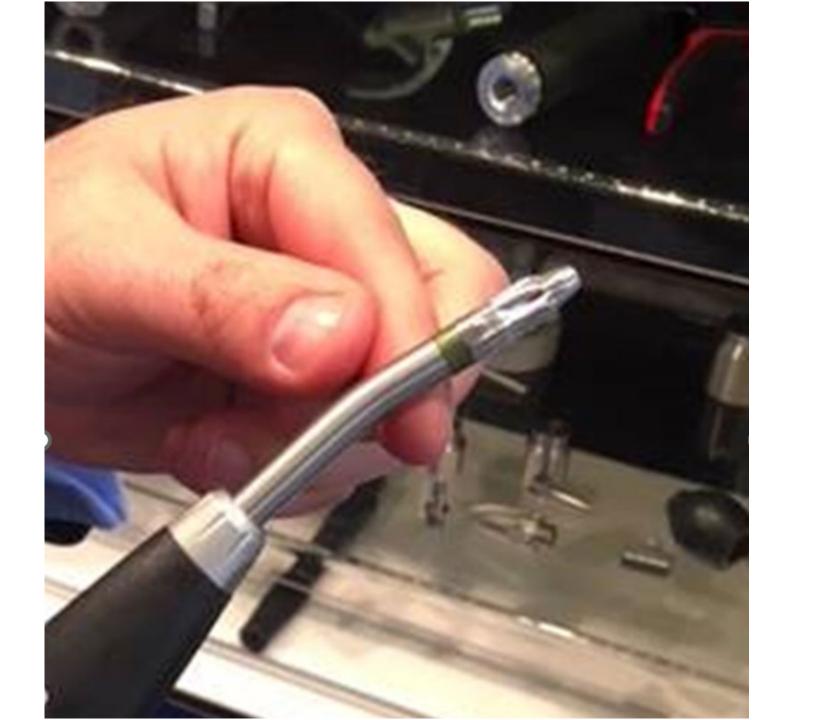
Company using compressed air guns in their production process causing daily exposure of...89dB. But no other advice.

"You <u>still</u> need to control this risk, you are getting a NoC letter"

(approx. cost to dutyholder £750)

HSE Inspector







Noise from pneumatic systems

Guidance Note PM 56

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First published 1985 Second edition 1999

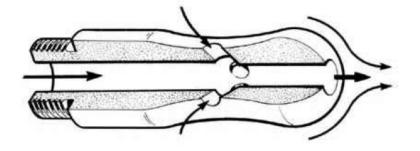
Types of exhaust silencer

- 13 Exhaust silencers can be approximately divided into three price categories.
- (a) The lowest priced units usually have injection moulded plastic bodies with sintered polythene as the pressure reducing (silencing) membrane, the Modifye priced with president and bodies incorporation sintered broads.
- (b) Medium priced units with machined metal bodies incorporating sintered bronze or heavily compacted wire wool as the silencing material.
- or heavily compacted wire wool as the silencing material.

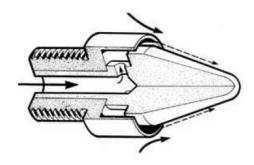
 (c) The highest priced units with fabricated and assembled metal bodies and layers of coarse woven wire obth as the silencing material.







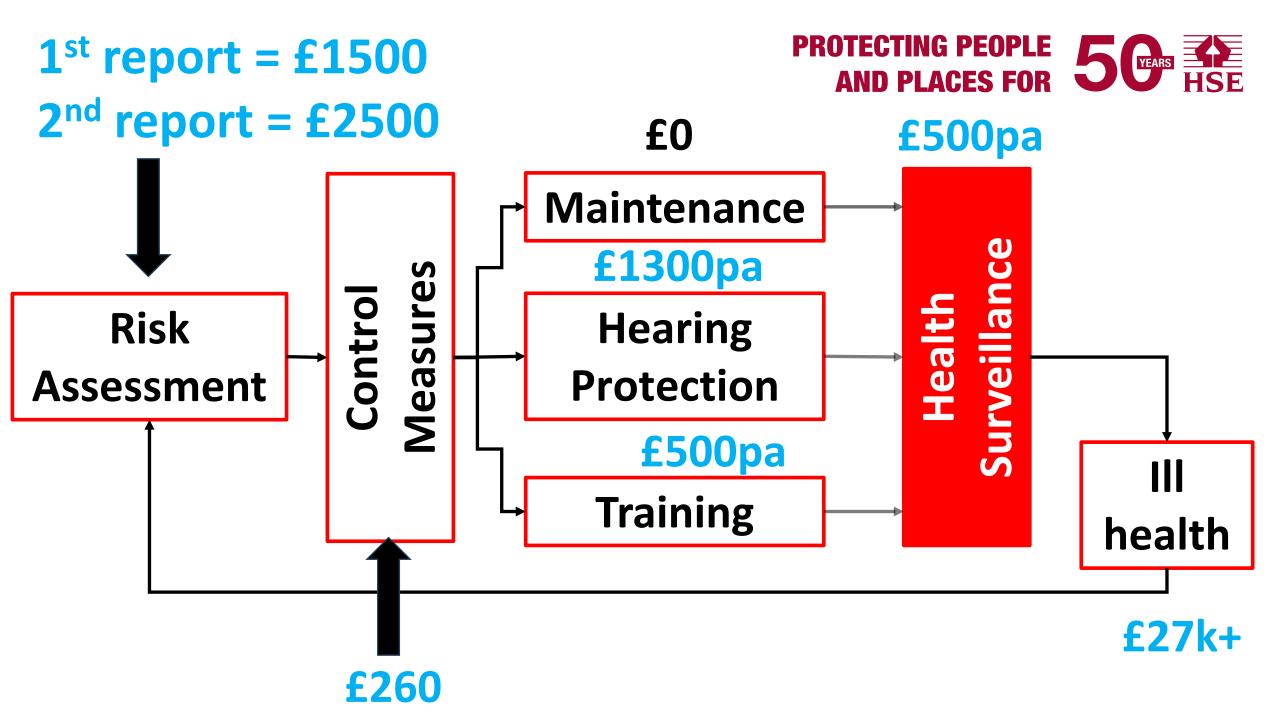
Aspirated venturi nozzle



Coanda effect nozzle

"Hi Chris, we bought two low noise air guns, it cost £260, the noise level went from <u>89dB down to 65dB</u>"

Dutyholder





Noise from pneumatic systems

Guidance Note PM 56

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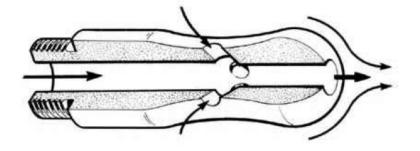
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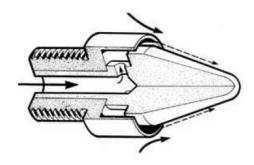
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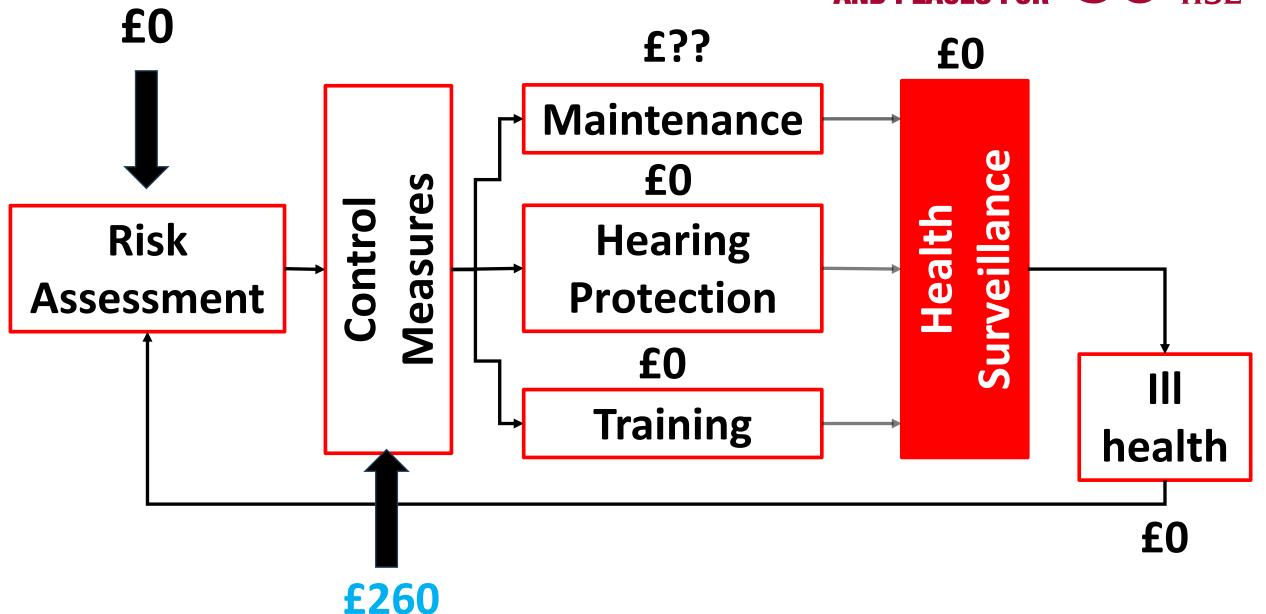


Aspirated venturi nozzle



Coanda effect nozzle

PROTECTING PEOPLE AND PLACES FOR SEARCH HSE



1. What HSE inspectors are finding when they ask about hearing protection?

2. What are HSE inspectors ask about when they ask about noise control?

3. What is the bare minimum you could do today to control workplace noise?

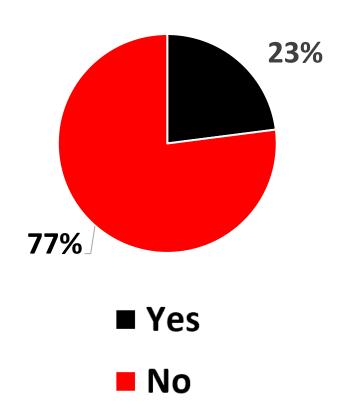
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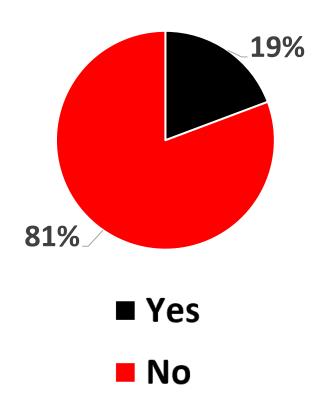
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Care of hearing protection. Were you shown:

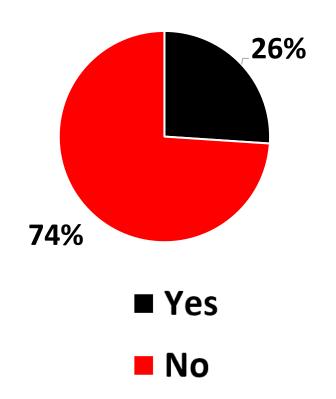




How to check?



How to report damage?

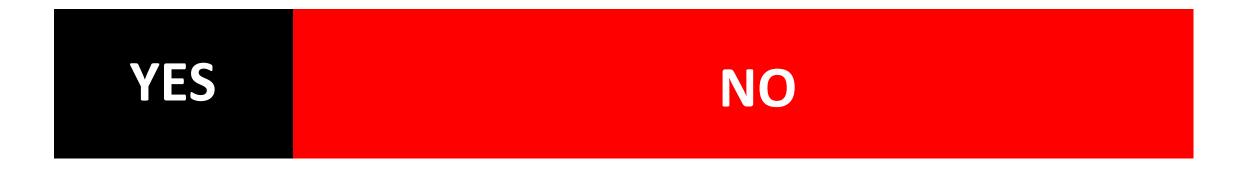


Did you get training on how to wear HPE with other PPE?



0 20 40 60 80 100

Did you get training on how to avoid interference with hair, hats, etc.?



0 20 40 60 80 100







HSE in the 1990s

Figure 28 The problems of fitting muff-type ear protectors (eg with long hair, safety glasses or jewellery)

HSE in the 2020s



Figure 19 Problems of fitting earmuffs with long hair

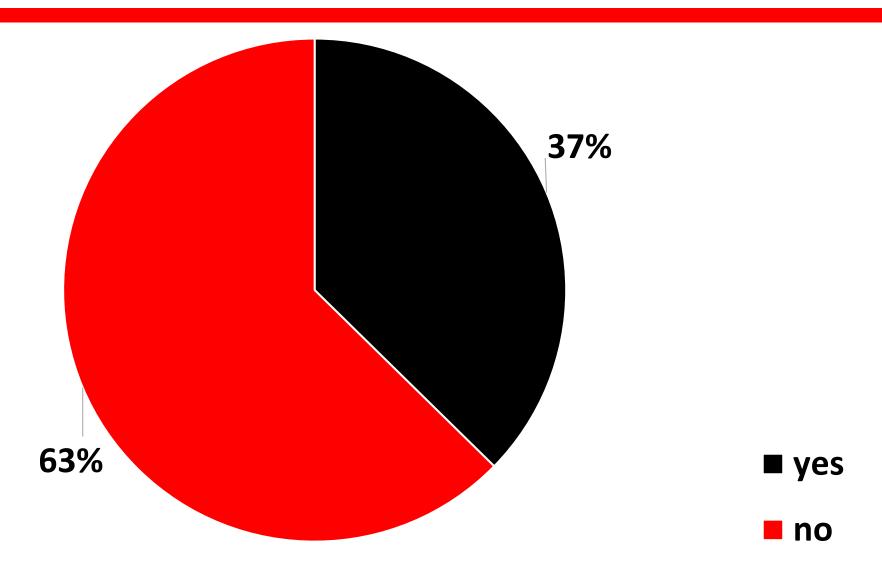


Figure 20 Problems of fitting earmuffs with jewellery

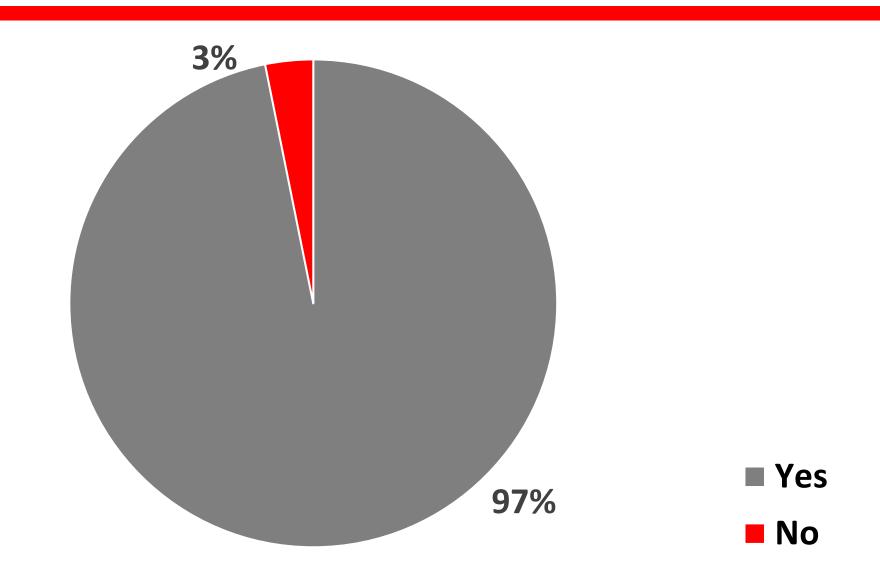


Figure 21 Problems of fitting earmuffs with safety glasses

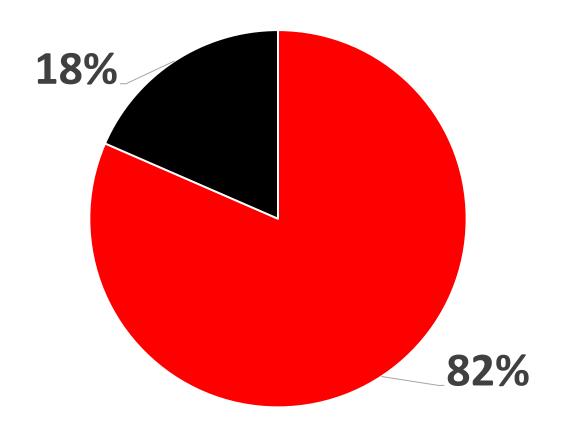
Were you told how important it is to wear HPE all the time you are working in noise?



Are the earmuffs in good order?

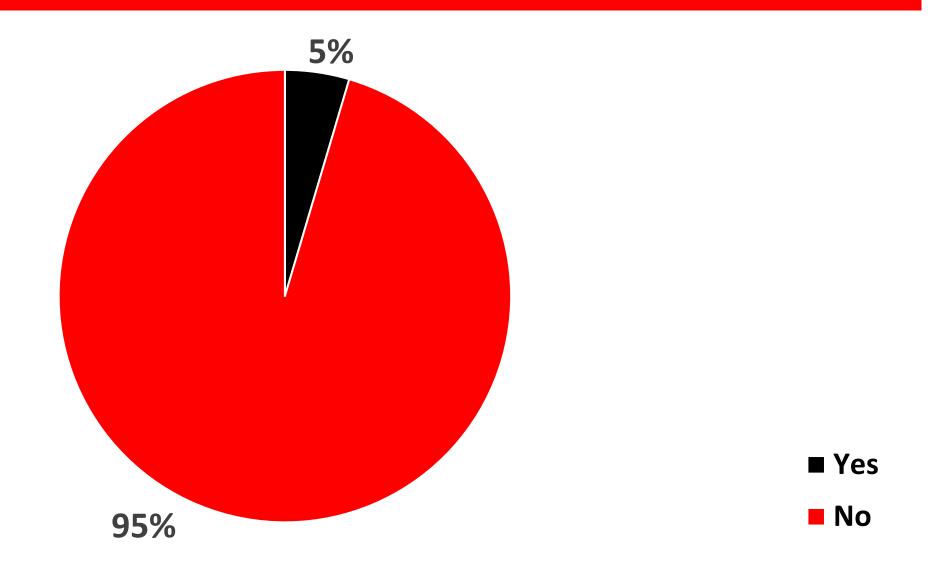


Did the dutyholder check if their hearing protection gave enough protection?



■ Did some sort of HPE calculation ■ Did no sort of HPE cacluation

Are employers checking audibility when they issue workers with hearing protection?





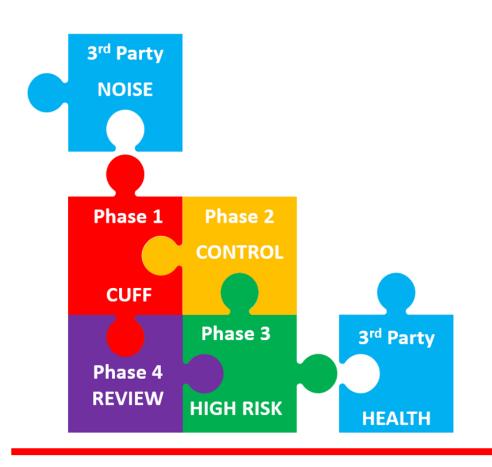


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PROTECTING PEOPLE AND PLACES FOR HSE



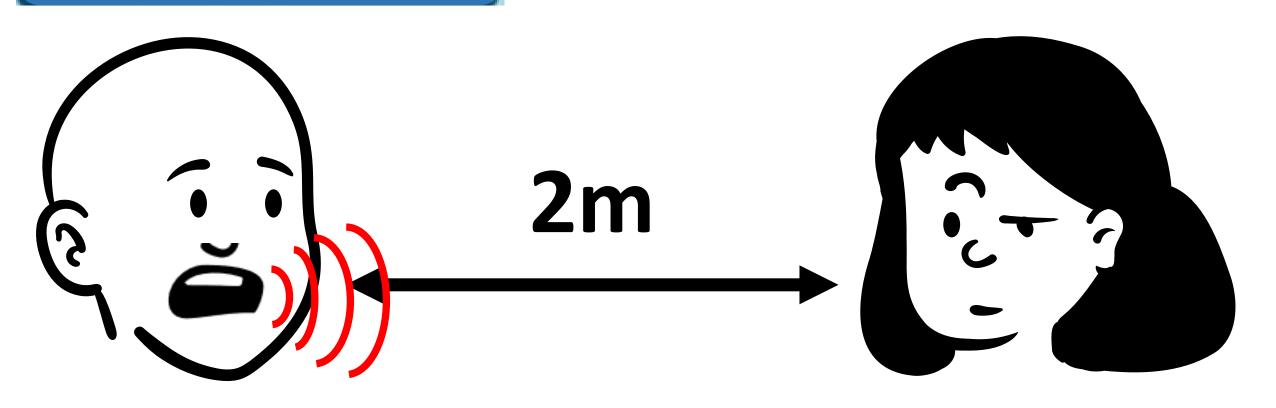
STEPS

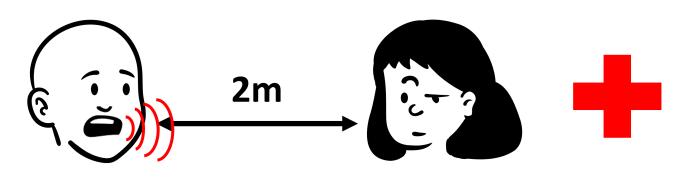
PHASE 1. Make Dutyholders understand hearing protection is a difficult solution.

- Inspect sites where hearing protection is used.
- Enforce on the management of hearing protection Condition Use, Fit for Purpose, Fit the ear)
- Advise on buyquiet and dutyholder held 'list of controls.
- Gather 3rd Party Noise Reports.

Shout to be heard. 2 hours. Need's a risk assessment





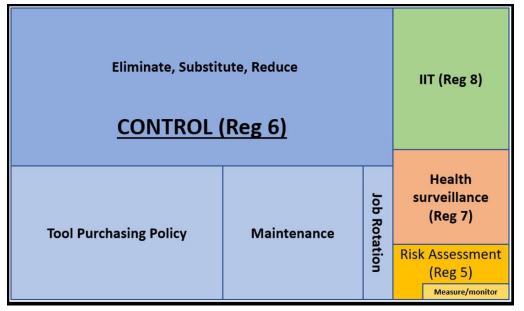






Above an action value?



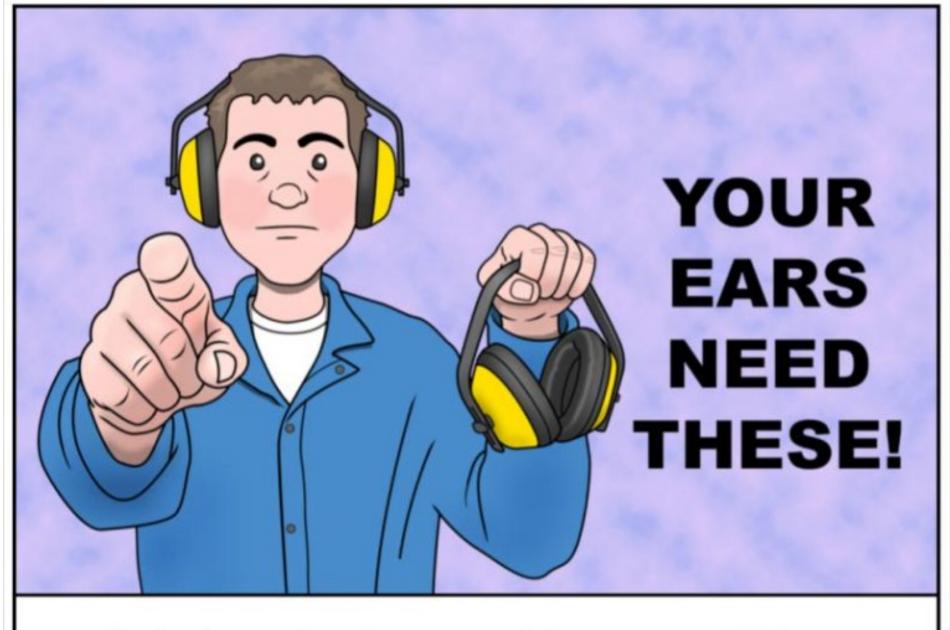












Protect your hearing now, while you can still hear.

- C Condition. Is the hearing protection in a good state of repair?
- U Use. Are the workers using hearing protection when it is needed?
- F Fit the ear. Is the hearing protection fitted or worn properly?
- F Fit for purpose. Has the hearing protection been correctly specified?







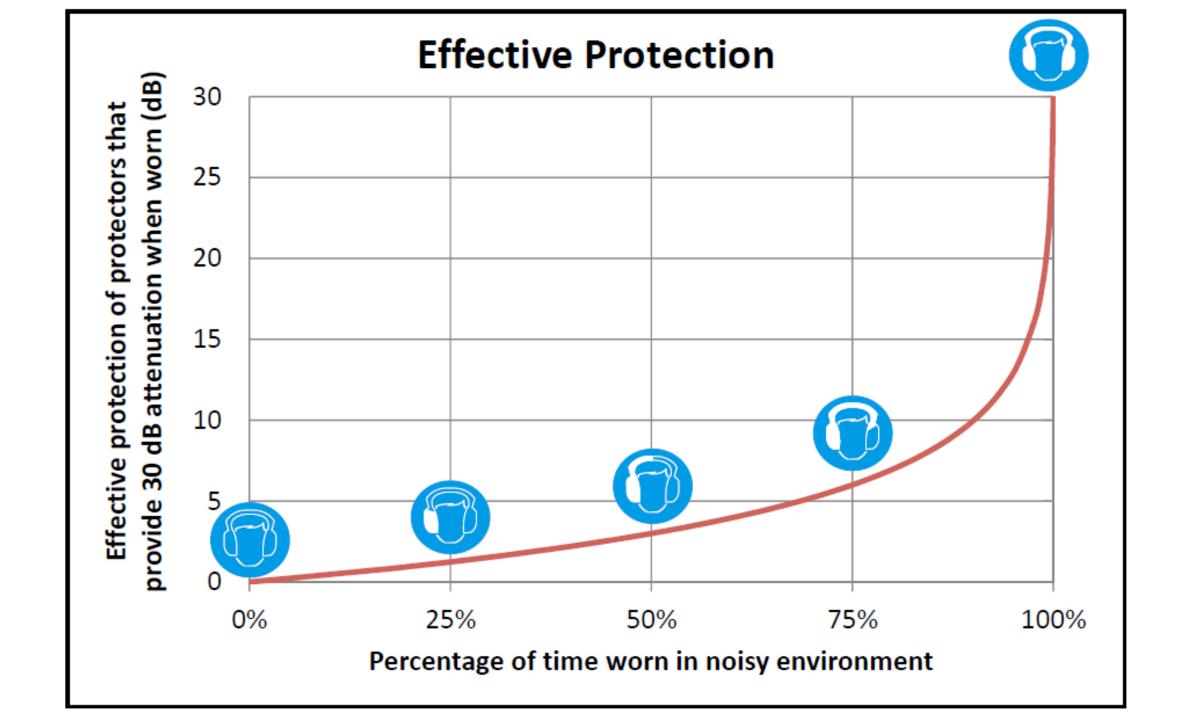






Figure 17 Correct fitting of earplugs



Figure 18 Incorrect fitting of earplugs

Table 3 Indication of protector factors

A-weighted noise level (dB(A))	Select a protector with an SNR (dB) of
85–90	20 or less
90–95	20–30
95–100	25–35
100–105	30 or more

https://www.hse.gov.uk/pubns/priced/l108.pdf



Hearing Protection Calculator - SNR method

The SNR method of hearing protection calculation uses:

- SNR value, available from the hearing protector supplier
- C-weighted (L_C or L_{Ceq}) noise levels at the workplace

NOTE: the L_{Ceq} value should not be confused with the peak noise level L_{Cpeak} , which is also measured in units of dB(C)

HEARING PROTECTOR	WORKPLACE NOISE			
Make/Model:	Location/Machine:			
SNR value	C-weighted Level	Protected noise level at the ear	HSE recommended value for the likely noise level at the ear	Protection rating ?
SNR	L _c	$(L'_A = L_C - SNR)$	$(L'_A + 4)$	
dB	dB(C)	dB	dB(A)	
28	93	65	69	Over-protection

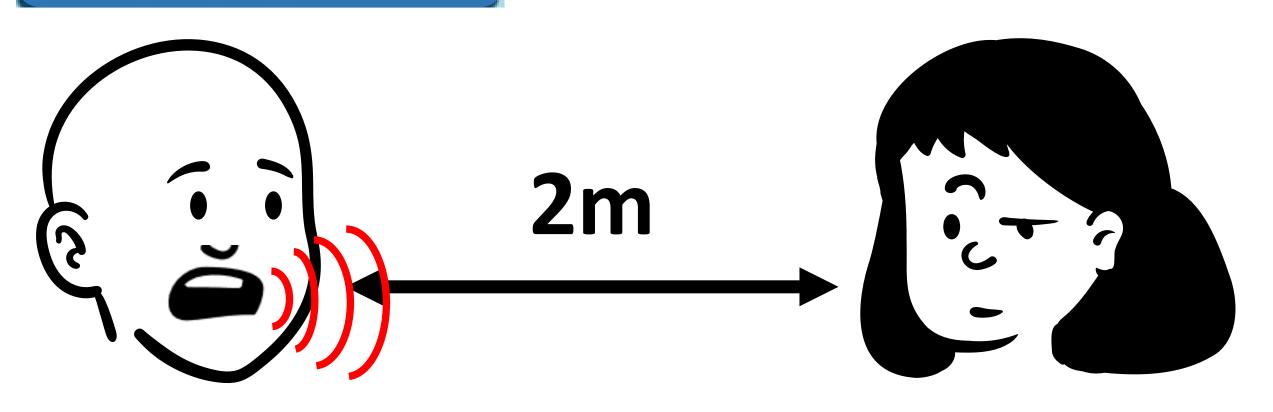
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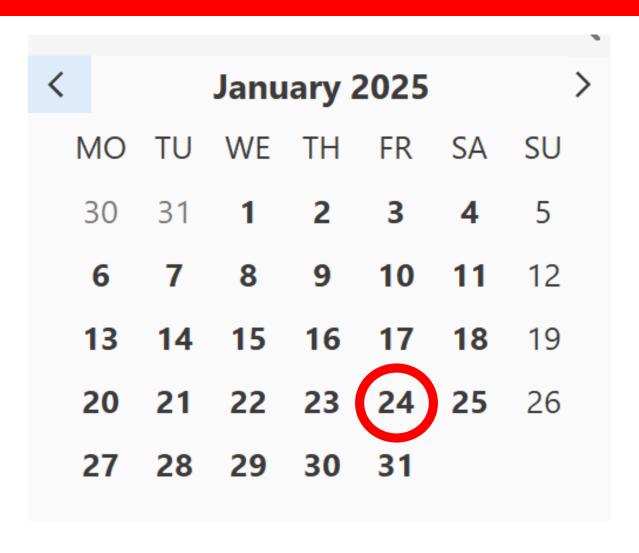
3. What is the bare minimum you could do today to control workplace noise?

Shout to be heard. 2 hours. Need's a risk assessment





Make a list of controls you are working on when you will implement them



<u>Home</u> > <u>Topics</u> > <u>Noise</u>

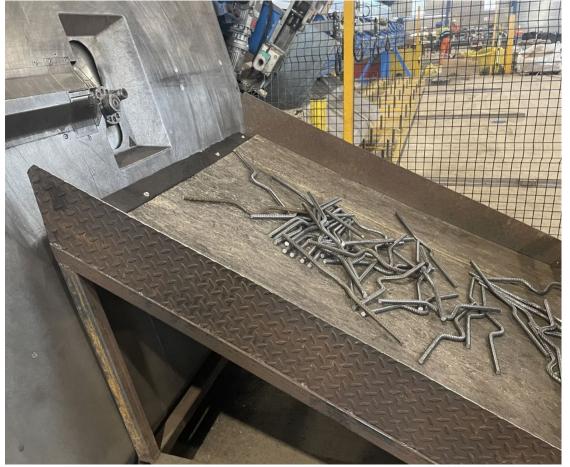
Case studies

Includes acoustic absorption, air movement, conveying, damping, design (equipment and workplace), isolation and insulation.

https://www.hse.gov.uk/noise/casestudies/index.htm



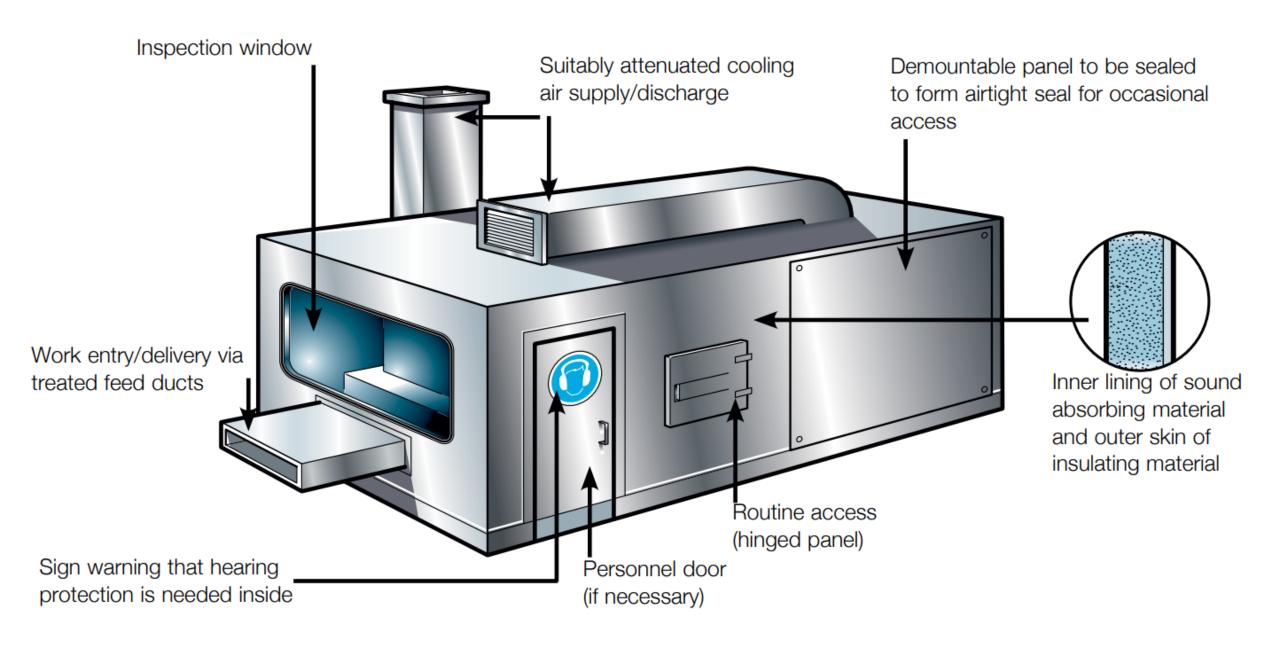




PROTECTING PEOPLE AND PLACES FOR HSE

FAN SPEED	Noise
REDUCTION	Reduction
10%	2 dB
20%	5 dB
30%	8 dB
40%	11 dB
50%	15 dB

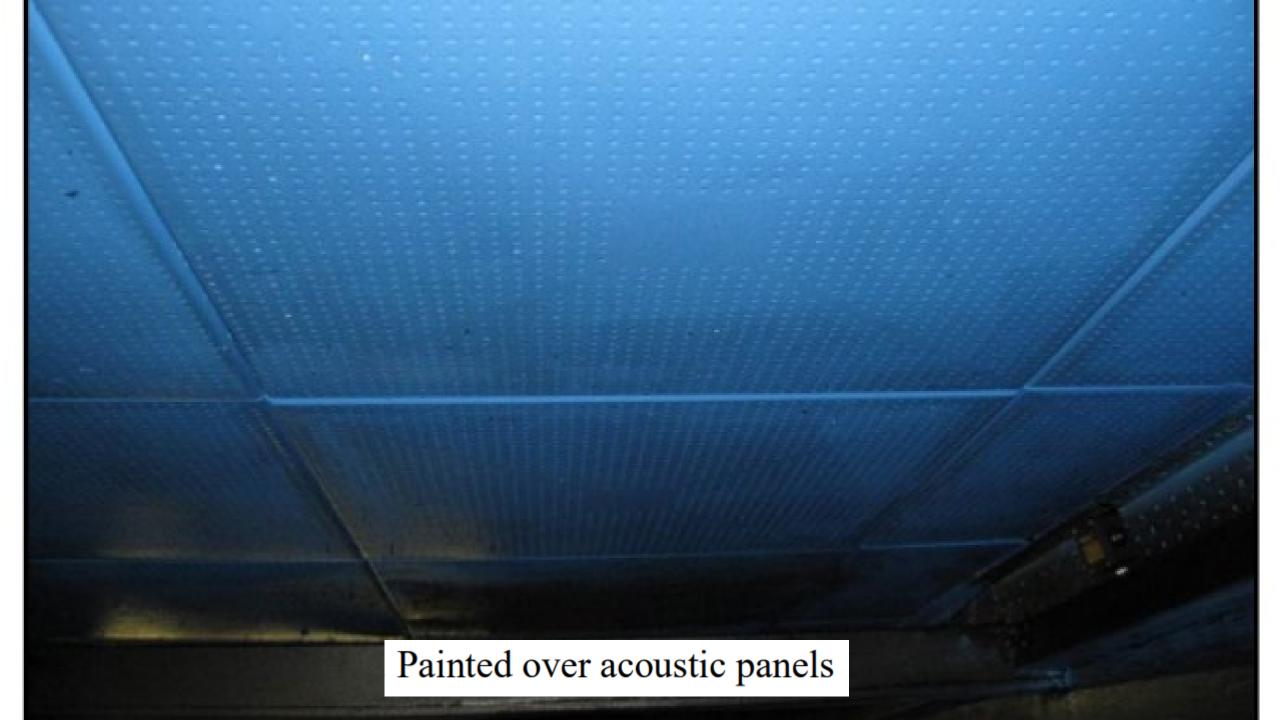
You paid all that money so make sure it works?



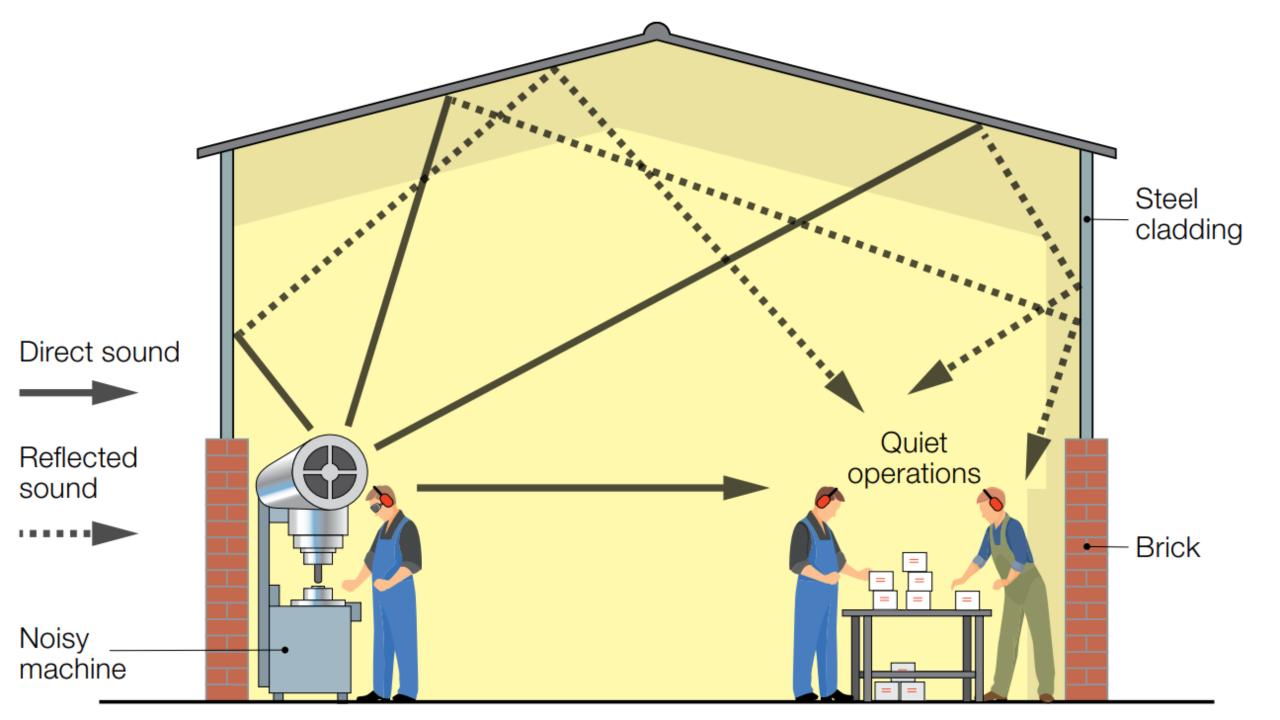


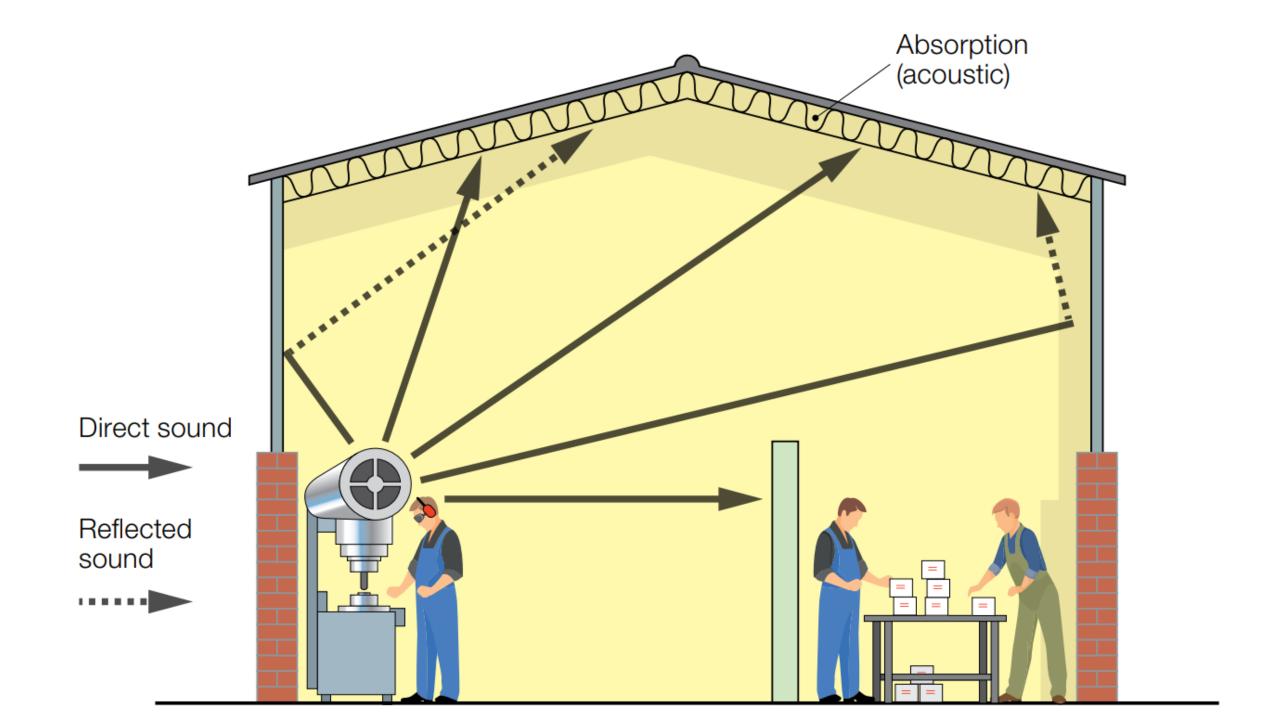


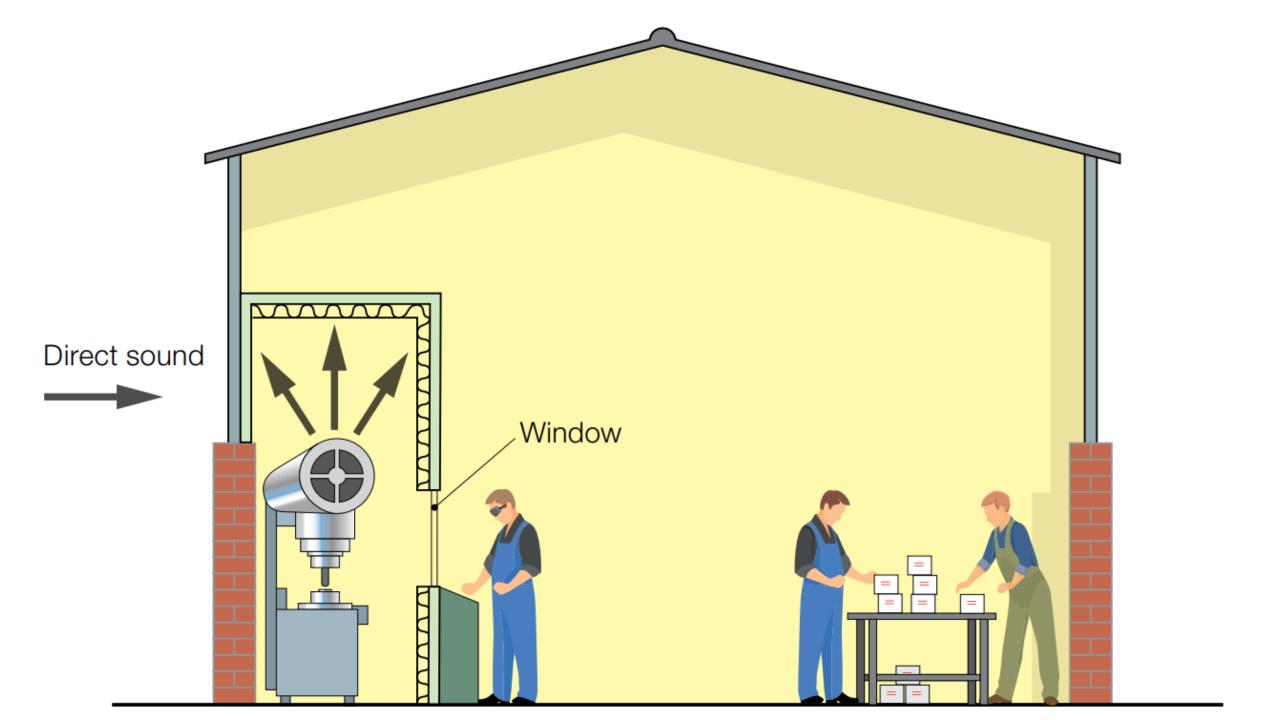


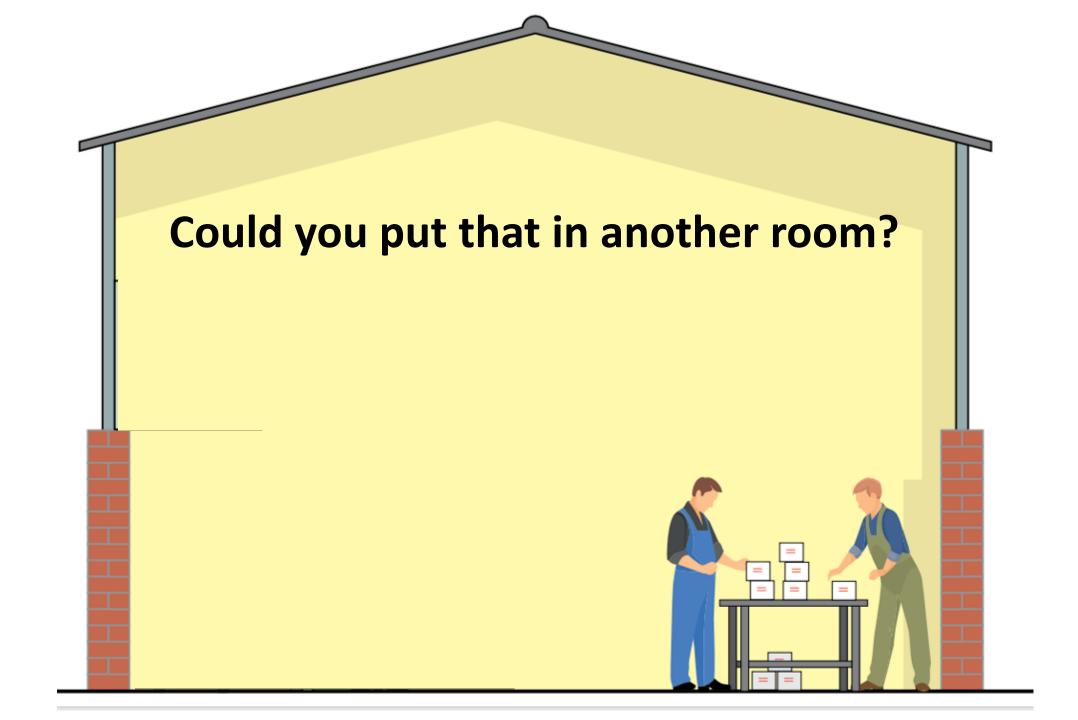


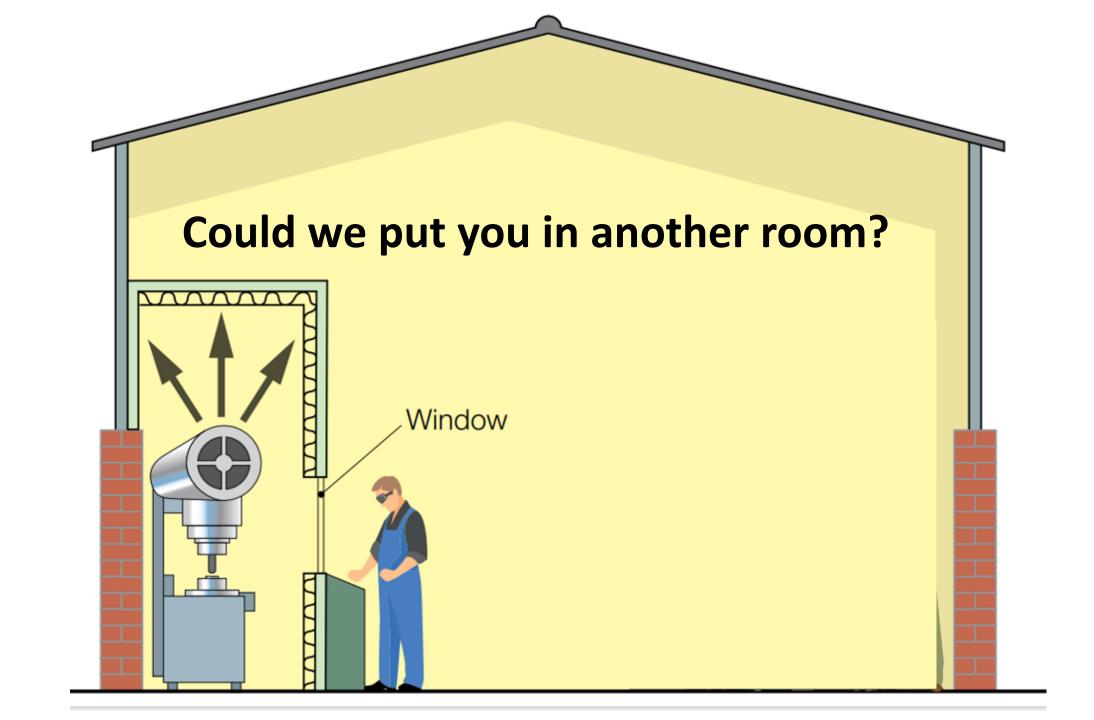
Why are you doing this here?





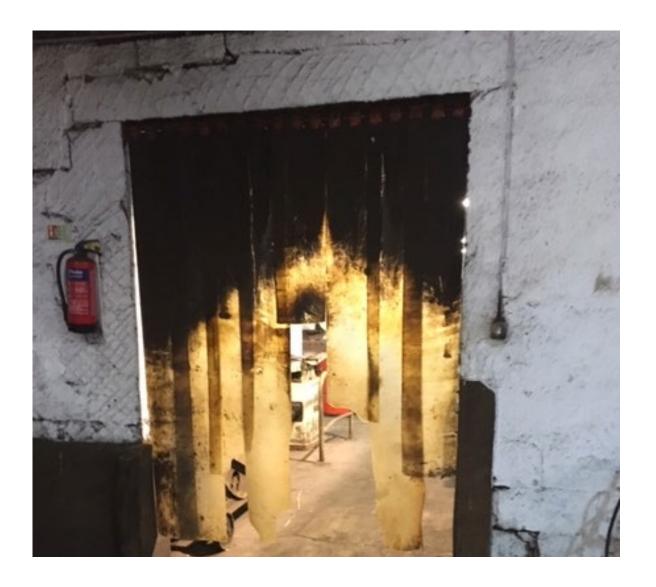
















Noise from pneumatic systems

Guidance Note PM 56

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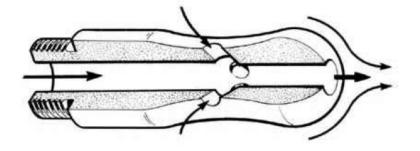
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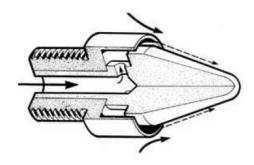
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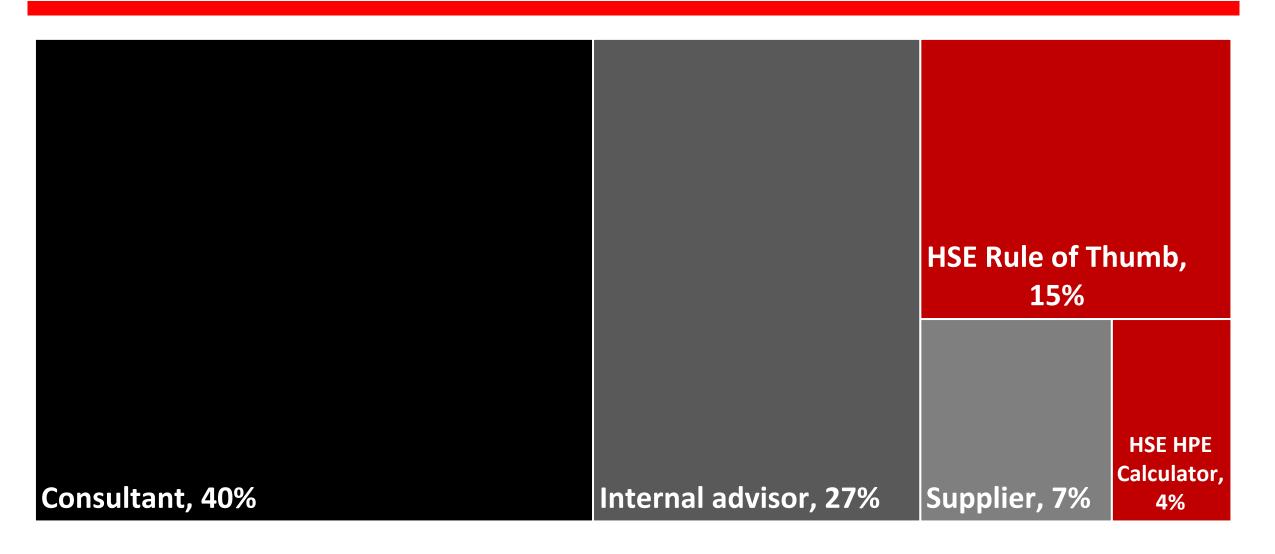


Aspirated venturi nozzle



Coanda effect nozzle

Who or what did the dutyholder use to do the sums for their hearing protection?





Selecting a consultant.

You should expect Yes answers to the questions highlighted in GREEN on and hope to get yes answer to the questions in AMBER.

You should make sure the consultant is competent to do the work		Yes	No
	Are they qualified to measure and assess workplace noise (e.g. completed IOA, BOHS or IOSH certificate/module in workplace noise assessment)?		
	Are they a member of a professional body (ANC, BOHS, IOA or IOSH)?		
	If advice on control is to be provided can they show that they, or the project supervisor, have a suitable level of experience.		
	If they have not completed a workplace noise assessment course can they otherwise show that they have suitable experience?		
00	Can they give examples of previous reports or examples of good work?		
To hel	p you complete the risk assessment you need specific details regarding your employees' noise exposure. Check the report will include:		
	What your employee's exposure levels are in relation to the action and limit values stated in the noise at work regulations.		
	Advice on if you need to provide health surveillance.		
	The required performance of any hearing protection you may need give to your employees and/or an assessment of existing hearing protection used.		
00	An executive summary for ease of understanding		
00	A list of practical measures that you can implement to both reduce risk posed to your employees by exposure to noise and improve compliance		
You sh	ould provide suitable information to help the consultant do their job		
	Tell them if you need a noise survey or advice on control or both		
00	Give them information about the work you do, staff numbers and rolls, equipment operating and any areas where access may be difficult		
00	Issue your site safety requirements for visiting contractors (e.g. time required for induction, PPE requirements)		
00	Issue details of your existing hearing protection, "buy quiet scheme" and health surveillance		
00	Provide a floorplan showing the location of equipment and noisy processes		
00	Issue copies of any previous noise surveys you have had completed		

Signed Date / /

https://hearingconservation.org.uk/be-a-smart-buyer-when-it-comes-to-noise-consultancy-services/

Next time you are in a workplace please try one of these three things.

- 1. Try the shout test.
- 2. Do they have a buy quiet scheme or a list of controls you are working on.
- 3. Can their workers hear warning signals when wearing hearing protection.



Chris Steel

Principal Specialist Inspector Noise & Vibration Health & Safety Executive **Contact Info**

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Linkedin
linkedin.com/in/chris-steel-424b787b

Tackling Noise-Induced Hearing Loss with Innovation, Not Just Regulation

A Smarter Approach to Controlling the Risks and Protecting Your Workforce

26th June 2025

Dr David Greenberg Founder Director, Eave









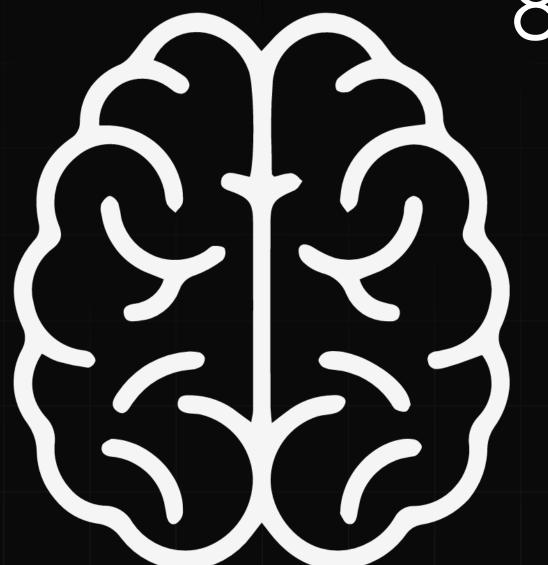
2,232,100 ____ 1,135,100









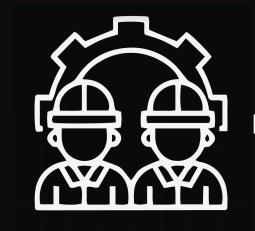


NOISE EXPOSURE

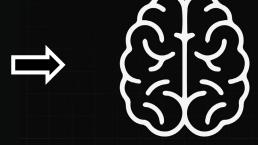
HEARING LOSS

LONELINESS & ISOLATION

DEMENTIA







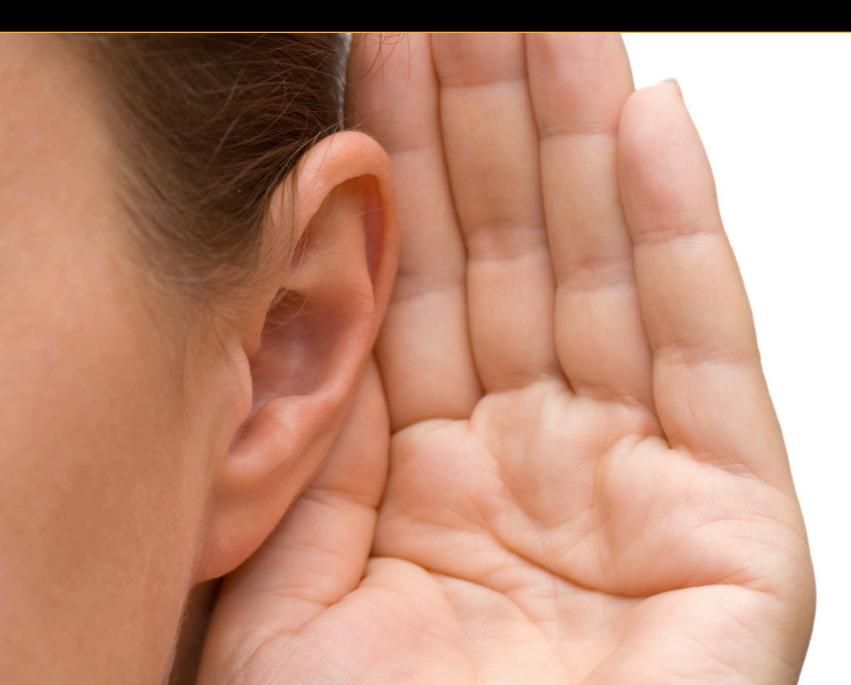
2,232,100 (>80dB)

1,135,100 (>85dB)

12,000,000

3,600,000

850,000



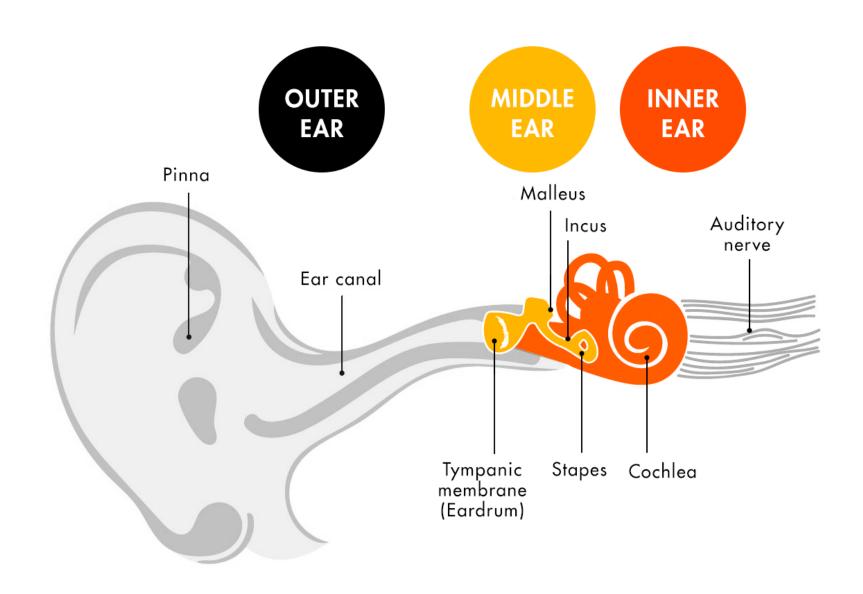
Reasons Why the Status Quo Fails

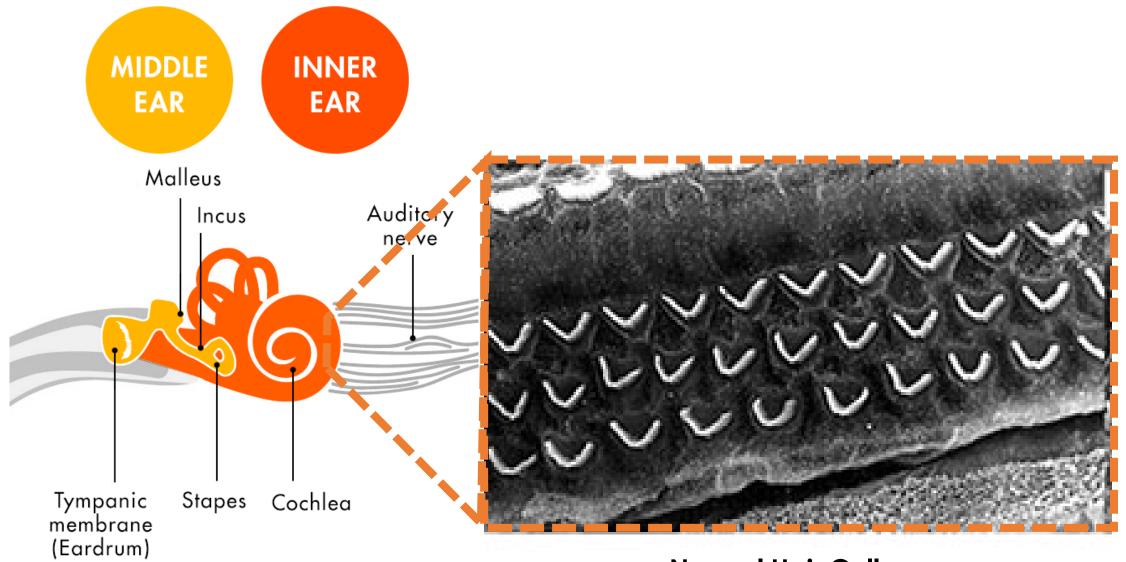
1. Lack of awareness and education

77% of people did not know that tinnitus is a sign of hearing damage

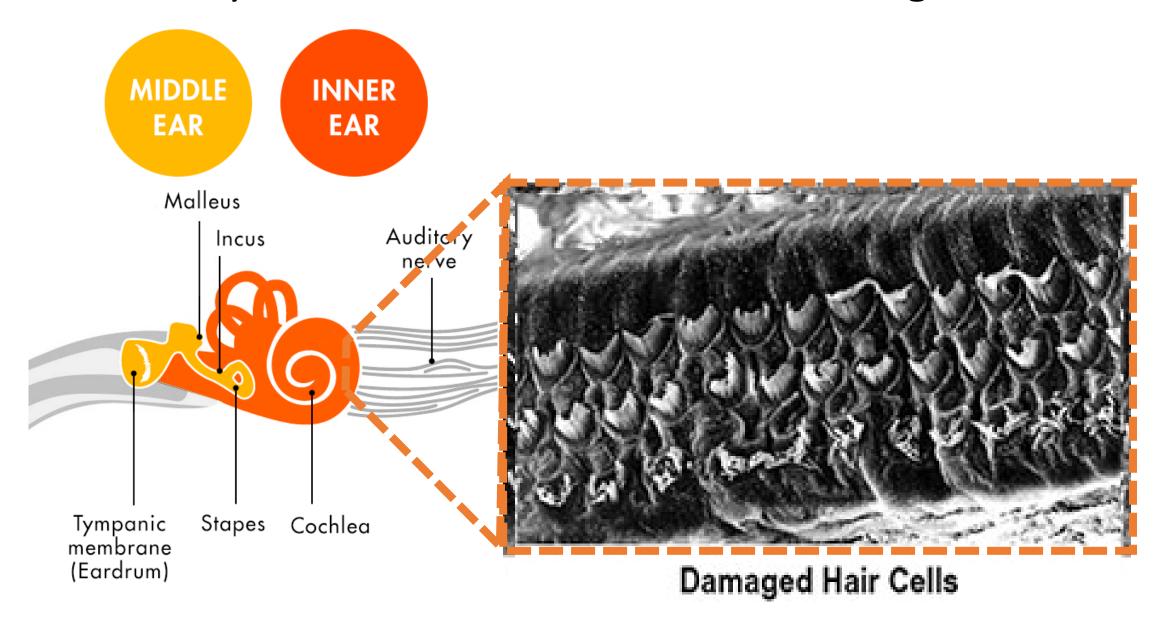
81% of people did not know that low or muffled voices during conversation indicates early signs of hearing damage

37% of people either didn't know or didn't believe that exposure to loud sounds causes hearing damage

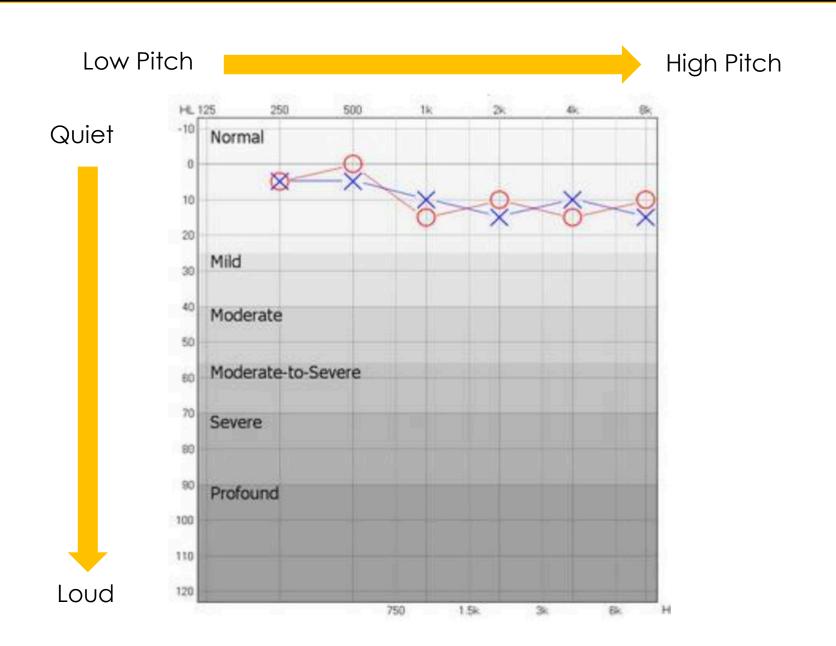


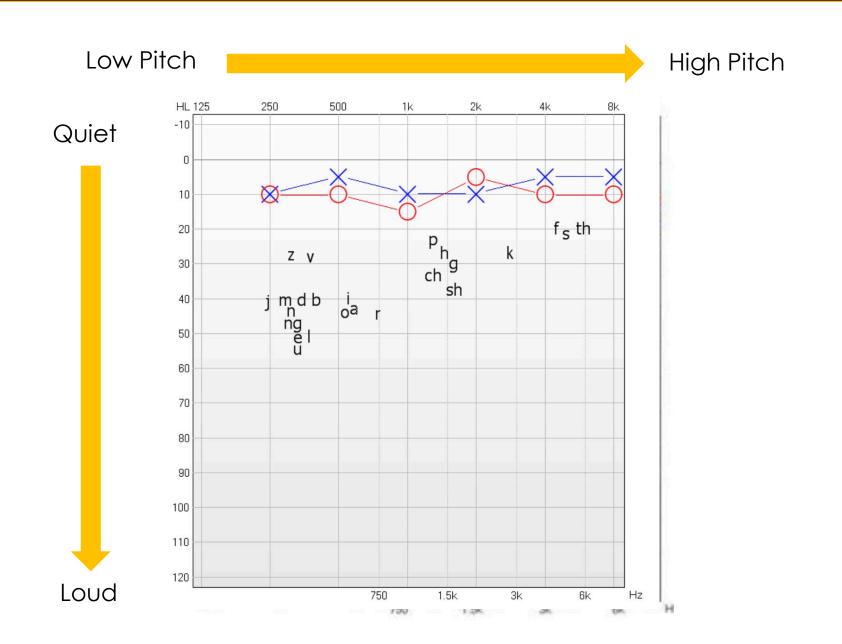


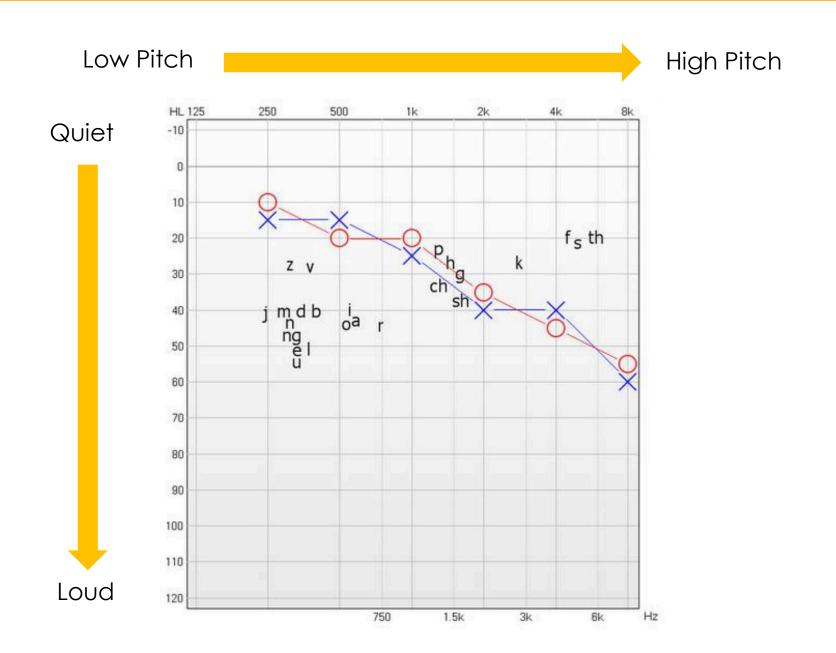
Normal Hair Cells







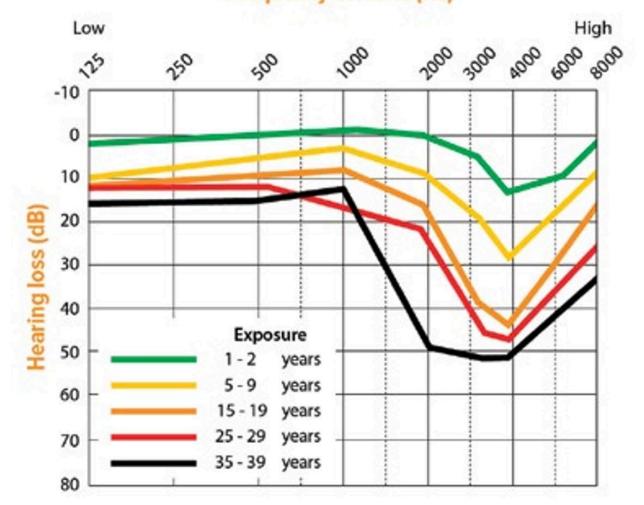




Up to 50% of hair cells can be lost before changes can be measured by audiometry (CDC)

Noise Induced Hearing Loss (NIHL)

Frequency in Hertz (Hz)

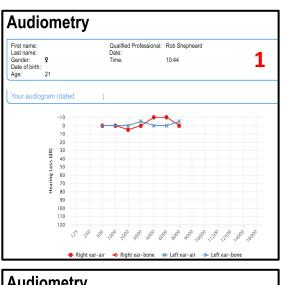


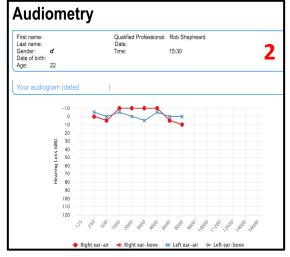
https://www.wcb.ab.ca/assets/pdfs/providers/HCP_Hearing_ld

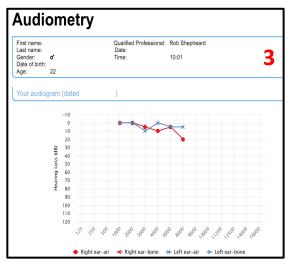
Audiometry as an indicator of exposure

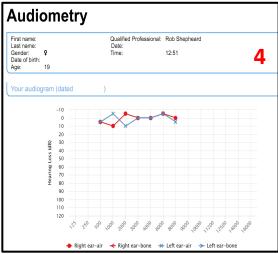
3 people: 10 + years exposure, NO PPE, tinnitus

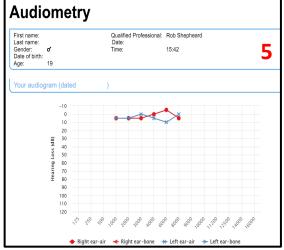
3 people: 10 + years exposure, PPE worn, no hearing damage

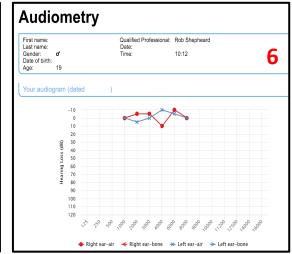








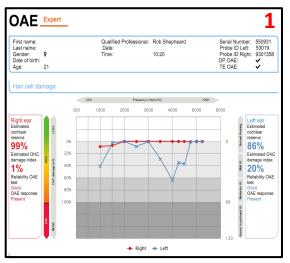


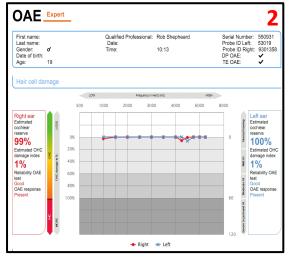


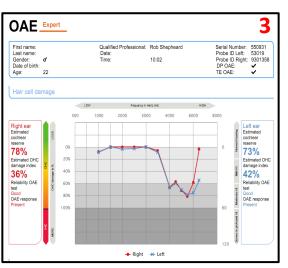
OAE as an early indicator of exposure

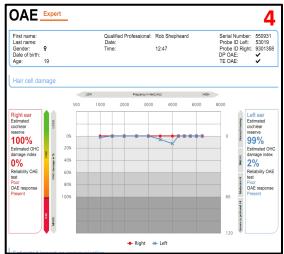
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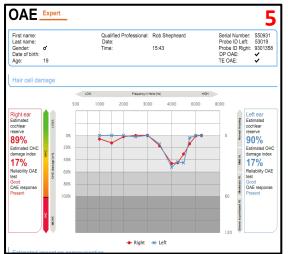
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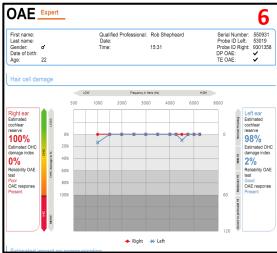












3. Stigma and Fear of Job Loss

Action on Hearing Loss surveyed >1,000 adults with deafness or hearing loss

60% of those who had not disclosed their condition said they felt others would assume they were not competent.

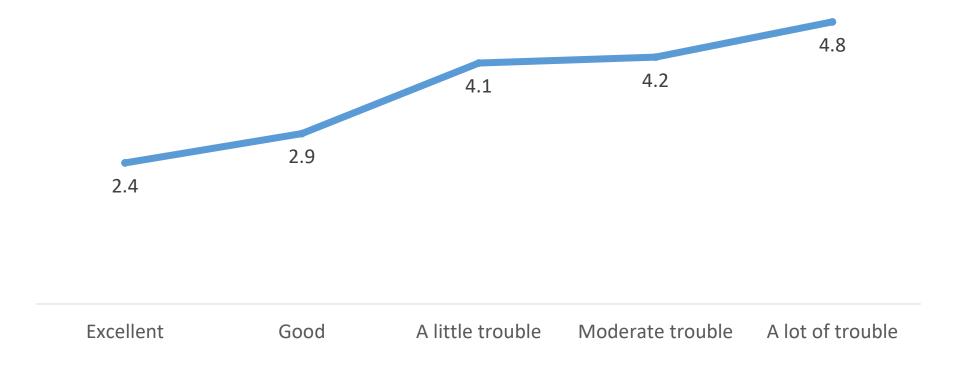


18% said they did not want to disclose their hearing loss for fear of losing their job.

54% had worked without disclosing their hearing loss.

3. Stigma and Fear of Job Loss





4. Madequacies in Noise exposure Assessments





Noise level meter



Passive ear defenders & earplugs



Noise dosimeter



Time consuming
Disjointed
Not-representative

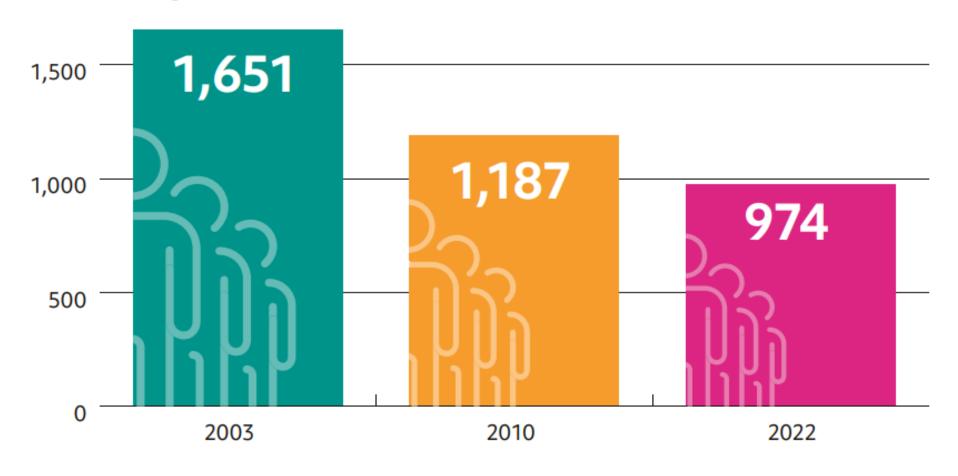


Noise reports

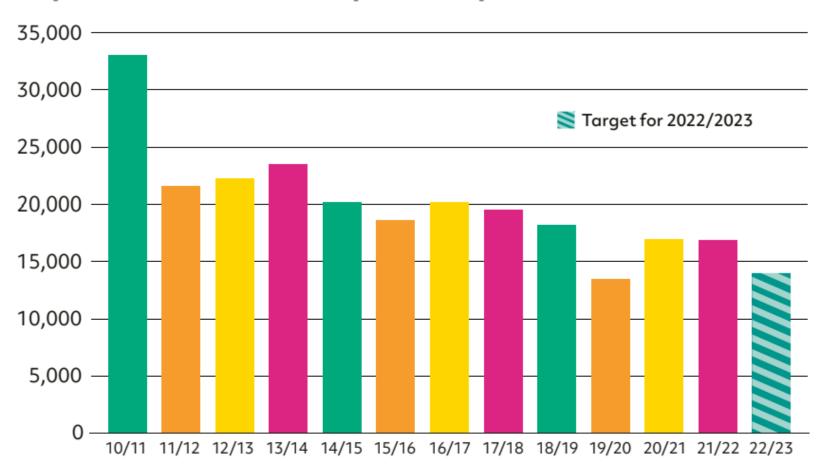


Health surveillance

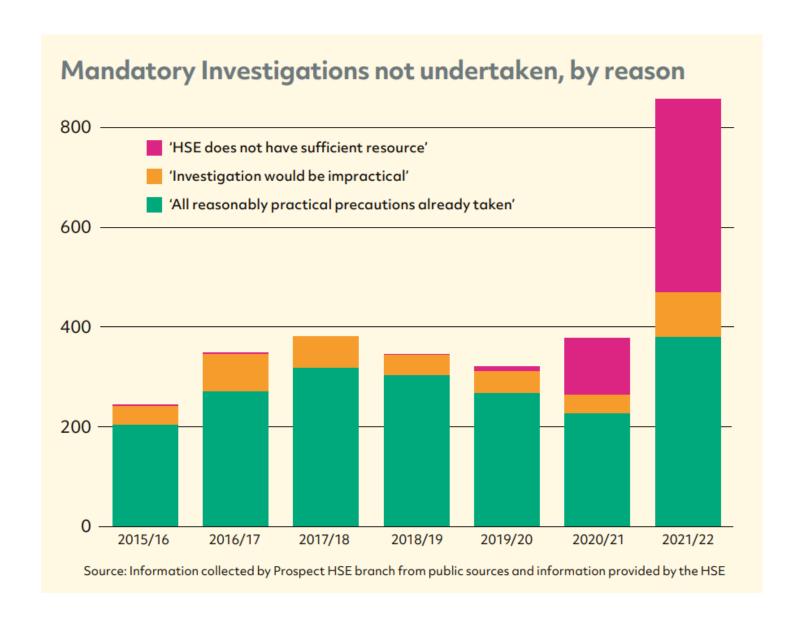
Total inspector numbers, 2003-2022



Inspections carried out by HSE inspectors, 2010-2023



Source: Information collected by Prospect HSE branch from public sources and information provided by the HSE



Classification of hearing loss

Compliance woefully low

Not RIDDOR reportable

Hearing protection rarely worn correctly

Reclassification of noise as Cat III Health surveillance inappropriately applied

Construction workers are 60% more likely to report hearing difficulties and 53% more likely to report experiencing tinnitus compared to non-noise exposed workers (Couth et al. 2019)

The problem with traditional hearing protection solutions

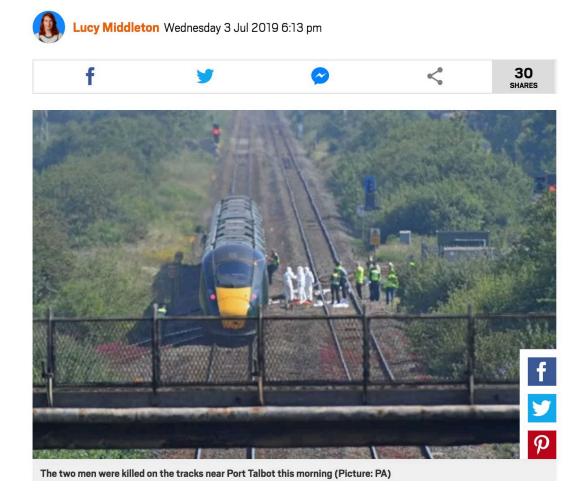
- No way to measure effectiveness in dynamic conditions
- No way to measure correct usage or usage at all

Indiscriminate blocking of environmental noise



METRO

Rail workers killed by train didn't hear it because of their ear defenders



THE PROBLEM WITH TRADITIONAL HEARING PROTECTION SOLUTIONS

HSE Research Report RR720

40% of PPE users got no protection whatsoever

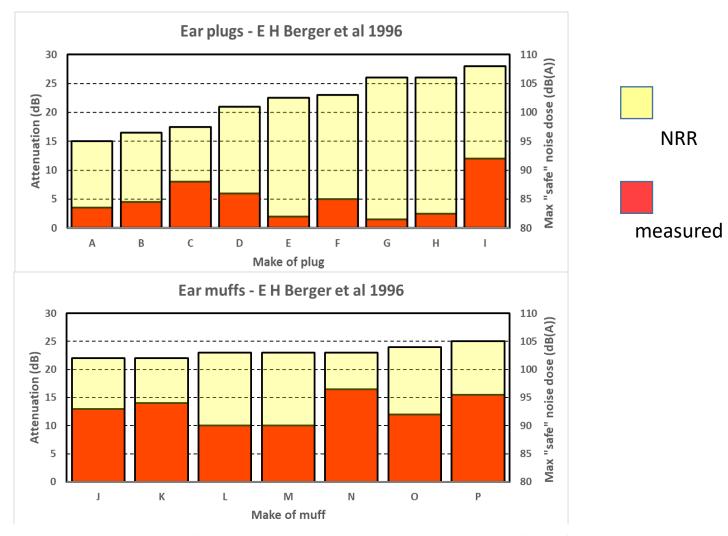
Performance of much of the remaining 60% was inadequate



Real world use and performance of hearing protection

Prepared by **Health and Safety Laboratory** for the Health and Safety Executive 2009

PPE – not the protection you expect...



Actual measured field PPE attenuation v supplier data (NRR)

High Blood Pressure

Regular exposure to noise has been associated with an increase in blood pressure. [2][3]

Ulcers

Noise causes digestive changes that lead to ulcers. Ulcers are 5x as common in certain noisy industries as would normally be expected. [4]



Women who were exposed to 85 to 95dB noise during pregnancy were more likely to bear children that had hearing loss. [1]

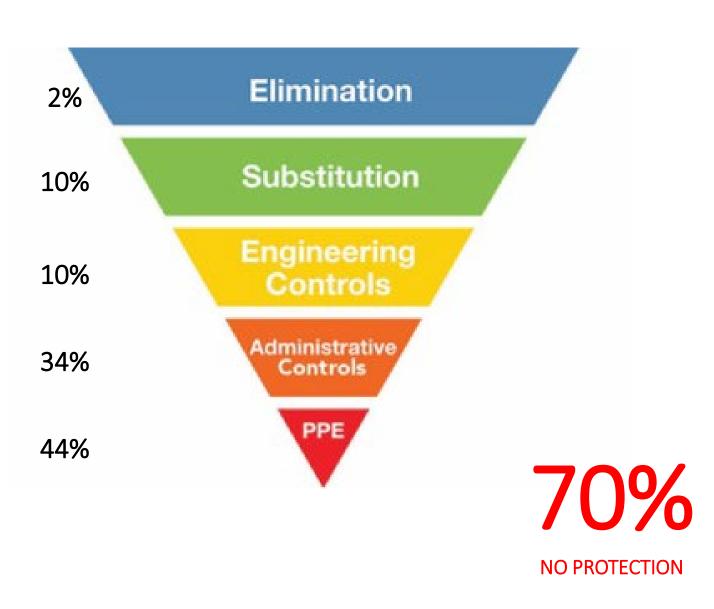
Heart Attacks

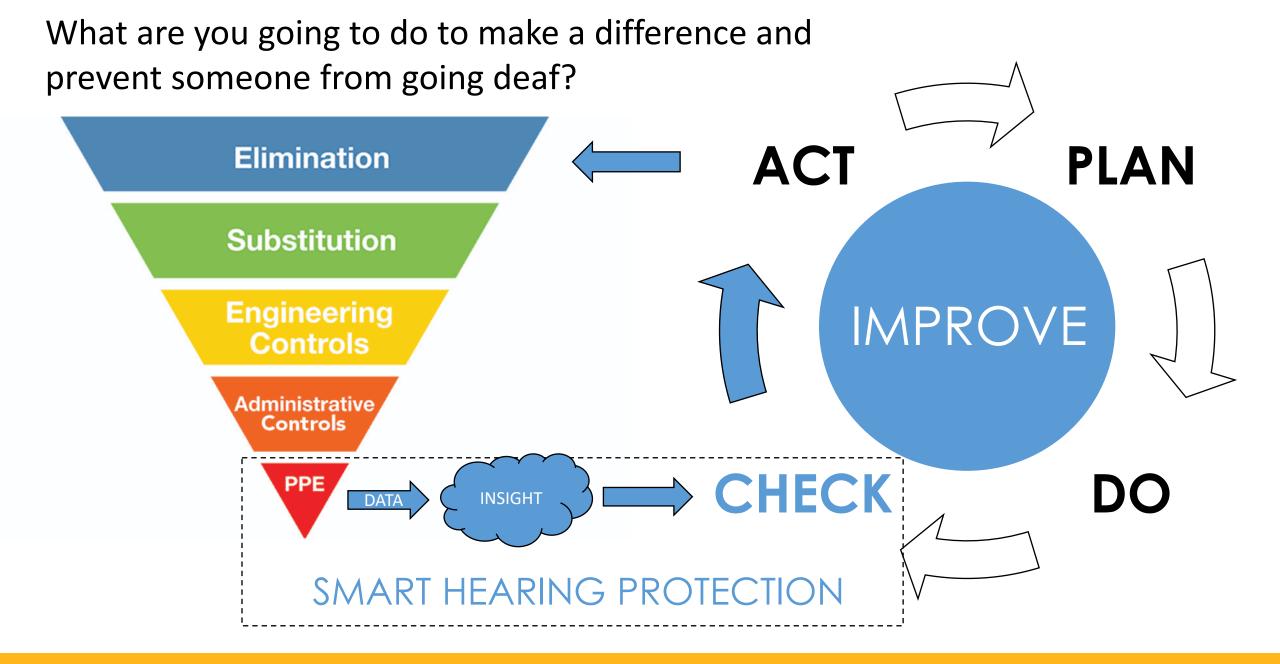
One study showed that noise caused 3,860 heart attacks in Germany in 1999, killing 2,232 people! [5]

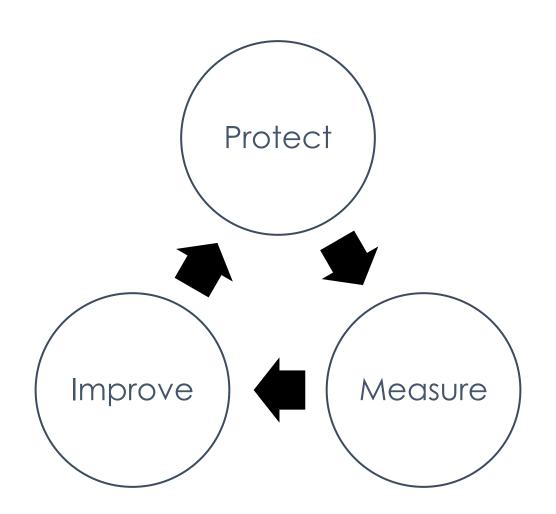
Reduced Productivity

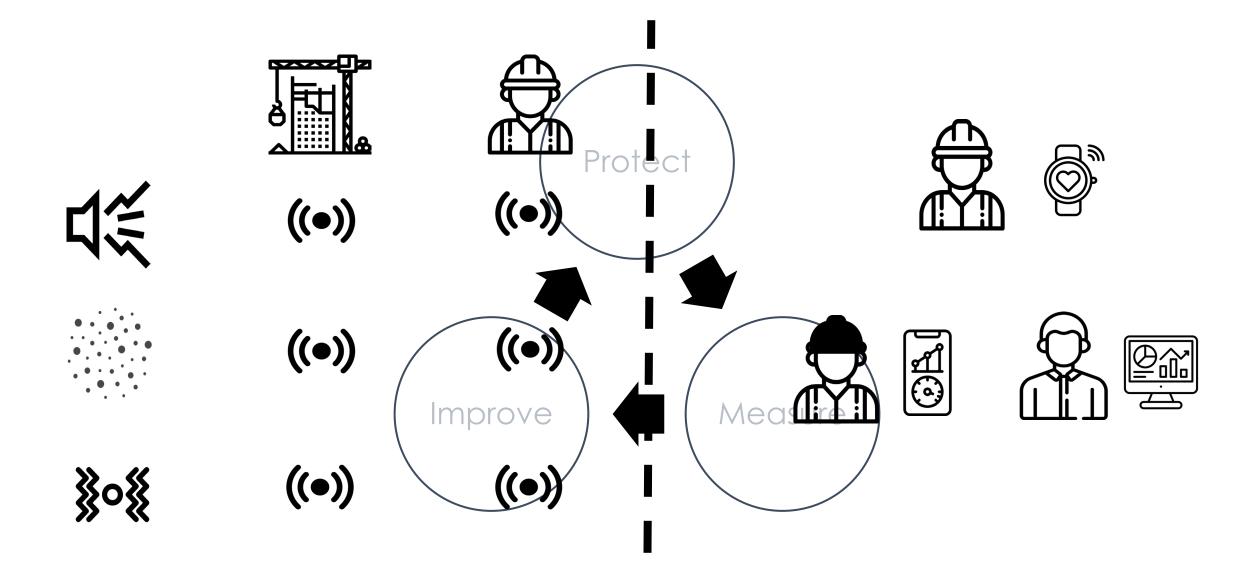
Noise can interfere with communication and concentration, and can contribute to workplace accidents. [3]

HS2 Tier 1 JV CDM risk register 256 noise hazards identified









SMART HEARING PROTECTION

EAVE **FOCUS**LITE

Noise Exposure Monitoring



360° situational awareness



Level-dependent hear-through





SMART HEARING PROTECTION

EAVE **FOCUS**LITE

> + - ^

PEAK



Noise control evaluation



Automated PPE wear rate compliance reporting



Automated site noise mapping

















EAVEOLUTION product range



FocusLite



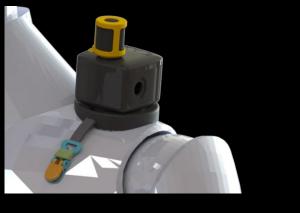
AirWarden







NoiseWarden







ToolWarden



HealthWatch

Noise / Dust / Vibration exposure tracking via connected smart sensors

Real-time alerts for operatives on the Samsung watch

Knox-enabled deployment for secure enterprise management

Peak™ SaaS analytics for compliance reporting and predictive insights



ToolWarden™



Peak™





HealthWatch™







- C Condition. Is the hearing protection in a good state of repair?
- U Use. Are the workers using hearing protection when it is needed?
- F Fit the ear. Is the hearing protection fitted or worn properly?
- F Fit for purpose. Has the hearing protection been correctly specified?

$E \wedge V E$

PEAK + FOCUSLITE

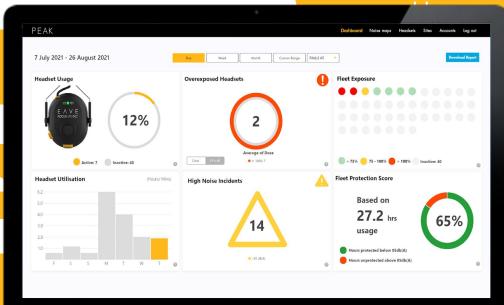




Remotely manage worker health

Ensure worker protection and complian

Eliminate risks to worker health



Enabled by data from protective

Enhanced with actionable notifications

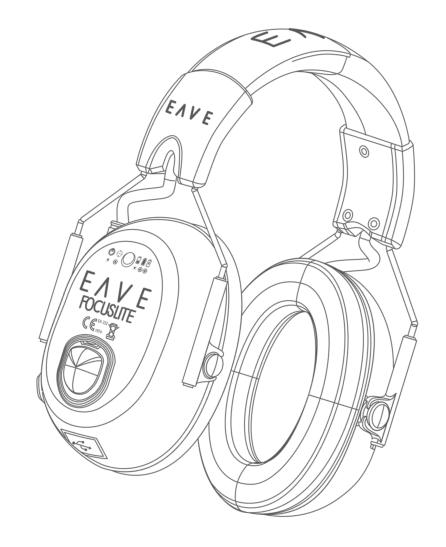


127

Condition

- Use hygiene kit to replace ear cushions and foams every 6-12 months
- Inspect cushion if Peak shows declining Personal Attenuation Rate
- Ensure helmet clips and c-clips are attached
- Ensure USB grit covers are in place and used

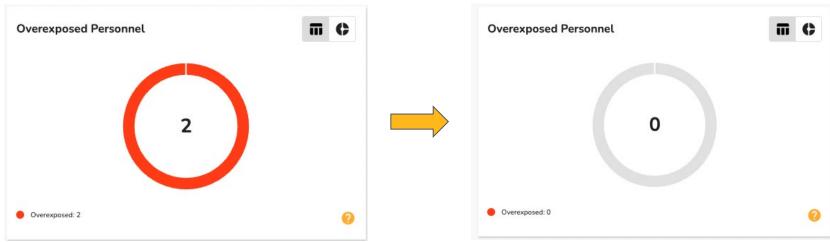




Use

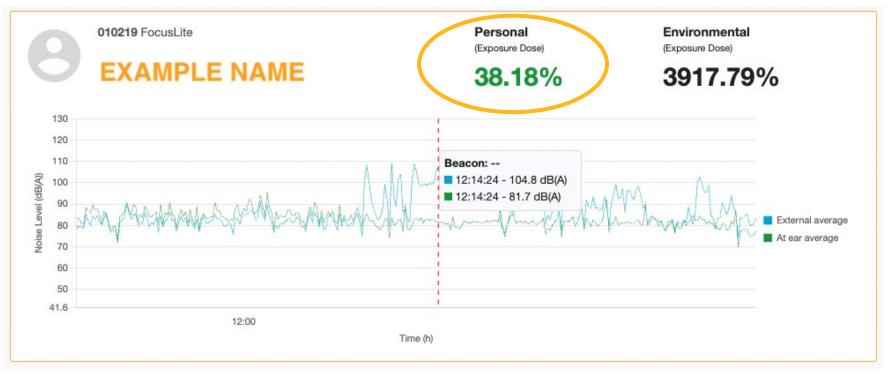
- FocusLite is switched on during shifts
- Peak overexposures are trending to zero
- Peak unprotected events are trending to zero
- Peak headset usage matches shift patterns
- Peak protection score is trending to 100%





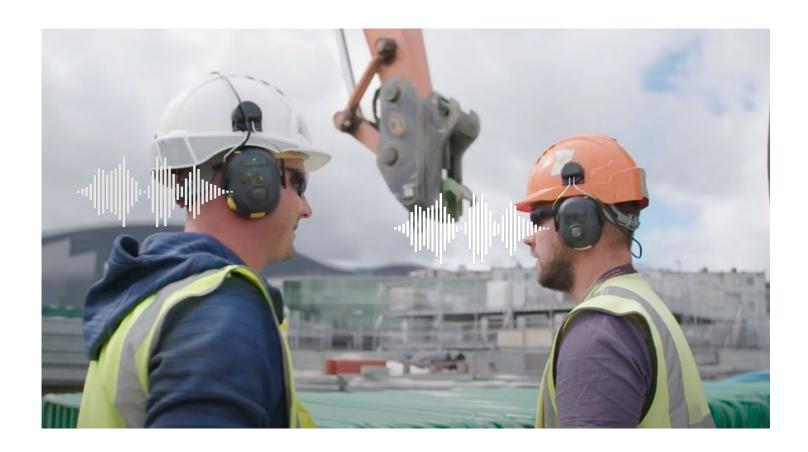
Fit the ear

- Training on how to wear the ear muff
- Adjust the bracket so cups are over the ears
- Peak personal dose is below 100% and as close as possible to 0%



Fit for purpose

- FocusLite is switched on to enable level dependent HearThrough
- Peak personal dose is below100% and as close as possible to0%

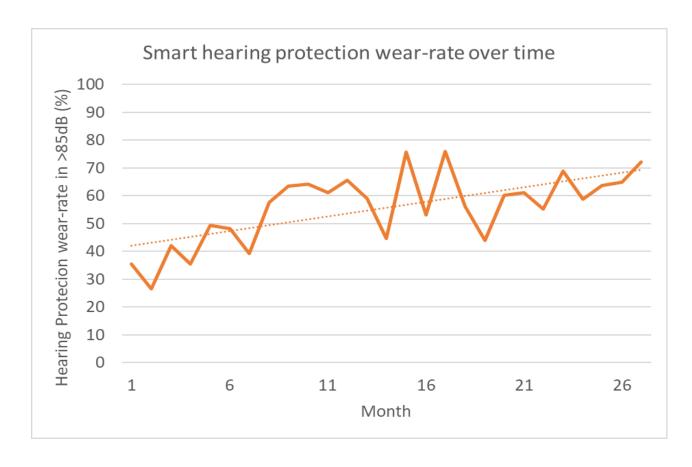


Data Analysis

HS2 Contractor			
Contractor 1			
Contractor 2			
Contractor 3			
Contractor 4			
Contractor 5			
Total			

1. Wear rates of PPE increase significantly over time

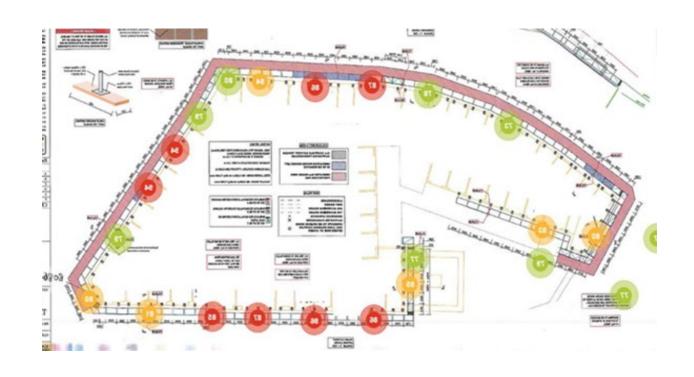
The direct feedback of noise exposure causes an increase in positive behaviours by operatives during operation



2. New sources of noise were discovered

Noise hazards identified via the noise mapping functionality that were overlooked in the initial Risk Assessment and Method Statement (RAMS)

- jet washing
- hot works burner
- basement work
- unplanned noisy works.



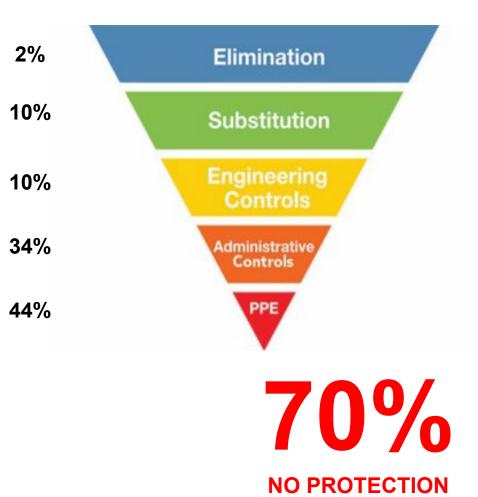
3. Contractors began to manage noise exposure by more effective means

HS2 contractor

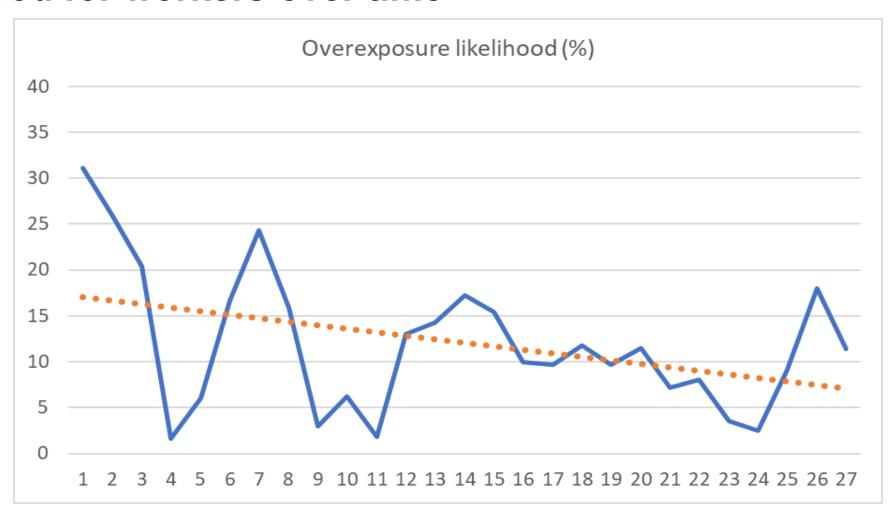
- 694 days of usage
- >7000 hours of data.
- 148 overexposure incidents.

The raised awareness from the data and insights lead to the RAMS being reviewed Example action taken: workers relocated from high to low hazard risk area.

HS2 contractor CDM risk register 256 noise hazards identified



4. Smart hearing protection halves the overexposure likelihood for workers over time



Key learnings and insights

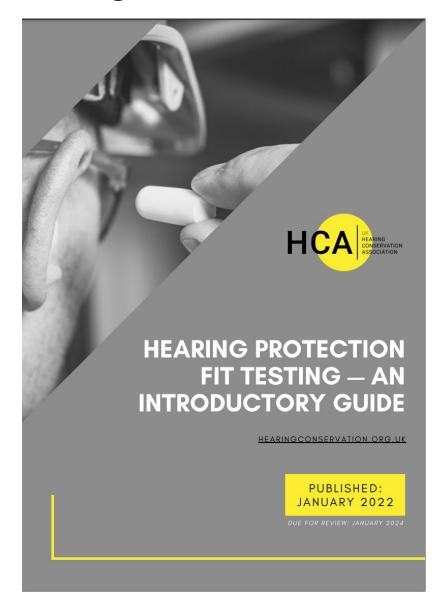
- 1. Over exposure to noise is rampant and is completely at odds with the official figures for reported exposures and NIHL
- 2. Vital to address factors that result in underreporting
- 3. Smart hearing protection enables contractors to understand where and how to fix exposures
- 4. Smart hearing protection is readily available and cost effective



David Greenberg

Director at Eave | Neuroscience PhD | Passionate about preventing diseases and accidents





Access here





Watch here

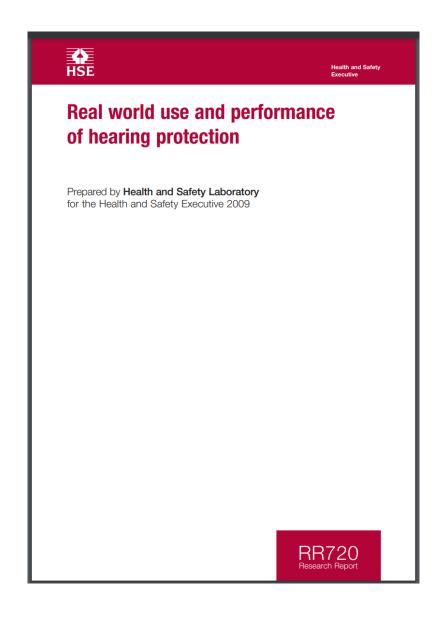






Find out more here





Access here



Let's talk about how to prevent hearing loss and tinnitus amongst your workforce



THANK YOU-QUESTIONS?



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WEBINAR CLOSE

David Frise – the BESA

Lydia Barber – Filtermist Limited

Charlie Ward – the BESA