



Playing Safe

Control of Noise at Work Regulations 2005

»»» *Impact on the 'Live' Concert Industry*

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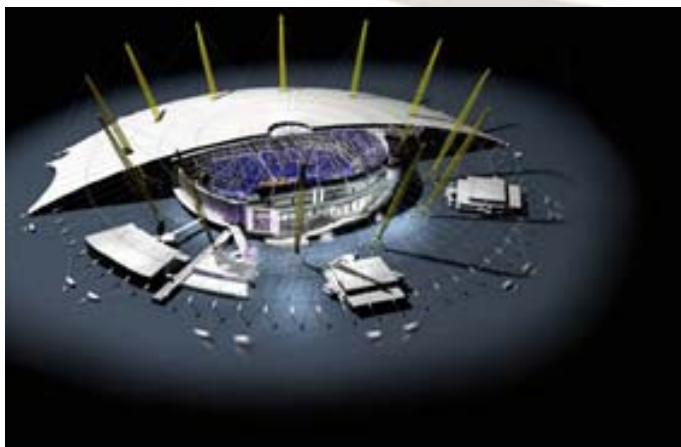
 Institute of
Acoustics



 **Vanguardia**
consulting

Background to Experience

- Entertainment Noise Control - early 1980's
- Knebworth - Queen Concert
- Most open air concerts in UK & some overseas
- Sound and Acoustic Design
- Research – Environmental Noise
Entertainment Workplace Noise



Content of Presentation

- **Review of Old and New Regulations**
- **Recent Study in the Live Music Sector**



History of Workplace Noise Regulations

- Noise and the Worker 1963 – DE
- Code of Practice for the Employed persons to Noise - 'The Yellow Peril' 1972, DE
- The Noise at Work Regulations 1989, HSE/HSC
- The Control of Noise at Work Regulations 2005, HSE/HSC
 - *6 April 2006*
 - ***6 April 2008 – Music and Entertainment Sectors***
 - *6 April 2011 – Shipping Industry*

Noise at Work Regulations – Music and Entertainment Sector

Summary – Read Full Documents

1st Action level – 85LEP'd

- Information, instruction, training
- Provision of hearing protection if requested by employee

2nd Action level – 90 LEP,d or Lpeak 140dB

- Information, instruction, training
- Use and provision of hearing protection
- Hearing protection zones

Control of Noise at Work Regulations 2005

Lower Exposure Action Values

- 80 LEP,d (daily or weekly)
- Lpeak 135dB (C-weighting)

Upper Exposure Action Values

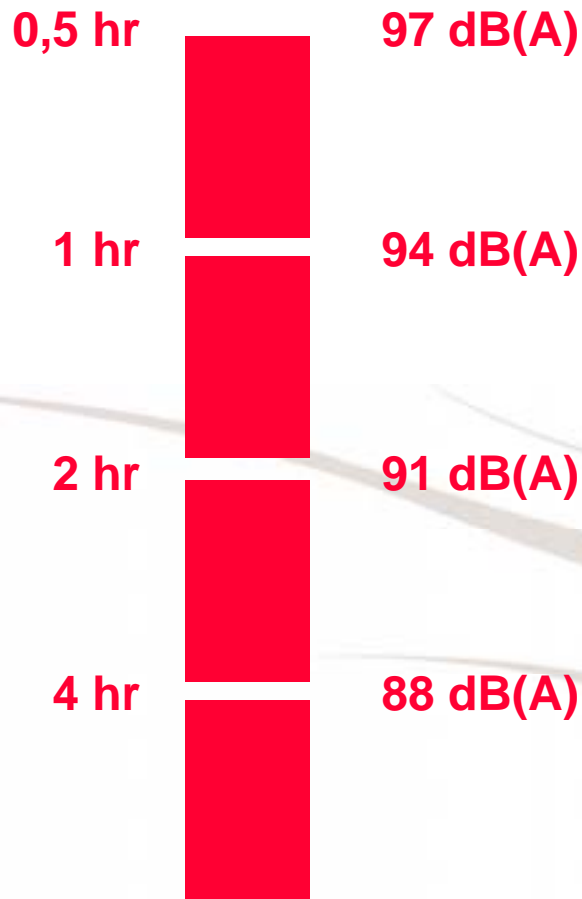
- 85 LEP,d (daily or weekly)
- Lpeak 137dB (C weighting)

Exposure Limit Values (Hearing Protection)

- 87 LED,d (daily or weekly)
- Lpeak 140dB (C weighting)



Maximum exposure time in relation to the risk level – Control of Noise at Work Regulations (Upper limit)



Risk level in dB(A)

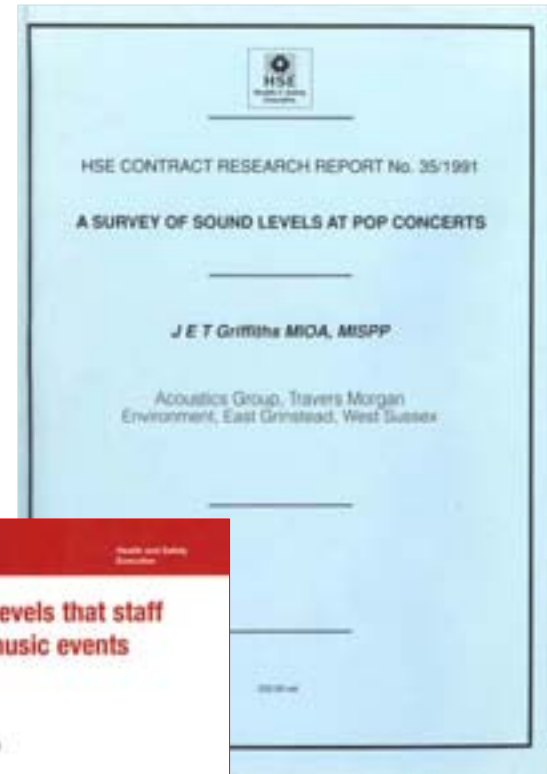
Max. exposure time (hrs.) a day

Summary of Changes

- Weekly averaging of exposure where noise varies markedly from day to day
- A 5dB reduction in exposure levels
- A limit on exposure taking account of hearing protection of 87dB
- A reduction in the L_{peak} value of up to 5dB
- A range of protective measures where levels exceed new limits
- Specific requirements to provide health surveillance where there is a risk

Noise Studies

A Survey of Sound Levels at Pop Concerts, HSE, 1991



Measurement of noise levels that staff are exposed to at live music events



Objectives and Scope of latest HSE Study

Objective

Study to assess current noise exposure of groups of people in the industry and report on the impact of the new legislation on the 'live' music concerts

Scope

- Study to include a diverse range of venues, concerts and artistes
- Assess the Noise at Work systems that are currently being adopted
- Consult with local authorities to establish procedures and enforcement
- Assess the impact of the new regulations
- Make recommendations for action plans and mitigation measures

Measurement Methodology

- 5 off Logging Dosemeters for each event – 12 concerts
- Permanent monitoring at the FOH and side of stage
- Questionnaire for Local Authority

Typical People Surveyed

Catering Staff

Fairground staff

Fire officer

Promoter

Guitarist

Mixer engineer

Security

Lighting Chief

Keyboard Tech

Merchandise staff

Promoter Rep

Event manager

Drummer

FOH/system engineer

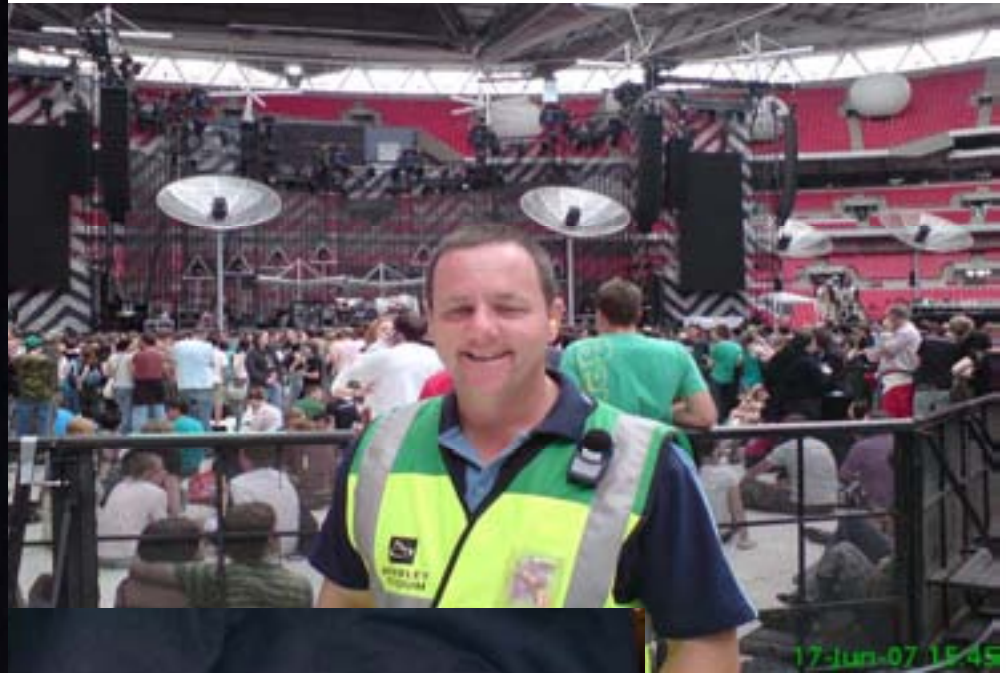
Site Manager

Stage Tech

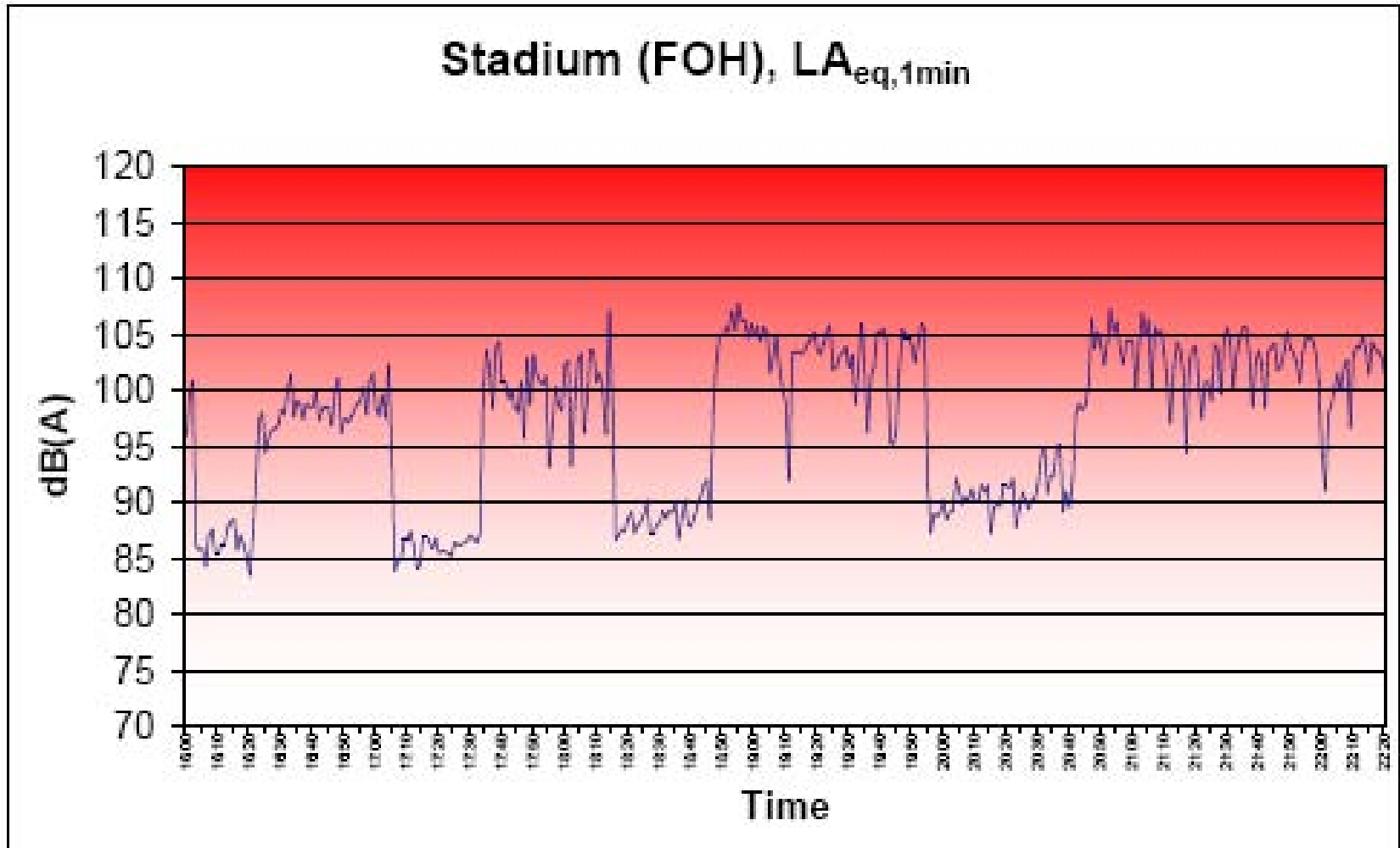
Camera operator

Medical staff

Instrumentation



Typical Time Level History Graph



Discussions of Results

- 1) Calculation of LEP'd
- 2) Full support of industry during study
- 3) Personnel grouped according to whether exposure essential or avoidable:-
 - Category A – Do not need to enter main hall/Stage area
 - Category B – Need access to hall/stage area at times
 - Category C – Need to be in hall/stage area all the time during the performance

Discussions of Results - Category A

Category A - Do not need to enter main hall/stage area						
	Category	Occupation	Venue type	LEP'd	LCpk	Duration (hours)
3	A	Catering Staff	Indoor Hall	91.2	145.9	8
4	A	Cashier	Indoor Hall	89.1	139.9	8
5	A	Crew Catering Chef	Outdoors	87.4	146.2	11
5	A	Merchandise Manager	Outdoors	85.1	146.3	9.5
6	A	Merchandise Staff	Indoors	99.5	139.5	8
6	A	Secondary Bar staff	Indoors	97	143.6	5
6	A	Main Bar staff	Indoors	96.6	135.7	5
6	A	Main Bar staff	Indoors	95.5	145.6	5
6	A	Cloakroom Staff	Indoors	90.2	144.7	5
6	A	Bar Staff - outside main hall	Indoors	80.2	117.6	8
7	A	Fairground staff	outdoors	97.6	145.5	13.5
7	A	Merchandise Staff	outdoors	93.8	146.3	14.5
1 1	A	Bar Manager	outdoor festival	85.5	137.1	5.5
1 1	A	Market Stall Staff	outdoor festival	101.5	145.8	5.5

Discussions of Results - Category B Need access

Occupation	Venue type	LEP'd	LCpk	Duration (hours)	Can hearing protection be used?
Promoters Rep	Stadium	99.8	146.2	11.5	Y
Fire Officer	Indoor Hall	100.9	145.6	8	Y
Events manager	Indoor Hall	86.8	136.9	8	Y
Assistant ops manager	Indoor Hall	85.1	134.4	8	Y
Venue Manager	Indoors	91	137.4	8	Y
Promotions manager	Indoors	90.3	146.5	3	Y
Drummer	Indoors	104.7	144.1	6.5	Y
Guitarist	Indoors	103.3	145.7	6.5	Y
Bass Guitarist	Indoors	100.9	133.4	6	Y
Security - Hospitality	outdoors	85	145.5	9	Y
St Johns Ambulance	outdoor arena	87.9	136.5	8	Y
St Johns Ambulance	outdoor arena	90.2	145.1	8	Y
St Johns Amb (moving)	outdoor arena	93.7	140.5	8	Y
Site Manager	outdoor festival	86.5	129.2	8	Y
Red Cross (moving)	outdoors	87.5	131.2	7.5	Y
Red Cross (Van)	outdoors	87.2	142.2	7.5	Y

Discussions of Results - Category C Access all times during show

Occupation	Venue type	LEP'd	LCpk	Duration (hours)	Can hearing protection be used?
Keyboard Tech	Indoor Arena	100.7	144.6	12.5	Y
Promoters Rep	Indoor Arena	95.6	144	12.5	Y
Production Manager	Indoor Arena	101.3	146	13	Y
Pit Supervisor	Stadium	101.7	140.3	11	Y
Stage Manager	Stadium	98.1	137.2	11.5	Y
Lighting Chief	Stadium	94.4	146.2	11	Y
Security Staff (Pit)	Indoor Hall	100.2	146.3	5	Y
Security Staff (FOH)	Indoor Hall	94.3	134.1	5	Y
Stage Manager	Outdoors	98	134	9	Y
Stage Tech	Outdoors	90.8	133	8	Y
Film Crew	Indoors	100.3	143.1	1.5	Y
Film Crew	Indoors	98	139.4	1.5	Y
Pit Security	outdoor arena	101.8	146	8	Y
Security - edge of bowl	outdoor arena	93.1	146.3	9	Y
Camera Operator	outdoor festival	100.2	137.4	6	Y

Category C Access all times but issues with use of hearing protection

Occupation	Venue type	LEP'd	LCpk	Duration (hours)	Can hearing protection be used?
Monitor Engineer	Indoor Arena	103.9	146.8	12.5	N
FOH sound Engineer	Indoor Arena	98.9	139.3	14	N
FOH sound Engineer	Stadium	100.4	145.7	10.5	N
Monitor Engineer	Stadium	96	136	10.5	N
Delay tower engineer	outdoors	93.1	125.3	8	N

Conclusions of Recent HSE Study

Various job types were evaluated and recommendations made based on dosimetry and fixed sound level meter measurements

The entertainment industry often requires high noise levels for audience satisfaction

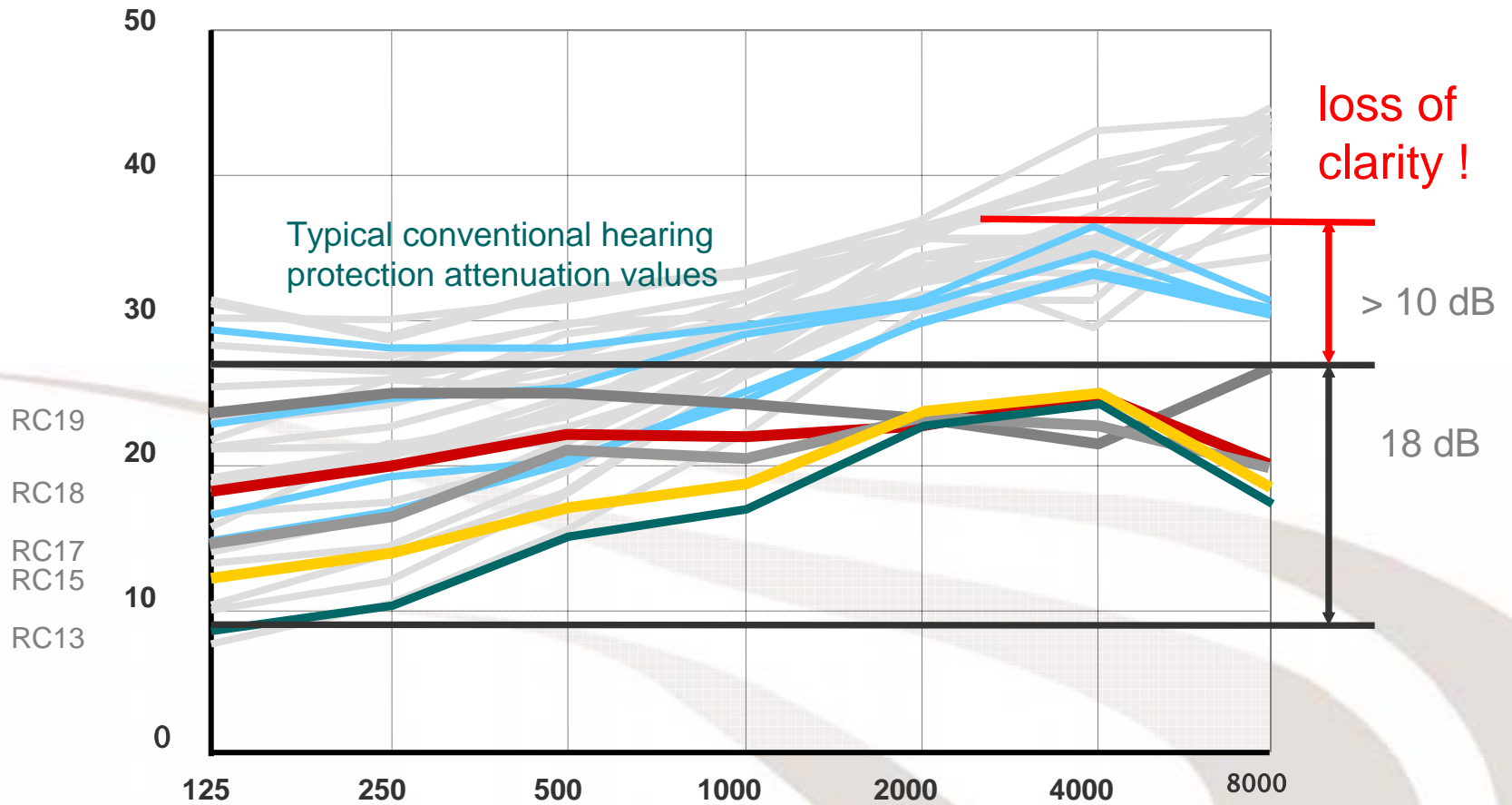
- In general personnel employed in the live entertainment industry are exposed to noise levels **above the upper exposure action value**
- There are a number of personnel who are exposed to high noise levels however it is **not always necessary for all of them to receive that exposure** to carry out their job efficiently
- There is an existing **resistance to wearing hearing protection** and there is a need for education
- Hearing loss can limit a career in the entertainment industry
- A survey of local authorities in whose districts live events took place suggests that there is **little or no enforcement of the current NAW Regs** at these events
- Since the research, **a number of promoters have equipped a number of their staff with bespoke hearing protection** which is a positive move and an indication that there is increasing awareness within the industry of the risks of prolonged exposure to noise

How Can we do Better?

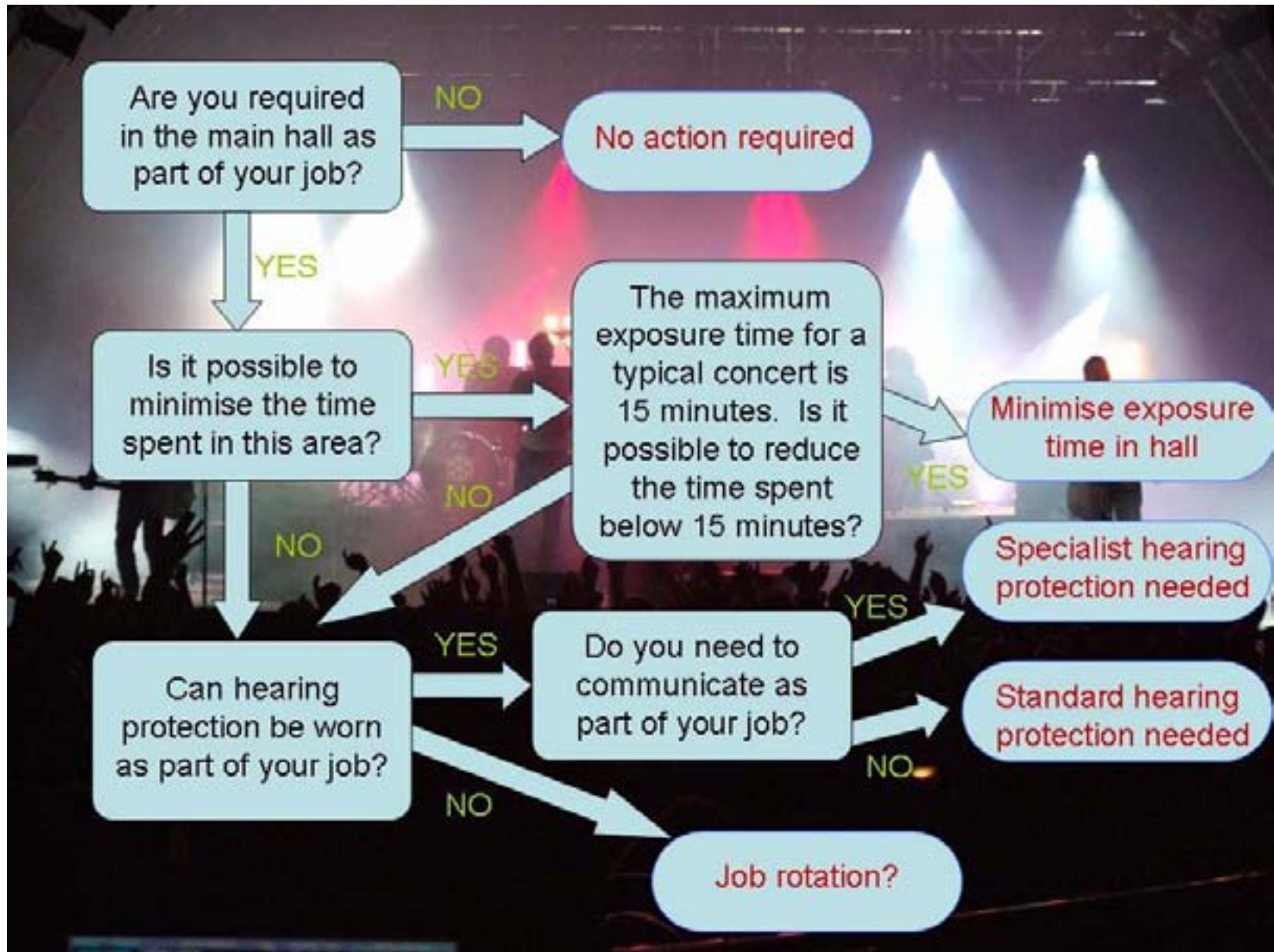
- Engineering Solutions – reduce at source, limit exposure, physical separation, acoustic barriers, acoustic absorption,
- Draft Sound Advice website <http://www.soundadvice.info/index.htm>
- Practical and Most Effective solution – Hearing Protection
 - Reusable or disposal
 - Flat response protectors
 - Custom moulded flat response protectors



Attenuation of Normal and Flat Response Protectors



Finally – Flow Chart to Identify need for hearing protection



What are we going to do now.....?

- ***Don't panic!!!***
- ***Get advice***
- ***Assess the risks***
- ***Prepare Noise Policy and Risk Assessment***

Remember – compliance will not happen overnight

thank you for listening

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