

**“When music fails to agree  
with the ear...then it has  
missed the point”** Maria Callas

**A look at controlling noise in orchestras**

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# Is there a problem?

- Studies have shown that orchestras can produce very loud sound
- Musicians do lose their hearing or develop other noise affected conditions
- These can seriously interfere with the ability to play accurately
- Young musicians may already be developing hearing loss before starting their professional careers
- Hearing loss is PERMANENT but PREVENTABLE

# Why does it matter?

- The Control of Noise at Work Regulations 2005 came into effect on 6<sup>th</sup> April 2006 for all industry, excluding employers in the music and entertainment sectors who have to comply from April 6<sup>th</sup> 2008
- They require employers to prevent or reduce risks to health and safety from exposure to noise at work. Duties are also placed on employees.
- They do not apply to members of the public exposed to noise from their non-work activities, or making an informed choice to go to noisy places, or low level noise which is a nuisance but causes no risk of hearing damage.

# Sound Advice?

"Excitement in musical performance is not achieved by volume alone. Constant loud volume may become monotonous and is potentially damaging to both performer and listener. Drama is created by dynamic contrast, which can be achieved with a reduction in general volume levels that would not be noticed by the audience. This represents a culture change and may require greater effort to achieve the softer levels needed to maintain the range of dynamic contrast." Sound Advice – Industry Guidance

# What does the Law require of employers?

- assess the risks to employees from noise at work
- take action to reduce the noise exposure that produces those risks
- provide employees with hearing protection whilst reducing the noise exposure using other methods
- make sure legal limits on noise exposure are not exceeded
- provide employees with information, instruction and training
- carry out health surveillance where there is a risk to health

# What is the noise risk assessment?

- Identify the high noise activities – music to be played, number of percussion/brass, venue acoustic and size, length of programme, sound effects
- Take measurements – simple to start, then with equipment for accuracy
- identify the staff who may be affected – how many, how long are they playing (+ rehearsal), is it necessary for them to be there all the time,
- identify measures likely to eliminate or reduce noise
  - Technical – acoustics, volume control, amplifiers, screens, isolation
  - Organisational – layouts, scheduling, repertoire, rotation
  - hearing protection – permanent, temporary
  - protection zones, quiet areas
- devise an action plan
- review

# Examples of sound exposures

Leq	Section	Piece
75	Brass	Haydn
80	Conductor	Carmen; Elektra
85-90	Strings	Mahler 1
90-95	Brass	Bruckner 5
92-94	Chorus	Opera
100	Piccolo	Nutcracker
Source:	'A Sound Ear 11'	ABO, 2008

# Physical controls

- Risers to raise sections of the orchestra – but won't work in a pit!
- Acoustic screens or shields – but have to be used with extreme caution so as not to increase the sound levels
- Seating plan, rotations, to suit size of venue
- Removal of certain instruments to outer locations
- Placing of amplifiers, and other sound systems



BBC Concert Orchestra on Risers

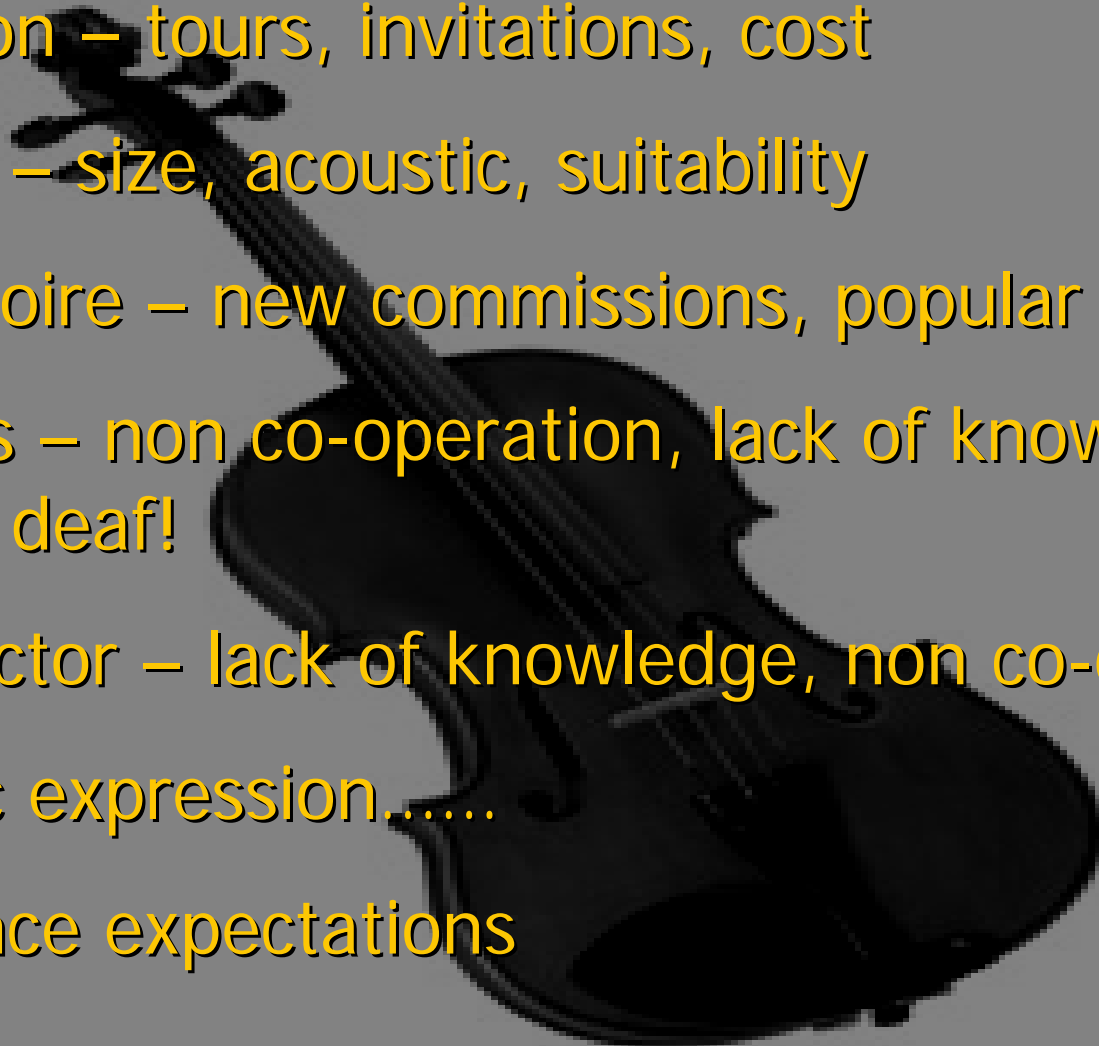
# Keep the sections separate?

## Some comments from players.....

- “the perpetrators of the noise i.e. the brass seem to be of the opinion that you’re a wimp if you can’t put up with it” -  
Woodwind
- “the types of people who insist on screens behind them tend to be wimps, and their attitude can affect the playing confidence of those behind them” –Brass
- our trumpets are extremely unwilling and difficult about screens. I think that this is criminal
- I have suggested trying out screens but our principal trumpet more or less told me to \*\*\*\* off

# What are the barriers ?

- Location – tours, invitations, cost
- Venue – size, acoustic, suitability
- Repertoire – new commissions, popular works,
- Players – non co-operation, lack of knowledge, already deaf!
- Conductor – lack of knowledge, non co-operation
- Artistic expression.....
- Audience expectations

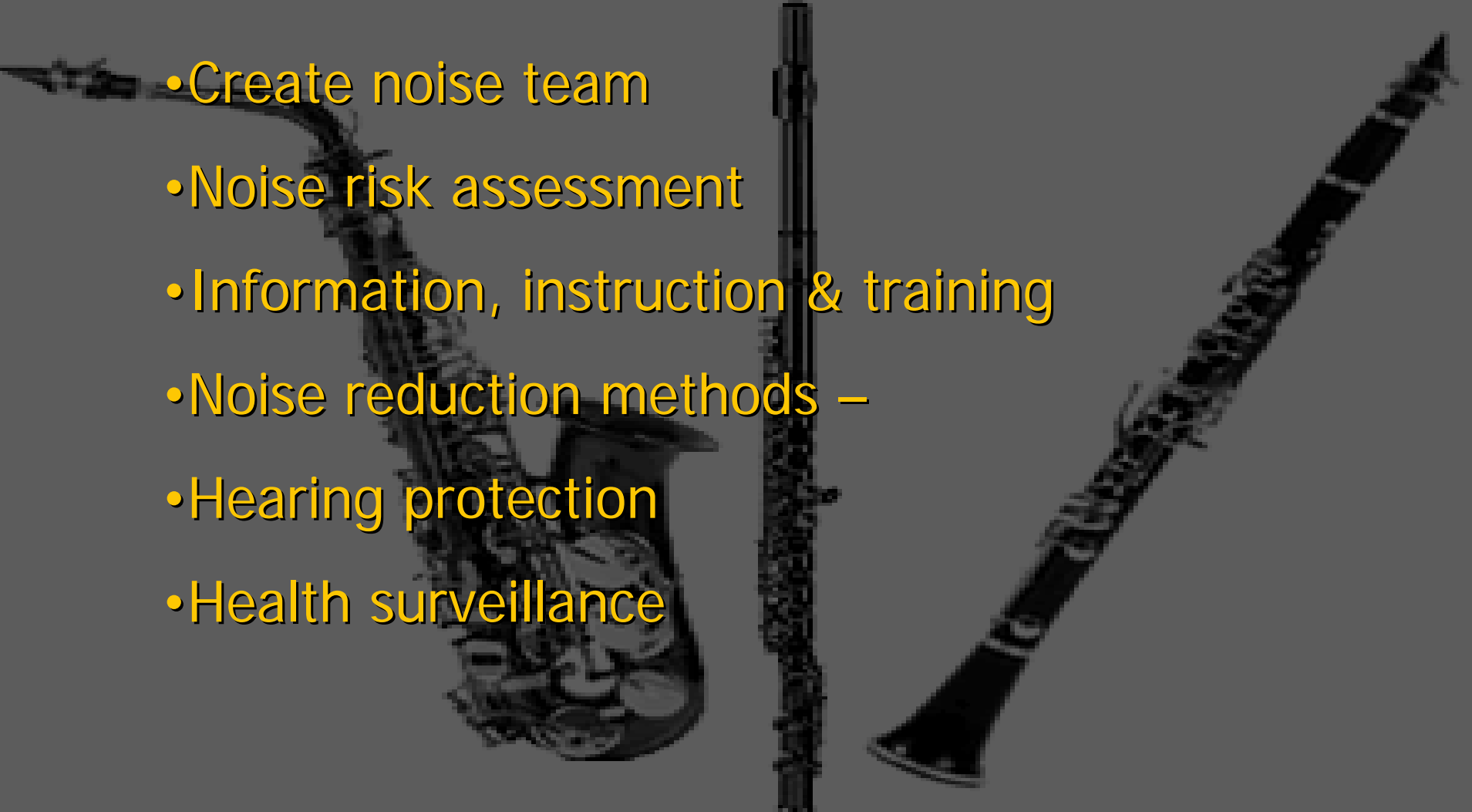


# So what are orchestras doing?

- Nothing
- Mandatory ear plugs but nothing else
- Good awareness and implementation of the Regulations:
  - Introduction of noise teams,
  - training,
  - technical support,
  - noise control measures,

# In summary – Manage!

- Create noise team
- Noise risk assessment
- Information, instruction & training
- Noise reduction methods –
- Hearing protection
- Health surveillance



# More advice?

- <http://www.hse.gov.uk/noise/index.htm>
- <http://www.hse.gov.uk/noise/musicound.htm>
- [http://www.abo.org.uk/pdfs/information/A\\_Sound\\_Ear\\_II.pdf](http://www.abo.org.uk/pdfs/information/A_Sound_Ear_II.pdf)
- <http://www.tinnitus.org/home/frame/THC1.htm>
- <http://www.personneltoday.com/articles/2004/01/01/22048/music-to-your-ears.htm>