Health and Safety
Executive

Controlling Noise at Work

HSE guidance and expectations

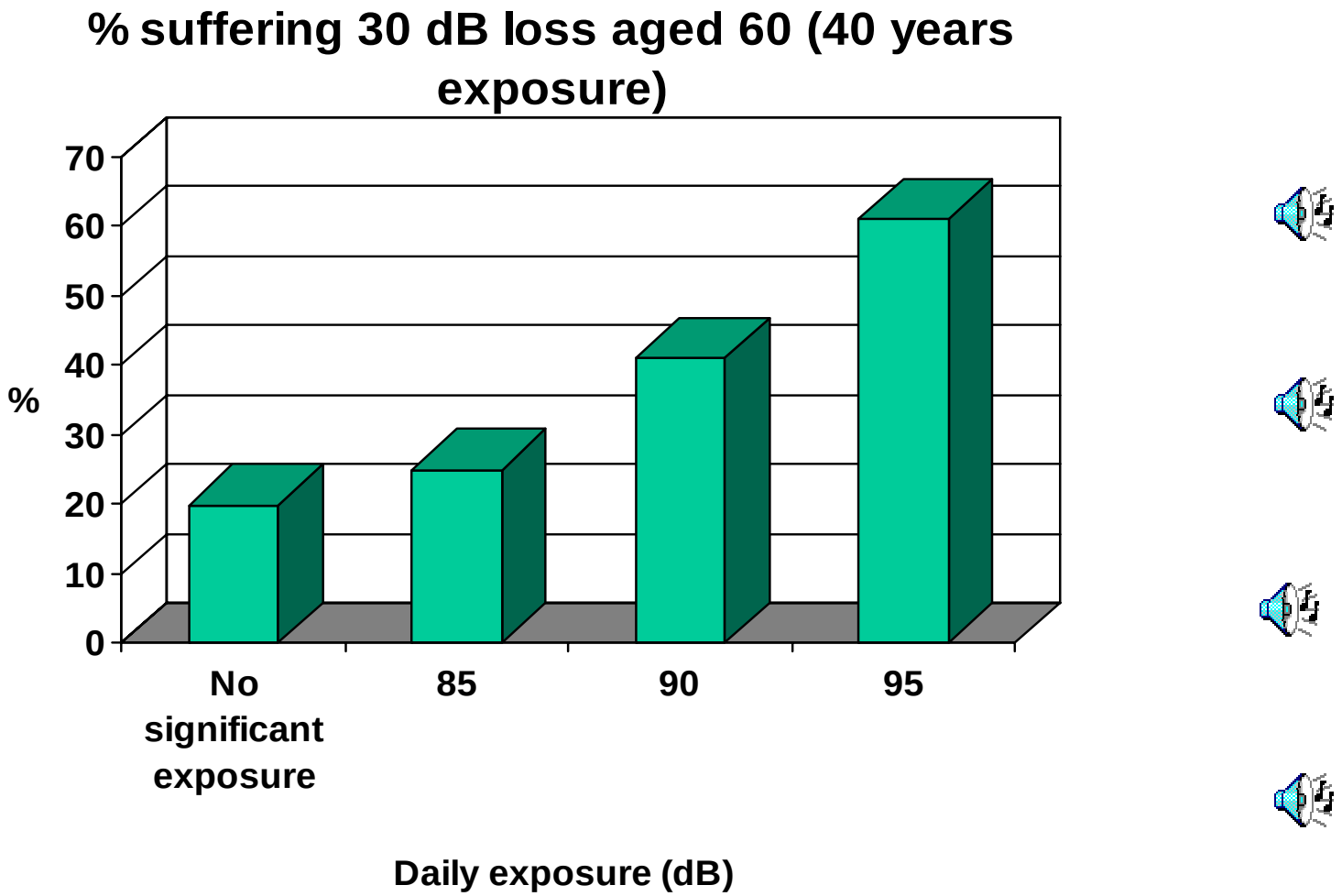
Introduction

- New "*Control of Noise at Work Regulations 2005*" replaced current noise regulations from 6th April 2006
- Headline: 5 dB reduction in exposure which triggers duties to control
- Opportunity: A revised framework for management of noise risks
- New regulations, new emphasis

Some figures

- 2 million people exposed to noise at work which may be harmful
- 1.1 million people relying on PPE to prevent harm
- 500,000 with hearing loss due to noise at work

Why reduce the levels?



Effects of noise exposure

- Hearing loss
- Tinnitus 
- Other hearing problems (e.g. localisation of sounds)
- Safety risks
  - warning signals
  - essential communications

Our Challenge

Away from…

- Noise assessment as the end point
- Excessive quantification of exposure
- Reliance on hearing protection

Towards

- Control of noise risks
- Managed through risk assessment and prioritised action plans

With

- New ‘tools’ and guidance to encourage rapid risk identification and decision making

Terms and Definitions

- Daily personal noise exposure $L_{EP,d}$
  - A measure of the total noise ‘dose’ received during the working day – an ‘average’ over the working day. Expressed in decibels (dB), with human response frequency-weighting
- Peak sound pressure level L_{Cpeak}
  - A measure of short-duration impulse/impact sounds. Expressed in decibels (dB), with a wide-band frequency weighting

The Noise Regulations – in Brief

- Purpose: Protecting persons against risks to their health and safety from noise at work
- Risks from noise to be eliminated at source or, where this is not reasonably practicable, reduced to as low as reasonably practicable
- Do what is ‘reasonably practicable’ for a given level of risk

The Noise Regulations – in Brief

- Lower exposure action values ($L_{EP,d}$ of 80 dB, L_{Cpeak} of 135 dB)
  - inform, instruct, train employees;
  - provide hearing protection on request;
  - maintain equipment provided to reduce risk/exposures;
  - ensure its use.

The Noise Regulations – in Brief

- Upper exposure action values ($L_{EP,d}$ of 85 dB, L_{Cpeak} of 137 dB)
  - all duties as at lower action values;
  - **reduce exposure by a programme of technical/organisational measures**;
  - provide hearing protection to all exposed’
  - ensure it is used;
  - provide health surveillance.

The Noise Regulations – in Brief

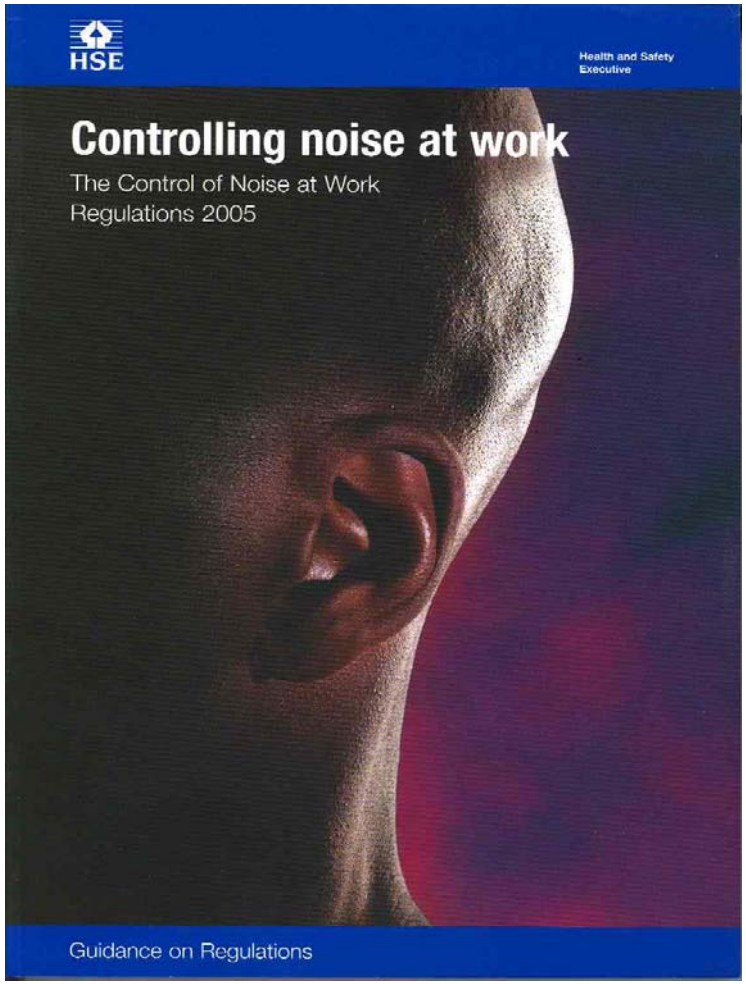
- Exposure Limit Values ($L_{EP,d}$ of 87 dB, L_{Cpeak} of 140 dB)
  - Maximum permitted exposure at the ear (takes account of hearing protection if applicable)
  - Return to this later in talk

Protecting the workers – In practice

- A practical framework:
  - **Assess** the risks;
  - **Take action - reduce** noise **exposure** that produces risks;
  - **Provide hearing protection** – while considering what action to take, and if you cannot reduce noise exposure enough by other means;
  - Make sure **legal limits** on noise are **not exceeded**;
  - Provide **information, instruction and training** – get workers and their representatives involved;
  - Carry out **health surveillance** for those at risk of hearing damage

Priced guidance

- **Regulations, comprehensive guidance and technical appendices** – for the employer, their advisors, providers of competent services



Free guidance

- **Free pamphlet for employers** – the essentials for small, medium (and large) enterprises

- **Free pocket card for employees** – plain language advice on protecting themselves and working with their employer

Making the transition

- Use the data from your current noise assessment
- Identify anyone not already considered who may be at risk
- Compare exposures to new action values
- Consider current control measures and decide whether more needs to be done to control risks and reduce exposures

Risk Assessment

- Assessment of risks to health and safety arising from the noise
- Purpose: to identify what needs to be done to reduce risks (Action Plan)
- Necessary when Lower Exposure Action Values likely to be exceeded
- Should contain assessment of exposure
  - Not necessarily highly precise
  - Reliable assessment based on representative data

Risk Assessment

- Can be very simple
  - Do I have tools/machines/processes known to be noisy?
  - Are people exposed/action values likely to be exceeded?
  - Are industry standard/good practice control measures in place?
- or detailed
  - e.g. for a novel situation

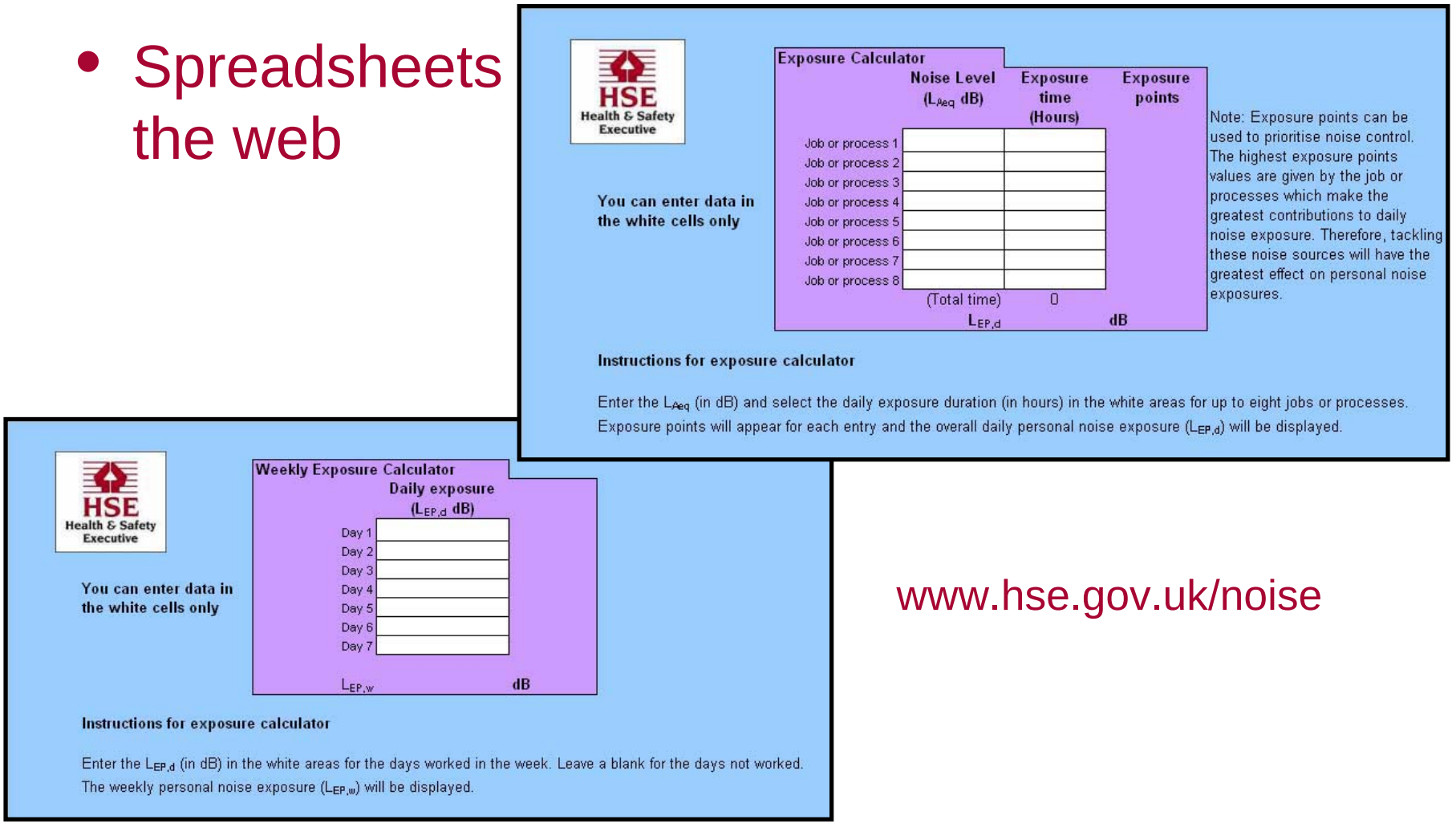
Tools for estimating exposure

- To encourage rapid exposure determination, and risk assessment

Sound pressure level, L_{Aeq} (dB)	Duration of exposure (hours)								Total exposure points	Noise exposure $L_{EP,d}$ (dB)
	1/4	1/2	1	2	4	8	10	12		
105	320	625	1250						3200	100
100	100	200	400	800					1600	97
97	50	100	200	400	800				1000	95
95	32	65	125	250	500	1000			800	94
94	25	50	100	200	400	800			630	93
93	20	40	80	160	320	630			500	92
92	16	32	65	125	250	500	625		400	91
91	12	25	50	100	200	400	500	600	320	90
90	10	20	40	80	160	320	400	470	250	89
89	8	16	32	65	130	250	310	380	200	88
88	6	12	25	50	100	200	250	300	160	87
87	5	10	20	40	80	160	200	240	130	86
86	4	8	16	32	65	130	160	190	100	85
85		6	12	25	50	100	125	150	80	84
84		5	10	20	40	80	100	120	65	83
83		4	8	16	32	65	80	95	50	82
82			6	12	25	50	65	75	40	81
81			5	10	20	40	50	60	32	80
80			4	8	16	32	40	48	25	79
79				6	13	25	32	38	20	78
78				5	10	20	25	30	16	77
75					5	10	13	15		

Tools for estimating exposure

- Spreadsheets the web



www.hse.gov.uk/noise

Control of risks and exposure

- Aim for noise control by technical and organisational means
- Wherever there are risks from noise employers should:
  - look for alternative processes, equipment, methods for quieter working or reduced exposure times.
  - keep up with good practice for noise control in their industry
  - consider noise in selecting tools and machinery
- Regardless of exposure, but so far as is reasonably practicable

Advice on controlling noise

- ‘Generic’ advice
  - In the free leaflet
  - In the main guidance, with examples
- Specific advice
  - Continuing free sector-specific advice from HSE
  - Further advice on good practice & industry standard benchmarks planned
- Case studies
  - Free web access to new case studies
  - Priced publications (Sound Solutions, Sound Solutions for Food & Drink industry)

Noise Control - Examples

- Problem: Internal cab noise of 95 dB. Vehicles have long working life, cost £200,000
- Solution: Damping pads to resonant surfaces, sound barrier mat to floor and engine bulkhead, line cab with absorptive foam
- Result: 11 dB reduction
- Cost: £15,000 (1995)

Noise Control - Examples

- Problem: Pneumatic knives – manufacture of roof tiles - Air exhausts – high levels of noise
- Conventional silencers considered impractical
- Solution: 6 exhausts piped to manifold and silencer
- Result: 12 dB reduction

Noise Control - Examples

- Problem: Significant noise from bowl feeder in manuf. of tube fittings
- Solution: line feeder with rubber layer – impact reduction and damping
- Result: 5 dB reduction

Quieter tools and machinery

- Have a positive purchasing policy
- Use suppliers data to
  - Help in selecting (incl. hiring) suitable products
  - Plan and design for lower exposures
- Be aware of limitations
  - Data may not relate to real use
  - Data may not represent your work
  - Ask suppliers for real/representative noise data

Hearing protectors

- Not a long-term solution
- Can be used whilst other controls are being investigated & developed
- Acceptable where despite all reasonably practicable controls, exposures remain above Upper Exposure Action Values ($L_{EP,d}$ of 85 dB, L_{Cpeak} of 137 dB)

Hearing protectors

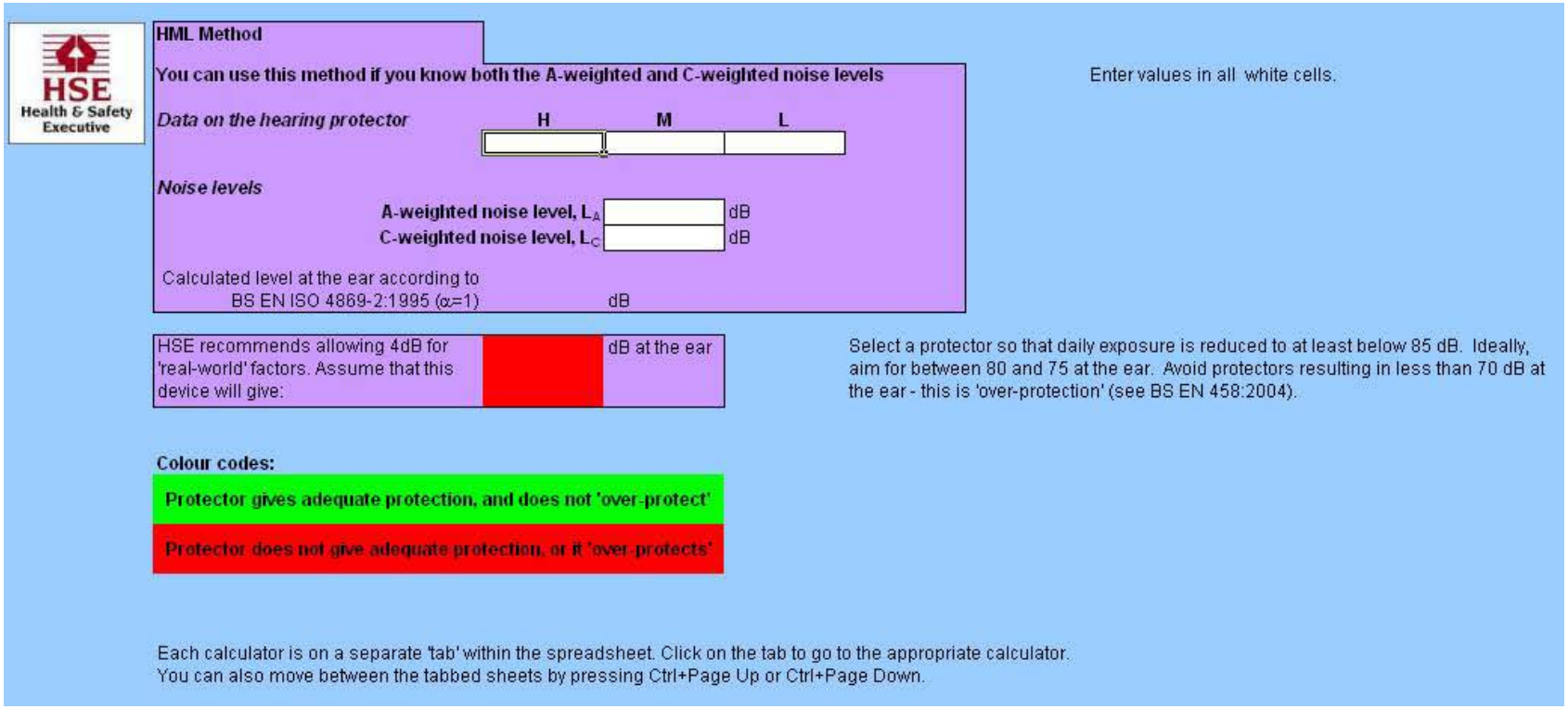
- Select according to protection, comfort, user preference, environment, work activity
- Account for ‘real-world’ attenuation
- Guard against over-protection – isolation can lead to tendency to under use, and safety risks
- Will only protect if worn fully (all of the time it should be) and properly – requires information, instruction, training, supervision, motivation

Simplified guidance on selection of hearing protection

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

Hearing Protection

- Spreadsheet for hearing protection calculations



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Legal limits – Exposure Limit Values

- Legal limits on noise exposure – 87 dB daily exposure
  - Apply *at the ear* – can take account of hearing protection
- Not a target for hearing protection performance, or noise control
- Should not be an issue for majority of UK industry
  - Provided other duties under regulations are complied with
- May present a challenge for some sectors
  - Let HSE know – we want to help

Health surveillance

- New requirements on health surveillance for hearing damage
- To be covered in detail later on today

Summary : What do you need to do to control noise at work?

- **Assess** risks to develop an action plan
- **Reduce** risks for all employees
- **Investigate** and **implement** good practice and industry standards for control of noise
- **Prioritise** higher risk cases with a programme of control measures
- Use **hearing protection** for residual risks
- **Health surveillance** to detect hearing damage and feedback to control measures