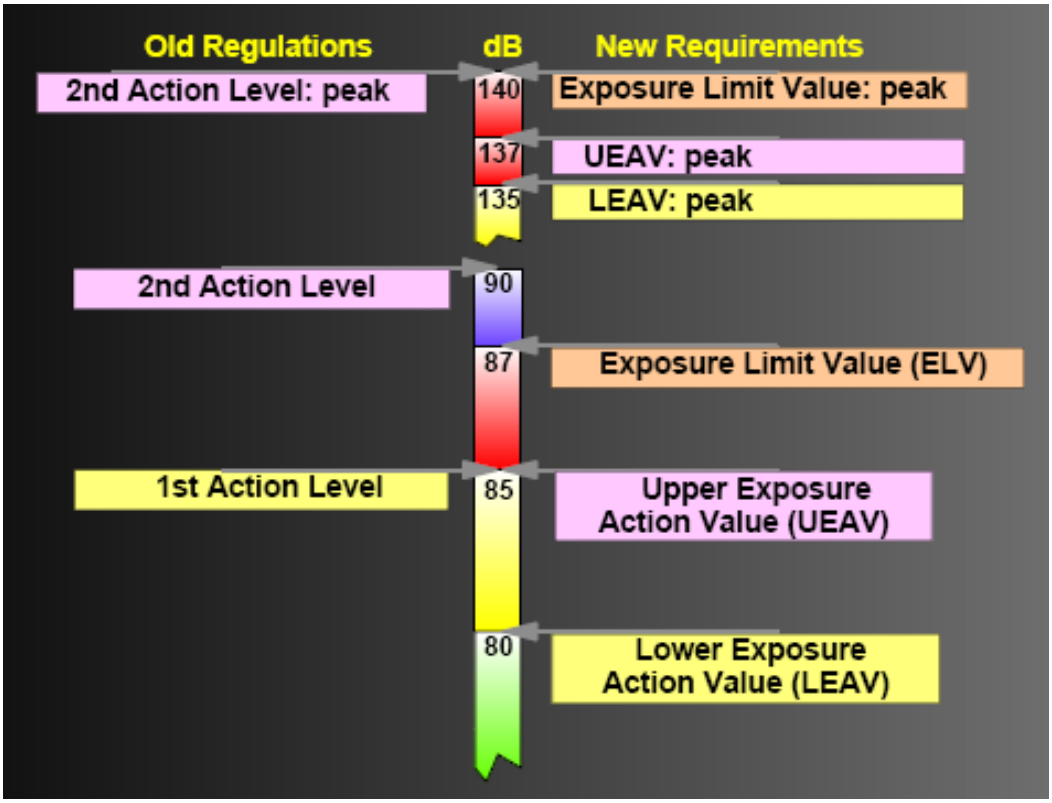
Update on the new Noise Regulations

Presentation by Steve McCrorie, Sypol Ltd.

Steve started by saying that this presentation was normally covered by a three-day course, so he hoped to finish sometime before sunset! He dealt, first of all, with the reasons for changing the Regulations and summarised the significant differences in this chart: -



Simon explained that they bring significant changes in expectations, with respect to 'policing' the requirements of the new Noise Regulations to ***Control Noise***:

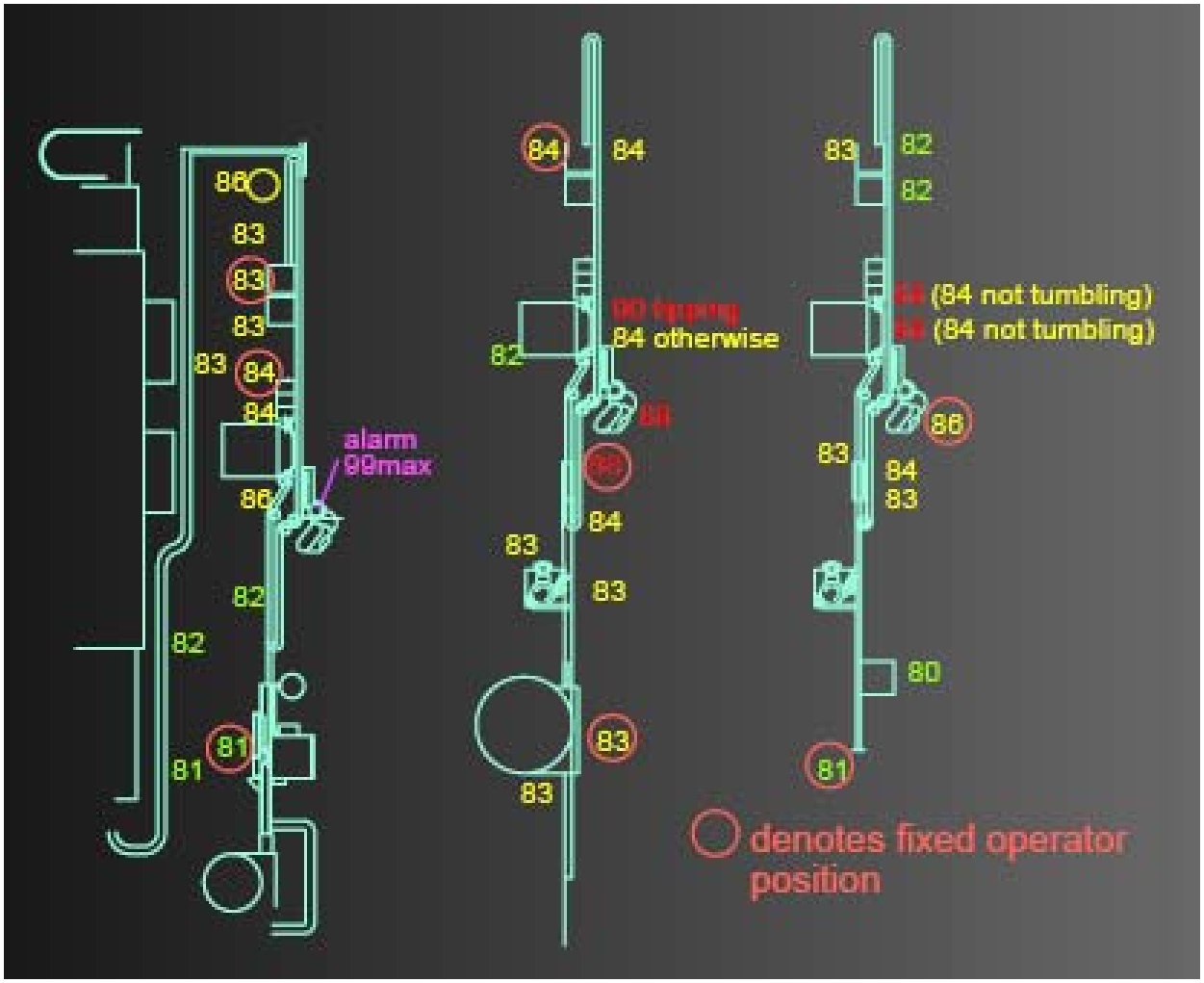
- More emphasis on a risk-based approach
- Compliance with the duty to reduce noise by engineering means
- Risk assessments should identify a programme of work
- Less reliance on PPE
- Health surveillance required above 85 dB(A)

The reasons for the changes in action levels are based on health surveillance, which provided the medical evidence.

The key point is to follow the familiar 5 Steps to control the operator's exposure to noise: -

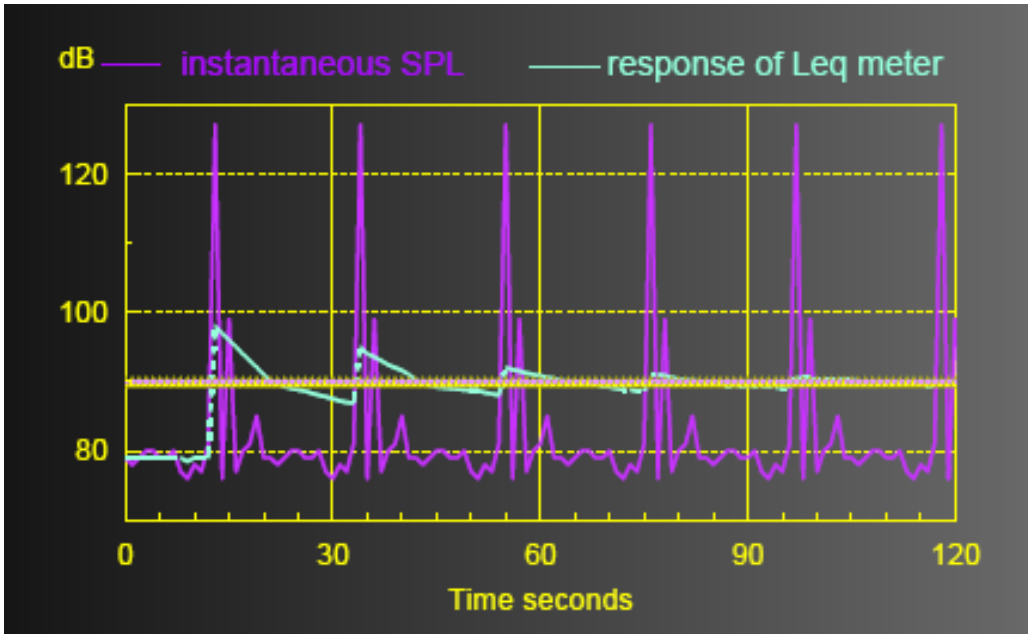
1. Identify the environment and location of the noise hazard
2. Identify those operators likely to be exposed
3. Evaluate the risks arising from the hazards
4. Record the findings
5. Review the assessment and amend as necessary

A key element in determining noise reduction controls is measurement of exposure levels, as shown in this layout plan of a workshop in which the monitoring positions are marked.



It is also vital to measure the duration of the exposure and both can be done on modern Sound Level Meters that act as a dosemeter as well, when held near the operator in a fixed position. When the operator is moving around, a Personal Dosemeter is used to collect noise exposure results, usually over a full shift, in variable work locations. The operator wears this, with the microphone near the ear and it provides the total noise exposure for the whole time period.

The instrument shown below is unobtrusive and convenient to use. The chart shows a typical sound measurement and illustrates how the spiky wave pattern, in purple, is averaged out by the dosemeter software, to give a steady level, in light blue, for the whole measurement period. The microphone must be placed on the same side of the operator's head as the noise source and care must be taken not to pick up vibrations from the wearer's shoulder



Personal Dosemeter

The measurement of exposure to noise throughout the working day is expressed in decibels, with the symbol **"$L_{EP,d}$",** before the effect of any ear protectors worn. Another measurement that is often taken is the "Octave Band" level, which has a linear scale, recording the dB(A) figure at different sound frequencies. This provides useful information for specifying efficient hearing protection, as the noise often varies in intensity at different frequencies and the Human Ear is also more sensitive throughout the range.

The purpose of the new regulations is make sure that people not damage their hearing and the preferred method of doing this is to reduce the noise at source. The full Hierarchy of control measures is: -

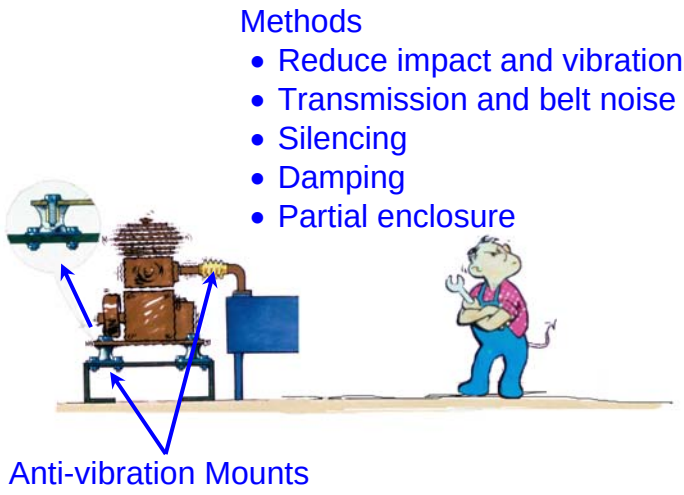
1. Change the method of working to eliminate noisy operations. Steve quoted the use of chemical methods to remove unwanted deposits of concrete, rather than scabbling guns!
2. Substitute noisy equipment with quieter versions. This approach can be greatly helped by having a positive Purchasing Policy to buy or hire quieter machines and tools. Talk to suppliers about the effect of their designs on noise and compare between them. Keep a record of your decision process, so that it helps to prove that you have complied with the Regulations.
3. Segregate work areas to reduce access to high noise sources.
4. Enclose processes completely
5. Partially enclose processes in, for instance, multi-occupied workshops
6. Provide information, instruction and training AND listen to feedback from operators about possible improvements to control measure.
7. Provide PPE

Steve went on to describe the following key characteristics of sound propagation, which affects how we should deal with it: -

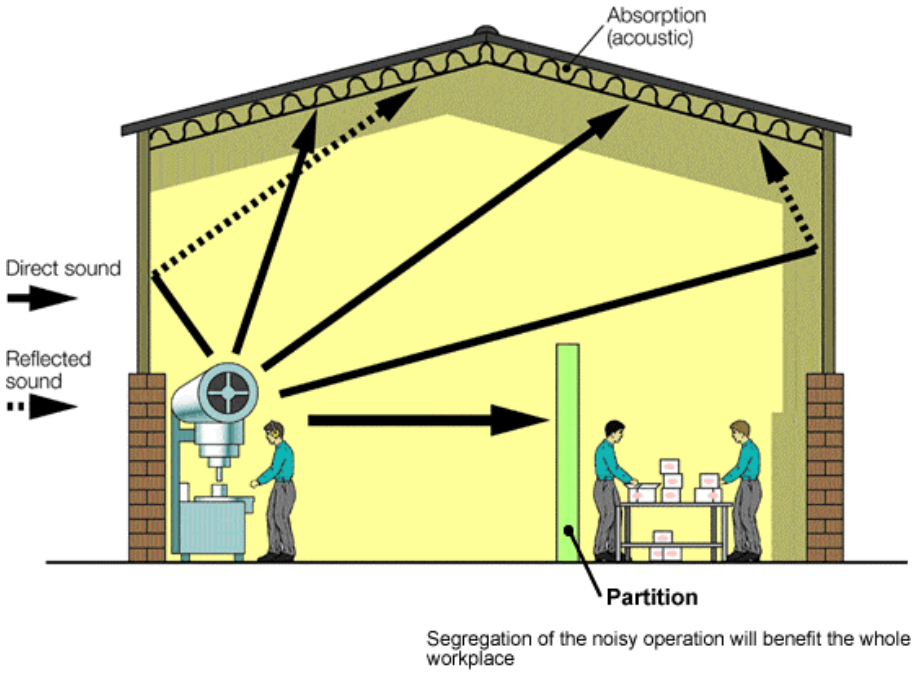
1. **Low frequency noise** radiates at approximately the same level in all directions

2. It is Non-directional and can diffract around corners, or after passing through a hole in a barrier
3. A shield has little effect unless it is very large
4. Low frequency noise is less disturbing
5. The Human Ear is less sensitive to it than to high frequency noise
6. If it is not possible to reduce the level, it may be possible to change it so that more is at low frequencies
7. **High frequency sound** is greatly reduced by passing through air
8. It is ***directional*** and is ***easily reflected***

On the subject of practical Engineering Control Measures, Steve dealt firstly with the use of anti-vibration mountings, such as those shown in this sketch.



Vibration of metal plates is hugely influenced by the type of metal and Steve contrasted the damping effect of lead with the lack of damping in a steel surface. Another method of damping metal sheet surfaces is to laminate the metal with either a thin damping core, or to bond a thick layer of damping on one side of the plate only. Similar effects may be achieved a thick, porous fibre plate between two thin, hard fibre plates.



This sectional view of a workshop shows how sound can travel by various routes from the source to multiple occupants. This situation may require several control measures and some are more effective than others, depending on who is to be protected. One measure that is often forgotten, or simply dismissed as being too complex, is absorption in roof spaces. Without it, however, the benefits of segregating partitions might be compromised.

Steve also gave examples of tools that could be modified to reduce noise at source, such as silencing nozzles on air lines, circular saws with laser-etched blades to dampen vibration. With saws, Steve added, it was crucial to keep the blades sharp and to clamp the material.

Another effective control measure was to reduce the time that each operator is exposed to noise, although Steve stressed that this was no excuse for allowing it to happen, just because the period was short! He emphasised the point by displaying a table to show how seemingly "small" increases in levels had a dramatic effect on the allowable exposure times.

Noise Level dB(A)	Duration of Exposure
85	**8 Hours**
88	**4 Hours**
91	**2 Hours**
94	**1 Hours**
97	**30 minutes**
100	**15 Minutes**
103	**7.5 Minutes**
106	**3.75 Minutes**
109	**112 Seconds**
112	**56 Seconds**
115	**28 Seconds**

The control measure of last resort is to use hearing protection. If the exposure level is above the **Lower Exposure Action Level (LEAV) of 80dB(A)**, but not above the **Upper Exposure Action Level (UEAV) of 85 dB(A)**, then the employer has to make PPE available on request. Above the UEAV, PPE ***must*** be provided and the **Exposure Limit Value (ELV) of 87 dB(A)** ***at the ear*** must NOT be exceeded. Steve added that the PPE must not impair communications, or the hearing of audible warnings and it must also be compatible with other safety equipment.

In conclusion, Steve said that Health Surveillance was necessary when exposure was likely to exceed the UEAV regularly. This was so that warnings should be given to employees who might be suffering early signs of hearing damage and to provide an opportunity to prevent it getting worse. This requires consultation with employees and their representatives.

After a lively question and answer session, the Chairman, Bob Cole closed the meeting and asked members to join him in thanking Steve for packing three days into one afternoon in such an informative way.