

November 2003

Presentation on “Noise Risk Management” by

Dani Fiumicelli, Principal Consultant, Casella Stangar

Dani introduced himself as an experienced person who had in the pollution business and Health and Safety for 20 years, both as a consultant and in Local Authority. Dani reminded us how sensitive the human ear is – and what its major parts looked like. He said that it was easily damaged by noise and caused symptoms like Tinnitus, Temporary Threshold Shift, permanent Threshold Shift or even Stress.

Dani went on to give us a brief look at the background to the Physical Agents Directive, introduced in 1994. It covered Noise, Vibration, optical radiation and non-optical electromagnetic fields. The Noise element was started in 1999 and received political agreement in June 2001 and came into force on 6th February 2003. The UK now has three years to enact regulations to comply.

The most significant changes are the lower Action Levels and Limit Value: -

	Old	New
Lower exposure Action value	85 dB(A)	80 dB(A)
Upper exposure Action value	90 dB(A)	85 dB(A)
Exposure Limit	N/A	87 dB(A)

Dani added that a weekly exposure limit is allowed, where exposure is intermittent and variable, based on a 40 hours working week.

Dani then showed us a table of Noise Level vs. Dose to demonstrate what a challenge the new levels would be.

Noise Level ($L_{eq(t)}$ dBA)	$L_{EP,d}$ 90	$L_{EP,d}$ 87	$L_{EP,d}$ 85	$L_{EP,d}$ 80
99	1 hour	30 min	19 min	6 min

Article 4 required that an assessment of exposure would be carried out and the **Exposure Limit Value (ELV) of 87 dBA** shall not be exceeded. This can be achieved with hearing protection, so it represents the limit at the ear.

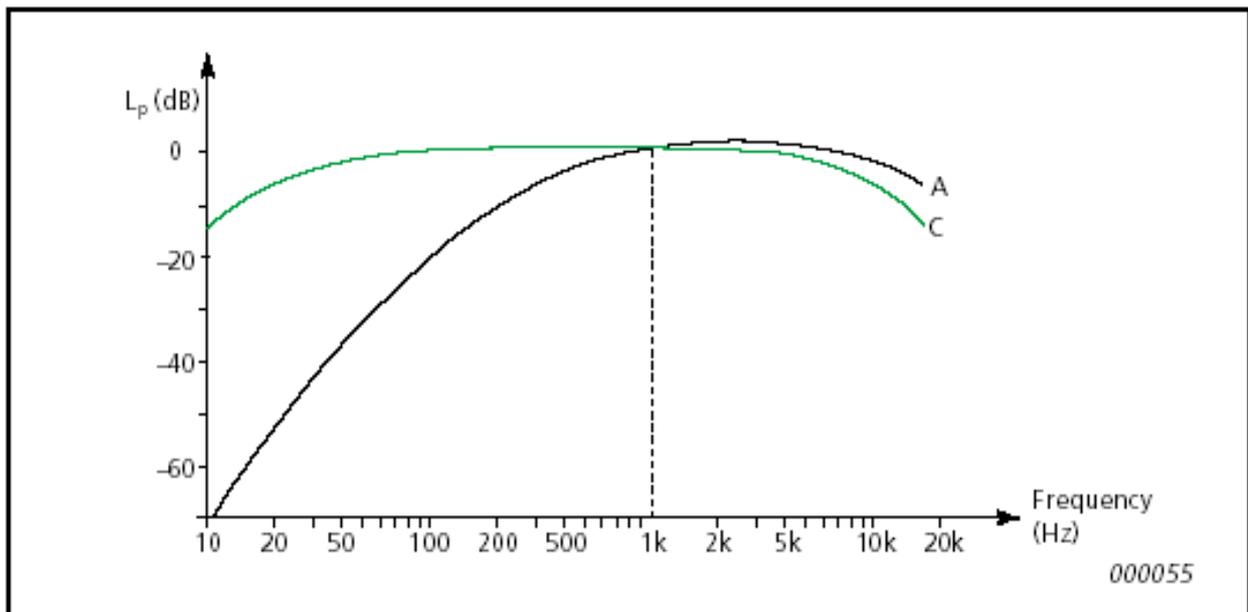
At the **Lower Exposure Action Level (LAV) of 80dBA** hearing protection must be made available, with suitable training and information.

At the **Upper Exposure Action Level (UAV) of 85dBA** there must be

- A programme of technical/organisational measures to reduce exposure
- Delimiting areas marked out
- Use of Hearing Protection is compulsory
- Hearing checks must be carried out by a doctor

The Noise Index changes from L_{Aeq} to $L_{EX,8hr}$ dBA or $L_{EX,weekly}$

Peak Noise levels will be measured on the **C Weighting Scale**. The difference between that and the more frequent A Weighting is shown below



Certain significant Amendments were considered: -

1. A worker whose noise exposure exceeds the **LAV (80 dBA)** shall be entitled to audiometric testing by a competent person. If the results of the testing show that it is necessary, and in any case if the noise exceeds the UAV, the worker shall have the right to have his/her hearing checked by a doctor or by another suitably qualified person under the responsibility of a doctor
Adopted.
2. Risks from noise caused by music and entertainment shall be exempt from the scope of this directive and may be regulated in a separate directive.
Defeated
3. Peak Upper action reduced to 135 dBA.
Adopted

The strategy for assessments under Article 4 is: -

- Determine daily/weekly exposure and peak pressures
- Compare with action/limit values
- Identify measures required under Articles 5, 6, 7 and 8

Article 5 demands the elimination of Risk, or where it is not possible, reduce the risk to a minimum: -

- Use the general principles /hierarchy of control from **89/391/EEC**
- If UAV exceeded, reduce exposure by technical/organisational means
- Delimit and sign areas where UAV likely, to restrict access

Article 6 requires the provision of PPE (if risks cannot be prevented by other means: -

- At LAV, make PPE available
- At UAV, ensure PPE is used
- Select PPE to eliminate risk or reduce risk to a minimum

Article 8 deals with the need for Worker information, instruction and training, which is required at the LAV, relating to risks, control measures, PPE.

Article 9 demands consultation and participation with workers/representatives

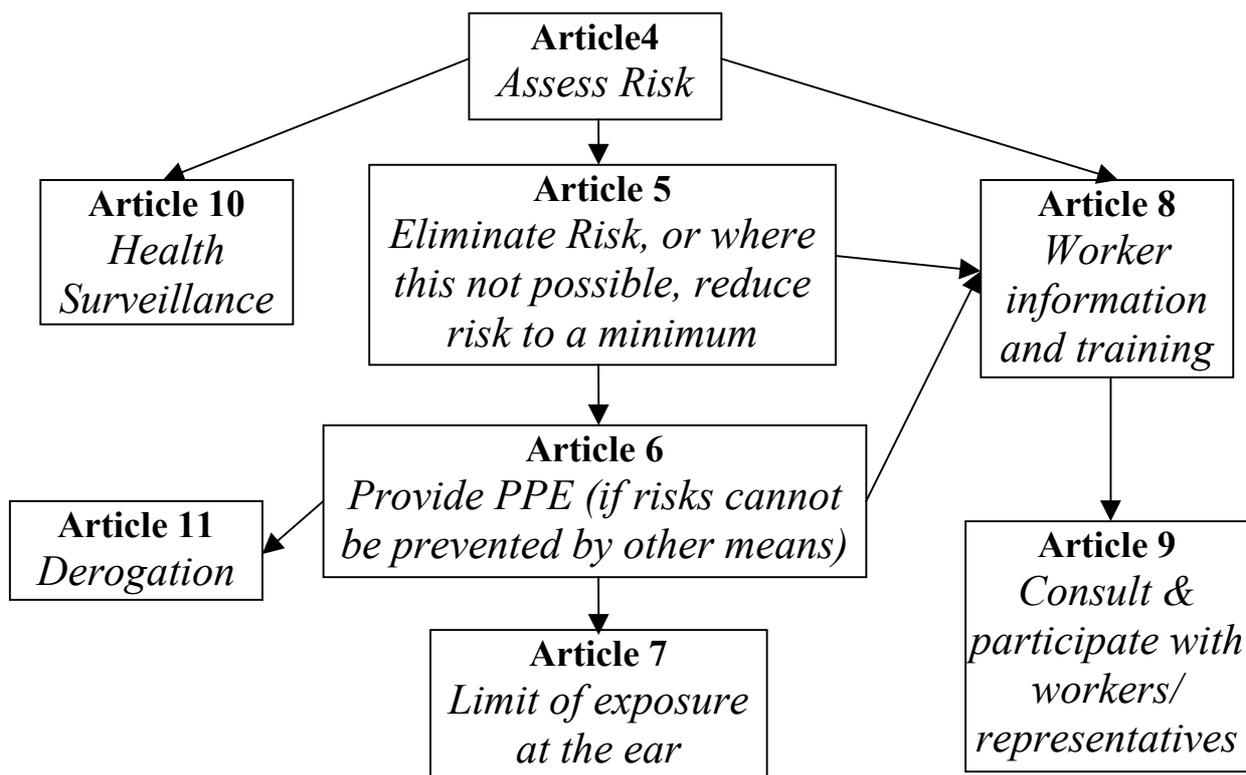
Article 10 deals with health surveillance appropriate to the risk: -

- At the UAV, hearing checked by/under control of doctor
- Records to be kept, supplied to a competent authority on request
- On hearing damage, review and amend controls, increased hearing surveillance for individual and other so exposed

Article 11 allows Derogation: -

- If PPE causes a greater risk
- Conditions must be guaranteed that will minimise risk
- Health Surveillance must be increased

The strategy is given in this flow chart: -



The risk assessment starts with a noise survey, using two different types of Noise Monitor: -

- Sound Level analyser: Measures noise levels at each workstation/process. The overall dose is calculated from a combination of level and exposure time. This can be complex for multiples of workstations/processes.
- Personal Noise Dosimeter: Directly measures noise exposure over a working period. It may not show which workstation contributes most to the overall dose nor when peaks occur or how big they are.

Dani showed photographs of a conventional dosimeter and a noise badge that is the size of a 50p piece.

Dani then produced two charts with pre- and post-reduction measures, taken from a survey in a workshop.

(*) – Post Reduction			Exposure time			
Level dBA			Hours	Minutes	Fractional	
Ink Developer	91	(82)		30	.079	(.010)
Rotomec	78	(78)	2		.016	(.016)
Lunch Break	65	(65)	1		.000	(.000)
Atlas	100	(90)		15	.313	(.031)
Developer	82	(82)		20	.007	(.007)
Domino	79	(75)	2		.020	(.008)
Envelope	88	(80)	1	30	.118	(.019)
Ultrasonic	77	(77)		30	.003	(.003)
L_{EP,d}	87.4	79.7				

The fractional level figure is used to prioritise the action programme to reduce levels.

Dani concluded by indicating how a consultant could draw on a wide experience of different situations to

- Survey noise levels
- Single out individual sources of high noise levels
- Suggest noise control methods
- Recommend methods of reducing exposure
- Demonstrate compliance with the Regulations

Members' Questions

David Hughes started the questions by asking Dani if there was a simple strategy for taking an initial noise survey. Dani said that it was important to use the HSE guidance about limits probably being exceeded if you had to shout to make yourself heard by someone approximately 2 metres away. The next step was to take Leq readings on the 'A' Weighting scale at spot points over the work area. If these were in excess of the old limits, then a more detailed survey would be needed. It was important to consider using expert help because it is easy to miss anomalies in the readings or the measurement philosophy.

George Mills of Metcom Training enquired what approach Insurance Companies would take. Dani replied that it would be very much the same with, probably, a more rigorous attitude on the need for assessments.

Michael Colles of the Weedon Partnership asked about information for different items of Construction plant. Dani said that there was a lot of data for construction plant and there was no derogation of duties on sites. It was possible to obtain indices of both process and plant but it was impossible to rely implicitly on the tables, as the conditions of use were so variable. Most employers took the simple view that if a piece of plant was noisy, the operator always used Ear Protection.

Chris Peck of Atkins Defence Asset Management asked if there was information about the effectiveness of PPE in use in the field. Dani answered that there was a BSEN that laid down a method for manufacturers to publish the mean attenuation for each Octave Band so that it was possible to subtract a figure from the readings to calculate the assumed level at the ear. He went on to suggest that ear plugs became less effective each time they were removed and replaced. He then described how personally moulded earplugs could be more effective, at a modest cost of £25 per pair. He added that disposable plugs should be used for jobs in dirty conditions in order to protect against the risk of infection.

Dick Bell asked about a strategy to survey the noise risk in a workshop with four to five machines. Dani stated that an assessment was still needed to reflect the working patterns and that dosimeters could provide this information. Sometimes the easiest solution was to use PPE all the time in a Hearing Protection Zone. He added that it was important to assess the effect of combining work within the noisy workshop and work outside, in a quieter setting.

George Mills asked if it was acceptable to use measurements taken under the existing Regulations, when making assessments under the new directive action levels, if nothing else had changed. Dani agreed that it was acceptable, as long as new control measures were developed to ensure compliance with the new action levels.

BHSEA President Morris Cooke referred to government papers about the new Regulations to improve the health of the workforce but reminded the members that hearing loss could also be caused by recreational activities, chemicals, or that familiar enemy – old age! Dani agreed that the subject of hearing loss was rather complex but it was important to remember that the best solutions should be simple!

Dick Monk pointed out that in certain environments, wearing of PPE could interfere with the audibility of Fire Alarms. Dani agreed that this could be a problem and suggested that the easy solution could be extra sounders or, even, flashing beacons.

As there were no further questions, the Chairman asked the members to join with him in thanking Dani for his very interesting and informative presentation.