

**THE EUROPEAN CONFERENCE OF GOVERNMENT NOISE AND VIBRATION SPECIALISTS :
INTERNATIONAL TECHNICAL COLLABORATION IN SUPPORT OF EUROPEAN LEGISLATION****A W Bednall****Technology and Health Sciences Division, HSE, Bootle, UK****SUMMARY**

In January 1991 the UK Health and Safety Executive's Technology and Health Sciences Division organised and hosted an international conference of government noise and vibration specialists from 15 European countries. The primary purpose of this conference was to stimulate greater co-operation between the specialists who provide advice and support to labour inspectorates concerning technical aspects of the enforcement of legislation on occupational exposure to noise and vibration. The conference resolved that an informal "club" should be formed and that further conferences should be held. This paper provides a brief outline of the first European Conference of Government Noise and Vibration Specialists, the issues discussed; resolutions agreed and the subsequent arrangements for continued informal exchange of information and co-operation.

BACKGROUND

1. This European Year of Health and Safety is also the year chosen by the Commission of the European Communities (CEC) in 1985, as the year in which a single European market for goods, services, people and capital was to be achieved. Accordingly the Community has adopted many directives aimed at the harmonisation of relevant legislation in member states a number of which are concerned with workplace health and safety hazards in general and with those of noise and vibration in particular (see below).

DIRECTIVE NO**TITLE (Simplified)**

86/188/EEC	Noise at Work Directive
89/391/EEC	Safety Framework Directive
89/654/EEC	Workplace Requirements
89/392/EEC	Machinery Safety Directive
91/368/EEC	Machinery Safety Directive (Amending 89/392/EEC)
89/655/EEC	Use of Work Equipment Directive
	Personal Protective Equipment Directive
	Physical Agents Directive (draft)

NB Other directives such as the old, specific, agricultural tractor and the construction equipment directives also contain noise or vibration requirements.

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2. To achieve the objectives specified in the Directives in practice it is essential that legislation be uniformly implemented and enforced throughout the Community. With respect to noise, this means that with regard to any technical measures required e.g. noise control measures, the requirements imposed in one country must be no less stringent than those applied in another. It was recognised some years ago that one way in which the achievement of this aim could be facilitated would be through greater technical co-operation between government noise and vibration specialists. That is to say, those specialists who provide advice and support to European Labour Inspectorates on technical aspects of the enforcement of legislation on occupational exposure to noise and vibration.

In recent years, therefore, co-operation between European government noise specialists has been increasing, with colleagues from the Dutch and Danish inspectorates participating in HSE specialist conferences. These and other meetings confirmed that we have many common interests and that all would benefit from a wider exchange of information and ideas.

3. The concept of a "club" of noise and vibration specialists associated with European Labour Ministries soon found support not only from the specialists but also from the Commission of the European Communities (CEC). Encouraged by this, the UK organised (with the support of the CEC) a conference to which the Labour Inspectorates of all EEC and EFTA states were invited to send specialist delegates for the purpose of a "free and frank discussion of common technical problems with a view to the development of mutually beneficial, informal co-operation in the future".

The conference, which took place in Wigan, in 1991, was judged by all who attended to have been very successful and something which should be repeated at some time in the future. It was also resolved that a technical secretariat be established to co-ordinate, as and when required, future informal liaison and other activities. Thus it was that the "informal" club came "formally" into being.

PURPOSE AND OBJECTIVES

4. The European Conference of Government Noise and Vibration Specialists is the formal name which government technical specialists active in the field of occupational exposure to noise and vibration have given to the arrangements which they have now established for informal technical liaison and co-operation.

5. Currently Specialists from 15 EC and European Free Trade Area (EFTA) countries, ranging geographically from Iceland to Greece and Finland to Spain are members of the "club". The technical secretariat is provided by the Noise and Vibration Specialists of HSE's Technology and Health Sciences

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Division (THSD). The aims of the "club" were defined during its first meeting in conference and they are :-

- to exchange views and experience in reducing noise and vibration exposure at the workplace and to develop future co-operation;
- to identify common problems and to develop solutions;
- to facilitate a common understanding in relevant technological areas (eg terminology, standards, noise reduction techniques);
- to facilitate the rapid spread of information and technical advice.

The requirements for membership of "the club" were that members should be government specialists or others who are responsible for the technical aspects of the implementation and enforcement of regulations concerned with health and safety standards in the field of occupational exposure to noise and vibration.

THE WIGAN CONFERENCE 1991

6. The first conference took place on the 16-18 January 1991 at Wigan, and was attended not only by specialists associated with the Labour Ministries of 15 European countries but also by representatives of the CEC and the Comité Européen de Normalisation (CEN). HSE's Technology and Health Sciences Division hosted the conference and delegates were welcomed by David Eves, HSE's Deputy Director General and Adrian Ellis, the Director of the Division hosting the conference.

7. The meeting programme was designed to provide a basic framework to highlight particular technical issues and each item was introduced by a short presentation from one of the delegations with an ample allocation of time for, what were, very open and informative discussions.

8. The topics covered were as follows :-

- The European Year of Health and Safety;
- Implementation of the Noise at Work Directive 86/188/EEC;
- The Machinery Safety Directive and CEN Standards;
- Perceptions and attitudes to noise as a hazard;
- Achieving "State of the Art" design;

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- CEN Standards, machine vibration limits and their role;
- Databanks.

It is not proposed that this paper should provide details of all that was discussed but the following items concerning areas where more research is needed or suggesting possible courses of action eg action to improve awareness of state of the art measures for the control of noise and vibration, might be of interest to other specialists working in the field of occupational exposure to noise.

Current Noise Legislation

9. With regard to the discussion concerning current legislation on noise at work, delegates felt that the assessment of certain classes of workers, such as farmworkers, construction workers, musicians, and people working in the broadcasting and entertainments industries present difficulties which only further research could resolve. Standard techniques are needed to enable the noise exposure of headset wearers to be correctly assessed. An agreed method for the measurement of peak pressure has to be developed and if the linear weighting is to be used, then its extremities will have to be more precisely defined. Several delegates thought that the current "C" weighting gave adequate repeatability and should be used but it would be useful to obtain the views of others in the field on this and also on the most appropriate method for assessing the harmful effects of single or repeated noise impulses.

10. Research was thought to be needed to establish correct methods for the measurement of the noise exposure of divers and caisson workers. Furthermore, the Noise at Work Directive is only concerned with hearing loss and thus if non-auditory effects are to be taken into account in any revision of the legislation, good data will be needed showing the relationship between noise exposure and permanent, non-auditory health effects.

Further research and development in the field of ear protection was also thought to be required. Improved methods for ensuring adequate protection against impulsive noise are needed and new forms of linear ear protection are required for groups such as musicians.

Attitudes to Noise

11. A topic particularly relevant in this "European Year of Health and Safety" was that of influencing attitudes of employers, employees, the general public, machinery designers, manufacturers and suppliers towards noise.

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The Dutch delegate reported that they had carried out extensive publicity campaigns making full use of the media and have had some success in increasing awareness but they have found that many people think that the problem relates only to extreme cases and don't associate it with their own working environment. Several delegates expressed the view that priority should be given to influencing the attitudes of young people and those of persons (trainers) who plan and provide vocational and professional training. The latter view is supported by recent HSE research which suggest (amongst other things) that professional and management training should be the focus of efforts to increase awareness of noise problems at all levels of management. [16].

12. With regard to suppliers and users of machines the delegates agreed that suppliers needed to be made aware of what is expected of them and in particular to measure noise and vibration emissions and provide information. It was also felt that more action was needed to make users of noisy machinery more aware of their rights and how to exercise them when purchasing new machinery. There was, in particular, a need to persuade purchasing managers that noise reduction is best achieved by buying quiet machines. N.B. The German BAU has recently issued a publication dealing with this aspect. [7].

Designing Low Noise Machines

13. The Machinery Safety Directive also requires manufacturers of machinery to apply "State of the Art" measures to reduce noise and vibration emissions but unfortunately doesn't define "state of the art". One view (that of a manufacturer) is that it is represented by all the machines on the market. In the German nuclear industry, however, the application of "state of the art" measures means the application of the results of the latest research in current designs. It is important that agreement is reached on this such that a positive, progressive reduction in hazard is achieved in the long term.

With regard to noise reduction the view of many delegates was that much of the knowledge needed now exists but the problem is to ensure that it is applied: engineers, acousticians and others need appropriate education.

14. The German delegate drew on his country's experience to suggest how designers might be influenced and helped to achieve "state of the art" design. The approach suggested was to provide :-

- seminars for teachers on noise and low noise design;
- 5 day seminars for designers on low noise design;
- conferences for salesmen and designers of specific machines on the design of quiet machines;

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- the adoption of the INCE system of qualifications in this field.

This work has to be complemented by a combination of information and enforcement and, with regard to information, the question of data acquisition and publication arise. In the case of noise, a basis of suitable standards already exists but in the case of vibration a start is only just being made and research is needed on the main sources of vibration exposure and ways of reducing vibration by design.

15. Commercial pressures stimulated by the provision of information on the noise (or vibration) quality levels of machines are intended to be the primary forces producing a progressive application of current state of the art noise or vibration reduction by design. However, machine designers, users and also law enforcers need some guidance as to what is achievable by the application of state of the art measures. Objective information is needed and also standard methods for assessing the effectiveness of noise reduction measures. Noise emission inventories, like those being prepared in Germany by the VDI, are required.

Noise Databanks

16. All delegates thought that a data base (or bank) of both noise emission data and also noise control case studies, was needed and in fact France, Sweden and several other countries are developing their own databases. The Norwegian delegate for example described the "Nordic Databank which has been under development since 1981 and is now available on PC discs. Because of these parallel developments, delegates agreed that harmonisation was necessary to ensure a common, uniform, approach between member states and it was suggested that this might be done on the basis of an existing international group, of which several delegates were members.

There are many problems to be resolved, however, including :-

- how information is to be collected, validated and stored;
- how data is to be made available to the public and others; and
- how possible legal problems might be overcome.

17. Possible ways in which noise emission data provided by manufacturers of machines in their noise declarations might be used to stimulate "state of the art" design were discussed. One strategy which has been successfully used is the so called "cloud strategy". In this the results of many tests by manufacturers of a particular class or type of machine are plotted on a suitable basis to give a cloud of "noise emission" points representing not only the intrinsic uncertainty of measurement procedures, the normal variation between production machines but also differences in the extent to

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which noise reducing features have been designed into the machines. In the German "Prüfung der Sicherheit" marking system only machines in the best quartile receive the mark. However, the position of any line or limit which might be taken as representing an acceptable noise quality or the boundary between machines which are "state of the art" and those which are not, is a matter on which noise specialists might have an opinion but which must be decided at a political level within the community.

Further work is needed to standardise the "Cloud Strategy" and to devise ways in which the information on which it is based can be updated and the effects of gradual design convergence taken into account.

CONFERENCE RESOLUTIONS

18. The Conference took a number of resolutions with regard to future liaison and other matters. The items of highest priority were :-

- the establishment of informal arrangements for co-operation;
- the production of a booklet of European noise control case studies which, if possible, would be produced by "the Conference" as part of the European Year of Health and Safety;
- the drafting of a standard letter to all machine manufacturers pointing out the relevant requirements of the Machinery Safety Directive and the wide availability of information on the design of low noise and vibration machinery; and
- the communication to the CEC of the Conference resolution that the Commission of the European Communities be requested to take appropriate measures to secure the development of a harmonised European databank of sound pressure levels, sound power levels and appropriate vibration data, for machines subject to the Machinery Safety Directive 89/392/EEC. With regard to the latter, the "Conference" was prepared, if requested, to appoint a working group to liaise with the Commission to develop the terms of reference of the project and to implement the technical aspects of the establishment of the database.

THE FIRST YEAR**Conference Resolutions**

19. In the past year good progress has been made with respect to the resolution concerning databases. Progress with regard to the other resolutions has, however been less good.

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20. In accordance with the Conference resolution concerning the need for a harmonised european databank, the Secretariat wrote to the Directorate DGV Employment, Social Affairs and Education of the CEC in May 1991. The response of the Commission was positive and shortly afterwards DGV established a formal working group based on the existing informal group. Since then work has progressed rapidly and a draft report dealing with the User's needs; database structure, data collection and other aspects such as administration, marketing and maintenance has been prepared. The report will be discussed and finalised in a plenary session in July and then, after editing, will be submitted to the Commission.

21. The idea that members of the European Conference of Government Noise and Vibration Specialists might produce a book of European noise control case studies has been raised with the Commission of European Communities and was favourably received. Unfortunately, until CEC funding for the project can be agreed no further progress can be made and this publication is unlikely now to appear during the European Year of Health and Safety.

Other Activities

22. A considerable number of national papers on aspects of occupational noise and vibration have been circulated to members of the "club" and in some cases the secretariat has arranged for the translation of documents into English prior to circulation.

23. The "club" connections have also been used to assist in the collection of information on an international basis. See Annex 1. For example members have responded to a request circulated by the Secretariat on behalf of the Royal National Institute for the Deaf, for information concerning workplace audiometry within the European Community and EFTA. A further request by HSE for information concerning the health surveillance of workers exposed to hazardous levels of hand transmitted vibration also met with a helpful response.

24. Co-operation on projects of mutual interest is, as yet, "low key". Information has been exchanged in connection with a UK project concerned with the influence of grinding wheel unbalance on the exposure of grinder users to vibration and it is hoped that this work will continue. The Swiss accident insurance association's (SUVA) database of noise exposure values has been translated by the Secretariat into English and made available on PC discs, in dBase III format, to colleagues. SUVA have used this to produce an English version of their printed data which is now available in German, Italian, French and English.

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THE FUTURE

25. Although the pressure of national workplans and problems have, inhibited, to some extent, co-operation between members of the "club", the "clubs" activities have been useful to members and a further conference is expected to take place in 1993.

"The Club" has potentially a very important part to play in the "New Europe" post 1992 and in the future, one can foresee an extension of "the club" to accommodate our colleagues in Eastern Europe.

The success of the "Wigan Conference" has stimulated specialists in other disciplines to consider this approach and similar conferences on other physical agents - such as radiation - may be held in the future.

NB Any views or opinions expressed in this paper are solely those of the author. They do no represent the views of HSE or any other official body.

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ANNEX 1

SOME PUBLICATIONS CIRCULATED TO MEMBERS OF THE EUROPEAN CONFERENCE OF GOVERNMENT NOISE AND VIBRATION SPECIALISTS

1. Dupuis, H Haverkamp, M Hartung, E Stosshaltige Schwingungen untersucht. Arbeitsschutz, Bundesarbeitsblatt 1/1991, p 18-23
2. Dupuis, H Hartung, E Haverkamp M. Akute Wirkung Stosshaltige Schwingungen in Sitzhaltung - Laboruntersuchungen. Verbundprojekt Ganz-Korper-Schwingungen II Belastung und Beanspruchung durch stosshaltige Ganz-Korper-Schwingungen. Institut fur Arbeits - und Sozialmedizin Johannes Gutenberg Universitat Mainz. Ordering number 01HK 304 9.
3. Prickartz, R Pohle G. Untersuchungen an schwingungsbelasteten Sitz - Arbeitsplatzen, insbesondere auf mobilien Arbeitsgeraten Verbundprojekt Ganz-Korper-Schwingungen II, Belastung und Beanspruchung durch stosshaltige Ganz-Korper-Schwingungen Institut fur Baumaschinen und Baubetrieb, Rheinisch-Westfalische Technische Hochschule Aachen. Ordering number (Forderkennzeichen) 01 HK 3174.
4. Probst, W Brulle P van den Gerlinger, H Ermittlung von Schwingungseinwirkungen an Sitz und Chassis von Gabelstaplern, Schriftenreihe der Bundesanstalt fur Arbeitsschutz, Forschung Fb 546, Dortmund 1988.
5. Dupuis H Hartung, E Christ, E Konietzko, H Mechanische Schwingungen. Kenntnisstand uber Beanspruchung, Belastung, Minderung und Richtwerte. Institut fur Arbeits und Sozialmedizin der Johannes-Gutenberg-Universitat mainz, Schriftenreihe der Bundesanstalt fur Arbeitsschutz, Forschung Fb 552. Dortmund 1988
6. Hohmann, B. Music and Impaired Hearing, Swiss National Accident Insurance Fund, Lucerne, Pamphlet No 11039e
7. Lieferbedingungen "Larm" fur die Beschaffung von Maschinen, Amtliche Mitteilungen der Bundesanstalt fur Arbeitsschutz, Nr 3 1990. Bundesanstalt fur Arbeitsschutz, Dortmund. (HSE Translation Number 14033. Noise specification for the purchase of machines).
8. EEC Directives on Machinery and on noise and the consequences for noise control and European standardisation. C406/033 I Mech E 1990. Engineering a Quieter Europe. Lazarus, H. Sehrndt, G.

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9. How can European Standardisation support Noise Reduction in Factories. XII World Congress on Occupational Health and Safety 1990. Lazarus, H. BAU Jacques, J INRS
10. Machine noise labelling-requirements for an effective implementation. C406/004 I Mech E 1990 Engineering a Quieter Europe, Jacques J.
11. Occupational Safety at First Hand, (German Occupational Safety Exhibition). Federal Inst for Occup Health and Safety (Germany).
12. Hand-arm vibrations. Directorate of National Labour Inspection Denmark AT-Circular No 7/1990.
13. Guide for the preparation of Noise Test Codes (C-Type Standards). CEN/TC 211 "Ad-hoc Group on Machine Noise Declaration doc N33 November 1990.
14. Igiene del Lavoro e Prevenzione delle Malattie Professionali. Norme Generali per L'Igiene del Lavoro 30 April 1956 Zucchetti R. HSE Translation 14007E.
15. Compartamento Dinamico di un martelletto Pneumatico. p.c. Veneranda Fabbrica del Duomo Milano Practica n 1273 Novembre 1977. HSE Translation 14005B.
16. Italian regulations on the risks from noise and vibrations based on EEC Directive no. 188/86: Experiences of the Inspecting Body. Nicola Palazzolo, Head of Co-ordination, Industrial Hygiene and Ionising Radiations of the Regional Labour Inspectorate for Lombardy. HSE Translation 14006B.
17. Attitudes towards noise as an Occupational Hazard Volume 1: Summary Report of the Study. Thomson-MTS and Building Use Studies. HSE Research Paper 1992. (To be published).
18. Noise in the Ceramics Industry. HSE Ceramics Industry Advisory Committee. Published by HSE IAC/L54 3/92 C50.
19. Noise in the Workplace: a select bibliography. HSE 1990.
20. Noise in the Workplace: a select bibliography 1980-84. HSE 1985 ISBN 0 11 883835 0.

