

## The "You must Control Noise" Regulations

The new noise regulations require a seismic shift in attitude to noise management in the workplace. Quoting guidance - **"these regulations are concerned with controlling noise, not measuring it..."**. Consequently, companies must now quantify the noise control options rather than simply repeating risk assessments that usually include little or no useful or practical information on the topic. Moreover, hearing protection can no longer be used for long term risk management unless it can be proved that noise control is impractical.

These changes in expectations (and particularly the de-emphasis of measurement) should be reflected in a company action plan audit as summarised below.

### Noise Management Audit

- Review and update existing risk assessment data (*re-assessment should not always be necessary*)
- Commission a Noise Control Audit to complete the assessment by costing the options
- Run a Noise Management Briefing to review and discuss the results
- Draw-up and implement an effective Action Plan

These elements are available from us individually or as an integrated solution to simplify the process.

**Check 4 for more information**



R.I.P?

*New regulations, new mind-set -  
no repeat risk assessment -  
control noise at source -  
increased productivity -  
eliminate PPE, audiometry -  
no hearing damage claims -  
automate future assessments...*

### HSE Roadshows - Sell-out Tour of 2005/6 HAV and Noise information takes to the road

A half-HAV, half-Noise series of 16 one day HSE events have been held round the country to review the new Noise and HAV regulations. Organised in conjunction with the EEF Manufacturers' Organisation, the events have been so well received and successful that extra dates are planned for 2006. They provide direct access both to the inspectors who wrote the guidance and to the INVC which was invited to provide the practical presentations on controlling the risks. For dates and venues, keep an eye on the HSE, EEF and INVC web sites ([www.hse.gov.uk](http://www.hse.gov.uk); [www.eef.org.uk](http://www.eef.org.uk)) or contact us for more details.

In a similar vein, we were also paid the considerable



compliment of being invited to provide the noise control presentation at the Earls Court Sound-Off Conference to launch the new noise regulations.

### Optimum Noise Management Strategy

Our new "one hour + " **Optimum Noise Management Strategy Briefing** can dramatically reduce the time and resources required to manage noise. It combines the above material with an intimate knowledge of precisely what constitutes "best practice" and provides a forum to discuss and establish the best strategy to comply with the new regulations as cost effectively as possible. **Check 4 for information**

### The Noise Control Audit

#### Assess and quantify the Noise Control options

The most effective way to satisfy the primary Control element of the regulations is to carry out a Noise Control Audit. This is an engineering assessment that generates a costed list of the noise control options and associated benefits for a single machine - or for a whole site - using the best of current technology. Backed by the largest available database of source control techniques, the results provide the basis for planning the most practical and cost effective noise control programme possible. It also provides certification where noise control is impractical. The Audit can be used to update existing risk assessments or included as part of an assessment review to cover the changes in the regulations.



### Cadbury - Best Practice in Action

Their commitment to World Class health and safety standards led Cadbury to take a very proactive approach to the new regulations by commissioning an INVC Noise Control Audit across their UK sites. This showed that implementing the recommended control programme would allow them to de-regulate half their production areas - substantially reducing the number of personnel who must wear PPE.

**It should also pay for itself in seven years.**

Moreover, by using best practice in noise control engineering technology, the programme avoids the operational problems linked to the hygiene, access and maintenance issues associated with conventional palliative noise control.

**Check 3 for a detailed technical note with case studies**

### Lower Mower HAV

Manufacturers are under increasing commercial pressure from their customers to develop low vibration plant. The innovative low vibration handle developed by the INVC for Dennis Mowers reduced operator exposure from 6m/s<sup>2</sup> down to 2m/s<sup>2</sup> - without compromising mower control. This is a dramatic improvement that would allow operators to use the mower all day without reaching the 2.5m/s<sup>2</sup> Exposure Action Value.



**Visit our updated web site - [www.invc.co.uk](http://www.invc.co.uk)**

## Never Measure Vibration Again!

### *Hand-Arm Vibration Field Data-base - New HAV-Base v4*

You would have to be mad to volunteer to stand in a muddy ditch, in the rain, measuring tool vibration for a risk assessment. Fortunately, as we've already done it - you don't have to. HAV-Base allows you to spend your resources on risk management rather than high cost risk assessment - as advised in the guidance. The NOISE-Base module kills a second bird with the same stone, facilitating assessments for mobile and hand-held plant under the new noise regulations.

#### HAV-Base / NOISE-Base version 4

This is the largest collection of accurate field vibration data available (c2500 records). Purchase **HAV-Base** to carry out your own risk assessments or send us your tool register for a virtual assessment from the database by email - at a fraction of the cost and time required for conventional measurement based assessments. The **NOISE-Base** module adds the ability to store plant noise data in parallel with HAV values, providing simple, elegant management of both types of risk from a single tool register.



within 6 metres

#### HAV-Base

- **Vibration values / points / "safe" working times**
- **Statistics (tool vibration ranges)**
- **Automated generation of risk assessment report data**
- **Incorporate your own HAV measurements**
- **HAV Manual: HAV Management best practice**

#### NOISE-Base

- **"Safe" working distance calculations for PPE**
- **Auto calculation of PPE suitability**
- **Operator noise dose calculations**

HAV-Base has been selected as the tool of choice by a cross section of major construction, hire, aerospace, councils, energy, utility and many other companies.

#### Stop Lights

The hire tool "traffic light" system is based on manufacturers' declared values and cannot be used for risk assessment. Relying on this data could well leave employers open to potential liability claims.



**Check 15 for the HAV / NOISE-Base technical note**

#### Digital Noise Assessment (DNA) Update

The DNA template has been updated to reflect the revised HSE expectations. DNA provides a benchmark quality standard in electronic form which dramatically reduces the costs associated with risk assessment and management. **Check 1 for detailed information**

#### Fan-tastic Noise Reduction



The tonal noise from this quarry suction fan was reduced by 23dB using our unique **Quiet Fan technology** - a new record for the technique. **QFt** eliminates the noise at source inside the fan casing. No silencers, no enclosure, no lagging, no maintenance, little down-time - and at a small fraction of the cost. **Check 6 for more information**

#### Heathrow Piling Noise and Vibration

Building a new terminal 3 multi-storey car park above the Heathrow Express underground station is a major technical challenge. Piles had to be bored 40m into the



ground very close to the access and train tunnels - without disturbing structures or personnel. BAA selected INVC to carry out an extensive vibration and noise monitoring programme over several months. The turn-key project involved installing an array of transducers in the tunnels plus detailed recording and analysis and continuous remote monitoring of the piling vibration via GSM. The INVC designed system also included a facility to alert key personnel automatically via SMS text message if the vibration exceeded threshold trigger values. However, this was never triggered in anger as the design and control of the piling operations kept the vibration and noise well within the design parameters.

#### A Quiet Investment in Manufacturing

A major manufacturing company asked the INVC to review and update their Noise Management Programme to protect their workforce whilst minimising the use of PPE. This involved upgrading to our CAD based Digital Noise Assessment (DNA) with a Noise Control Audit. This allows management data to be accessed and updated in a fraction of the time required for conventional assessments. The Audit itself generated the detailed engineering noise control programme that is currently being implemented as an extension to normal maintenance.

Far from adding to costs, noise control is proving to be a good investment. For example, the 12dB noise reductions on component wash-booths not only eliminate the use of mandatory PPE, but also substantially reduce air consumption - and hence production costs - without compromising performance.



#### Training Options

Our comprehensive range of Noise, HAV, Whole Body workshops/training courses - both in-house and general, from toolbox talks to IOSH certified competency - are run throughout the UK on a regular basis. **Check 9 for details and schedules**

# Sounding -



## Acoustic Shock - Shock!!

Doesn't the term "Acoustic Shock" sound nasty? If you renamed it "unexpected somewhat louder headset noise than usual that is still at only a tiny fraction of the noise level that is deemed to cause hearing damage in industry", it wouldn't sound so bad. The problem is that there is now a bandwagon with plenty in the media about "acoustic shock" in call centres and you can find lot of "information" on the web. I was even told by someone recently that an event was so bad for one operator that it "made her ears bleed" - apocryphal, but he believed it. Headsets have limiters; people have volume controls. We've measured many call centre operator exposures and the highest still had daily noise doses in the mid 70s - 1/10<sup>th</sup> the level at which PPE is mandatory in industry. If the noise limiter on a station is not working, you could get startling events - easily solved by fixing the technical problem. The real problem is actually not technical and acoustic, but one or more of the human problems of poor working conditions, low pay and boredom that cause stress. Unless someone can show that the hearing of call centre personnel is an order of magnitude more sensitive than in industry, hearing damage could only happen via a combination of faulty equipment and a long term commitment by the operators to working at a volume of 11 (Spinal Tap scale ...).

The problem lies with proving this in the face of media hype and strong emotion - see "HeadMaster" in The Innovations Catalogue below for our solution.

## Energy Efficiency, Global Warming, Fans and Pneumatics

Fans are at their quietest when run at maximum efficiency. Fan noise is proportional to the 5<sup>th</sup> power of speed. Rather than considering silencers (yet another loss in the system), look at improving airflow efficiency and reducing fan speed (a 20% reduction in fan speed drops the noise by a factor of 3). If tonal noise is a problem, our Quiet Fan technology is a low cost source control option that has no effect on efficiency. Copper pipes as pneumatic nozzles are a disgrace. Fit proprietary entraining nozzles - at 10dB quieter and using 20% less compressed air for the same thrust, it's a no-brainer.

## Instrumentation Convergence

We've now switched over from DAT recording to solid state and disk recording for data collection and analysis - purely in the interests of efficiency. The fact that mine also carries my entire MP3 collection is just a happy coincidence ...

- off

## Interesting Work

### Paper Mill Environmental Noise Monitoring

The causes of intermittent nighttime noise complaints had proved to be impossible to identify. We installed our latest **NoiseMaster** system with a microphone overlooking the site. This logs noise levels - but also records all events and transmits them to the H&S manager's PC so he can hear exactly what happened and identify the culprits....

### More Mini Monitoring - Component Quality



A second **ProTest** production test system has been installed on the line to provide automated testing of the sound quality on a new

instrument binnacle. This fails components that just don't have that reassuringly smooth sound when attracting the driver's attention. **ProTest** is used for vibration and noise testing on a wide range of applications, from gears to dampers to motors to pumps (yet another updated version was recently installed at BOC Edwards to test vacuum pumps).

### HAV Tool Maintenance Testing

Vestas Wind Systems (wind power turbine manufacturers) are using our **HAV-Test** system to decide which tools should be stripped. This allows the mechanical condition of each tool to be automatically assessed quickly and accurately, with a substantial reduction in both maintenance costs and the HAV risks of operators.

**Domestic boiler design noise control (6dB); power presses (10dB without enclosing); vibratory grader / feeders (17dB at source); masking system for very low frequency environmental noise; power station pumps the size of houses (12dB); 90m cement stack insert (20dB); cosmetic bottling line**

## The Innovations Catalogue

### HeadMaster catches Acoustic Shock in the act

The new **HeadMaster** system provides a quick and simple way to investigate reports of acoustic shock in call centres and control rooms. Simply connect to the headphone socket of the workstation and it will record any unusual events in their entirety whilst ignoring normal traffic. This not only allows you to listen to the events for identification, but as the recordings are calibrated, **HeadMaster** also provides a detailed analysis of noise levels - both for individual events and for the whole shift. This objective evidence can be used both to identify potential problems and to defend claims.



Contact us if you would like to discuss applications

### Noise Control Audit Diagnostic System

As using conventional instrumentation on-site to identify and diagnose plant noise sources for occupational and environmental projects is a time consuming and complicated process, it is also expensive. In addition, it is often necessary to shut plant down repeatedly (and for long periods) to compensate for acoustically difficult conditions - which doesn't do much for productivity. So we have developed our own system. The new (v 3) **FrequencyMaster (FM)** analyser not only cuts the time required on site by a factor of 3 or more, it also allows us to acquire the information we need from the briefest (or no) shut-downs. We use a simple sound level (and sometimes vibration) meter, a low cost solid state recorder and the latest **FM** software. Listen, slow-mo and analysis (from simple octaves to narrow band and 3D waterfalls) - a complete system for less than the cost of a mid range SLM. Easy to master, it has proved to be popular with many regular and occasional users across a wide range of applications - from product development to industrial plant and environmental noise.



Check 19 for more information

# NOISE AND VIBRATION INFORMATION AND TECHNICAL SUPPORT: EMAIL AND FAX-BACK

The INVC provides extensive technical support and training across industry. Feel free to give us a call for advice, information or to discuss particular problems. If you'd like more free information on any of the following, check the required items, fill in your details and email, post or fax a photocopy of this section to the number below - or fill in the email request form on our website.

Check this box if you'd like an email .pdf copy of this newsletter (with sound)

## Occupational Noise Management

**1 DNA - Digital Noise Assessment** Updated  
DNA is the quality benchmark that puts all your assessments on disk, making past data instantly accessible and ensuring that all future assessments meet the same standards (with a common layout) to reduce costs by 80% or more.

**2 Noise Management Manual**  
A detailed and pragmatic guide to what constitutes best practice to meet the requirements of the new regulations - with particular reference to the revised expectations of the HSE.

**3 Noise Control Audit** Updated  
Provides you with a costed list of all the noise control options (with estimates of noise reductions in each case) for single machines or whole sites using the best of current technology. Used to update existing assessments, it also typically reduces noise control project costs by 50-80%.

**4 Noise Management Audit and Briefing**  
A complete and detailed review of noise management procedures and practices against current best practice benchmarks. Includes assessment updates, noise control, a detailed Action Plan and an Optimum Noise Management Strategy Briefing to minimise the costs involved in meeting the regulatory requirements.

## Noise Control

**5 More Sound Solutions**  
A large collection of low cost noise control "best practice" engineering solutions that do not involve enclosures. This is the ideal starting point for anyone with a noise problem - the solution may already be available "off-the-peg".

**6 Quiet Fan Technology (QFT)**  
A unique technique that eliminates fan noise at source - modifications are fitted inside the fan casing giving a permanent 10 - 20dB reduction at a fraction of the cost and hassle of conventional silencers, enclosures etc - and with no hygiene or maintenance issues.

**7 Maintenance Based Noise Control**  
Turn-key noise control service that implements engineering noise control measures quickly and painlessly as an extension to a maintenance schedule. Moreover, productivity can even be improved ...

**8 Hygienic Noise Control**  
Conventional noise control materials and techniques are generally not only very high cost, but also unsuitable where hygiene is an issue. This technical note provides information on successful noise control that not only has no effect on hygiene, but is low cost and in some instances, can actually improve productivity.

## Training

**9 Noise and Hand-Arm Vibration**  
The INVC is the IOSH approved training organisation for occupational and environmental noise and for Hand-Arm vibration. General and industry specific modules are available, covering all aspects of noise and vibration - tick box for a copy of our new and revised training literature. *".... made noise measurement and calculations easy .... both theoretical and practical sessions were superb .... the best course I've ever been on ...."*

Please Print Your Details - or indicate if there has been a change of address or personnel for our records.

Name: ..... Tel: .....

Job Title: ..... Fax: .....

Company: .....

Address: .....

..... email: .....

Other information: .....

## Environmental Noise and Vibration

**10 Environmental Noise and Vibration Services**  
A single source for a comprehensive array of environmental services - plus the bonus of state-of-the-art analysis and an unusual degree of engineering expertise that often results in unexpected dividends ...

**11 Best Practicable Means (BPM) Audit**  
An INVC developed simple procedure that enables you to prove whether BPM are being considered to control environmental noise using the best of current technology. Includes case studies and potential cost savings.

**12 IPPC Management + Buy Quiet Environmental**  
Ensure you meet your IPPC Licence noise specifications in the future as cost effectively as possible. The procedure includes template documentation (in digital form - with sound samples) and procedures for inclusion in company policy for new plant and changes to the site.

## Hand-Arm Vibration

**13 HAV Audit and Virtual Assessment**  
Benchmark risk assessment and audit with Virtual Assessment techniques to minimise the problems associated with field HAV measurement. Usually reduces costs by c70-80% and time by up to 95%!

**14 HAV Manual: free summary version by email** Updated  
A full multi-media CD version is also available.  
Comprehensive practical manual covering best practice in HAV management under the new regulations. Previous versions have been standard issue in many companies to audit existing procedures, as a convenient template for HAV policy and as a searchable company-wide resource.

**15 HAV-Base - NOISE-Base V4** New and Updated  
New v4 HAV database contains accurate field data for c 2500 tools and facilities for graphical summaries and statistics to make risk management simple (buying, hiring, using). NOISE-Base provides similar facilities for noise, combining noise and HAV data in a single risk management register. These constitute best practice as the most cost effective way to assess and manage HAV and noise risks.

**16 HAV-Test Tool Maintenance** Updated  
Provides simple, quick and automated tool vibration testing in the workshop that dramatically cuts maintenance costs. Detecting tool faults also ensures minimum HAV levels for operators.

**17 Product Noise and Vibration Control**  
We have a track record for the rapid development of practical, innovative engineering noise and vibration control measures on anything from vacuum cleaners to power presses, integral design or as retro-fit to existing machines.

## Product Testing / Analysis Software

**18 ProTest Product Testing System** Updated  
Flexible hardware and software for the automated production line testing of product noise/vibration (includes sound power, fault detection and diagnosis).

**19 Noise and Vibration Analysers** Updated  
The new **FrequencyMaster** is the state-of-the-art - a simple yet flexible and very low cost PC based noise and vibration analysis system for general use and as engineering tools for product development. We use it ourselves across environmental, safety and engineering applications.

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