

What You Need To Hear

EU Hearing Directive 2003/10/EC

HOWARD
LEIGHT 

Bilsom

As manufacturing, construction and other industrial endeavors are on the rise in Europe, so are the number of people exposed to harmful levels of noise in the workplace. Over 29% of all workers are exposed to hazardous levels of noise in at least one-quarter of their time in the workplace, and 11% are exposed at all times¹ – and these trends are increasing.

While noise-induced hearing loss is permanent and irreversible, it is completely preventable. The new European Union Directive 2003/10/EC, which goes into effect on 15 February 2006, aims to prevent worker exposure to harmful noise, while promoting a healthier and more productive workforce. This brochure highlights the changes in the hearing Directive, providing an outline of the new action levels, answers to common questions and a glossary of basic terms related to the Directive.

Complementing the new Directive, we also offer you a simple guide in selecting the right **Howard Leight**[®] earplugs and **Bilsom**[®] earmuffs for your hearing conservation program. Our innovations in product design, material science and acoustic technology ensure a high level of comfort and protection for you and your workers, offering the widest range of materials, user-friendly styles and attenuation levels available.

We encourage you to contact your Bacou-Dalloz representative or visit us online at www.hearingportal.com for more information.

Table of Contents

EU Directive Components	2
Changes in Directive	4
Questions and Answers	6
Glossary	10
The 4Cs of Hearing Protection	12

More information on EU Hearing Directive 2003/10/EC can be found online at: <http://europe.osha.eu.int>

¹ Third European survey on working conditions 2000

EU DIRECTIVE COMPONENTS

Determination and Assessment of Risk

- ◉ Noise levels throughout workplace must be measured through representative sampling by a competent service.
- ◉ Assessment must be updated on a regular basis, such as after change in processes or results of health surveillance show it to be necessary.

Avoiding and Reducing Exposure

- ◉ Apply engineering controls at the noise source or along the noise path to reduce exposures. These controls may include vibration dampeners, absorptive panels, barriers, muffler, or variations in force or drive speed of motors.
- ◉ Perform regular maintenance on machinery to prevent additional noise.
- ◉ Implement administrative controls to limit the exposure time for workers. These controls may include rotating workers in noisy areas, providing quiet breaks for noise-exposed workers, or moving processes such as maintenance or cleaning to quieter workshifts.

Personal Protection

- ◉ Provide hearing protectors (earplugs/earmuffs) to workers when noise exposure exceeds lower action level.
- ◉ Workers must utilize hearing protectors when noise exposure meets or exceeds Upper Action Level.
- ◉ Employer must ensure proper use of hearing protection amongst noise-exposed workers.

Limitation of Exposure

- ◉ Workers may not be exposed to noise that exceeds limit values.

Worker Information and Training

- ◉ Workers must receive information on risks of noise exposure, methods of avoiding/reducing exposure, exposure limits/values per Directive, assessment/measurement of noise, proper use of hearing protectors, detecting/reporting signs of noise exposure, circumstances of health surveillance, and safe working practice to avoid noise exposure.

Consultation and Participation of Workers

- ◉ Workers are allowed to participate in the assessment of noise exposure, methods of noise reduction and selection of hearing protectors.

Health Surveillance

- ◉ Workers who are exposed to the upper exposure limit shall have their hearing tested by a doctor or suitable professional.
- ◉ Preventive audiometric testing must be made available to workers whose exposure exceeds the lower exposure action levels.
- ◉ Employer is responsible for maintaining up-to-date health surveillance records.
- ◉ Workers have access to health surveillance records upon request.

CHANGES IN DIRECTIVE

In 2003, the European Parliament adopted Directive 2003/10/EC, which establishes new threshold values for the noise exposure measures of its earlier Directive 86/188/EEC. These new threshold values are lower, and more protective than the previous values. In addition, a new exposure limit of 87 dBA is defined as the maximum allowable daily noise exposure level at the worker's ear, taking all protective measures into consideration. The measures of the new Directive are to be enacted in Member States by 15 February 2006.

Comparison of Old Directive (86/188/EEC) to New (2003/10/EC)

Hearing Protective Measure	Old Directive Noise Level	New Directive Noise Level
Warning Signs Posted in Work Areas	90 dBA	85 dBA
Hearing Protectors Available	85 dBA	80 dBA
Hearing Protection Required	90 dBA	85 dBA
Training of Exposed Workers	85 dBA	80 dBA
Noise Reduction Program	90 dBA	85 dBA
Protected Exposure Limit	N/A	87 dBA

Why Is This Change Necessary?

It has been nearly 20 years since the original threshold values were defined in the EU Directive. Since that time, scientific knowledge has indicated that more protective threshold values are needed. Many noise-exposed workers appear to be susceptible to permanent hearing damage at noise levels lower than those defined in the previous standard. This change in the EU Directive initiates more stringent threshold levels at which protective measures must be taken, and also introduces a new maximum protected exposure limit of 87 dBA.

What Action Should Be Taken To Comply With The New Directive?

- Assess noise levels to determine if they exceed the new action levels.
- Endeavor to reduce hazardous noise exposures at their source by means of engineering or administrative controls.
- If noise cannot be reduced to safe levels, use hearing protectors (earplugs or earmuffs) to protect noise-exposed workers.

Action Levels and Exposure Limits

Protective Measures Are Required At These Exposure Levels

Protective Measures	Daily 8-Hour Exposure	Peak Exposure
Lower Exposure Action Level	80 dBA	135 dBC
<ul style="list-style-type: none">○ Variety of hearing protectors must be made available to noise-exposed workers (voluntary usage)○ Audiometric screening must be made available to workers whose exposure indicates a risk to health○ Training must be provided in the risks of noise, correct use of hearing protectors, detection of hearing damage, provisions of health surveillance and safe working practices to minimize noise exposure		

Upper Exposure Action Level

85 dBA 137 dBC

- Variety of hearing protectors must be made available to noise-exposed workers, and usage is enforced
- Audiometric evaluation by a doctor must be made available to exposed workers
- Warning signs must be posted in noisy areas

Exposure Limit Value

87 dBA 140 dBC

- Maximum allowable noise level in the ear with all protective measures in place
- Protected noise exposures under hearing protection may not exceed this level
- Include the attenuation provided by hearing protectors when estimating this value

QUESTIONS AND ANSWERS

Regulatory Changes

When do these changes take effect?

- The change takes effect in EU Member States on 15 February 2006.

What is the difference between the 80/85 dBA Action Levels and the 87 dBA Limit Level?

- The 80 and 85 dBA Action Levels are based on unprotected noise measurements that do not include the attenuation provided by hearing protectors. Preventive measures are taken when noise exceeds these levels. The 87 dBA Exposure Limit is based on protected noise measurements – that is, an estimate of noise levels at the ear under hearing protectors. To prevent noise-induced hearing loss, protected noise exposures may not exceed this limit.

How do I determine if the protected exposures of my workers are under 87 dBA?

- The best way to ensure that the protected exposures do not exceed 87 dBA is to select suitable hearing protectors, comparing attenuation ratings of the protectors with the noise environment in which they will be used, and then ensuring proper fitting. In most cases, this is accomplished by providing training in how hearing protectors are correctly worn.
- In exceptional situations, the exact noise level at the ear under hearing protectors must be measured, not just estimated. To accomplish this, noise measurement devices with microphones that fit under earplugs and earmuffs are now available, thus allowing a continuous real-world measurement of protected noise exposure.

Noise

How can hazardous noise levels be reduced at their source?

Examples in the Directive include the following:

- Select work equipment that emits lower noise levels.
- Plan the layout of workplaces to isolate noisy equipment from workers.
- Train workers to use equipment properly to keep their exposures to a minimum.
- Implement engineering controls, such as shields, enclosures, or noise dampeners.
- Follow proper maintenance schedules to reduce unnecessary noise due to faulty equipment.
- Organize work schedules and rest periods to minimize noise exposures.

How loud is 80 dBA compared to 85 dBA?

- Although a change between 80 and 85 decibels may seem minor, the difference is significant and noticeable. Because the decibel scale is a logarithmic scale, small changes in the number represent enormous changes in sound pressure levels. In this case, the difference between 80 and 85 dBA represents more than a doubling of sound energy or volume. In practical terms, most people must shout to be heard by a listener just one meter away in the presence of 85 dBA background noise.

Hearing Protection Devices

What new obligations for hearing protection does the employer have under these new regulations?

- The biggest change is the lowering of action levels by 5 dB. Precautionary measures, such as making hearing protectors available to workers, must be initiated when noise levels exceed the new 80 dBA Action Level (the previous level was 85 dBA). Protective measures, such as enforcing the use of hearing protectors, must be initiated when noise levels exceed 85 dBA (previously 90 dBA). The employer must also now ensure that a worker's protected daily average noise exposure (the noise level at the ear under hearing protectors) does not exceed 87 dBA.

QUESTIONS AND ANSWERS

Hearing Protection Devices *(continued)*

What are the responsibilities of the employer in providing workers with hearing protectors?

Employers must provide their workers with hearing protectors, and provide instruction on proper fit and usage of such HPDs. As good business practices:

- ⊙ Employers should provide a variety of hearing protectors to their employees, including a single-use earplug, multiple-use earplug, banded earplug and/or an earmuff.
- ⊙ Proper instruction should include fitting a variety of earplug styles properly, how to wear earmuffs, and how to clean/maintain their hearing protectors.
- ⊙ Hearing protectors should be made available in easy-to-access areas, such as locker rooms, by the time clock, or by any main entrance to the facility or where employees are exposed to noise levels > 80 dBA.
- ⊙ Accessories, such as replacement pods for banded earplugs and ear cushions/foam inserts for earmuffs, should be easy to access, ensuring proper maintenance and extending the lifetime of the hearing protector.

Training and Motivation

What can we do to encourage hearing protection usage among employees who are exposed to noise levels exceeding the new action levels?

The new action levels now include many employees who previously thought they were working in “safe” noise levels without protection. To encourage these workers to protect their hearing, the following steps are advised:

- ⊙ Provide training to noise-exposed workers on the effects of noise and the proper use of hearing protection devices.
- ⊙ Include workers in the selection of suitable hearing protectors.
- ⊙ Offer a variety of hearing protectors – Single-Use or Multiple-Use earplugs, Banded earplugs and Earmuffs.
- ⊙ Avoid overprotection: choose hearing protectors that allow workers to communicate and hear warning signals, while still protecting them from hazardous noise.

Must office workers or storeroom workers now be included in hearing protection programs?

- ⊙ Average noise exposures in an office are generally not of sufficient intensity or duration to be hazardous – many office noise levels are between 60 – 70 dBA. Warehouse and storerooms often have equipment that increases the average noise level between 70 – 80 dBA. If lift trucks or other noisy equipment are in frequent operation, it is advisable to assess the noise levels to determine if they meet the new action levels.

In our facility, noise levels vary significantly day to day – certain noisy jobs are performed only once a week. Must hearing protectors be worn all week?

- ⊙ When a worker is exposed irregularly to hazardous noise, the new Directive provides for a weekly noise exposure level (based upon five 8-hour workdays) to be substituted for the daily noise exposure level. This average weekly exposure level must not exceed 87 dBA, and appropriate measures must be taken to reduce the risk associated with the noisy activities to a minimum.

Must every employee be monitored for noise exposure?

- ⊙ A noise exposure assessment must be obtained for all employees exposed to 80 dBA TWA. But not every employee must be personally monitored. Representative samples may be taken, if it can be shown that noise exposures are equivalent to other workers in the same area or performing the same task.

Where can we go for help?

- ⊙ Assistance with noise assessments is available from social insurance, local regulatory agencies and safety professionals. Assistance with hearing protection and training is available from Bacou-Dalloz.

GLOSSARY

A-Weighting

- ⊙ A filter applied by noise measurement devices, intended to replicate the frequency sensitivity of the human ear. Sound level meters set to the A-weighting will filter out much of the low-frequency noise they measure, similar to the response of the human ear. In contrast, the C-weighting is a “flatter” filter, allowing more low frequencies to be measured.

Attenuation

- ⊙ A reduction in noise level. Hearing protectors are rated for their attenuation; protectors with higher attenuation reduce more noise.

Daily Noise Exposure Level

- ⊙ An 8-hour time-weighted average measurement of noise exposure. This measurement includes both continuous and impulsive noise.

Exposure Limit

- ⊙ The maximum allowable daily noise exposure level, taking account of attenuation provided by hearing protectors worn by a worker.

Lower Action Value (80 dBA)

- ⊙ The daily noise exposure level at which precautionary measures must be in place. If noise levels exceed 80 dBA, then hearing protectors must be available to exposed workers (usage is voluntary) and training must be provided to exposed workers.

Peak Sound Pressure

- ⊙ The maximum instantaneous value of a C-weighted noise measurement.

Single Number Rating (SNR)

- ⊙ The hearing protector rating used by the EU. Attenuation tests are conducted at independent laboratories, using human subjects to determine the average attenuation achieved by the protector. The SNR is found on the packaging of all hearing protectors.



Time-Weighted Average

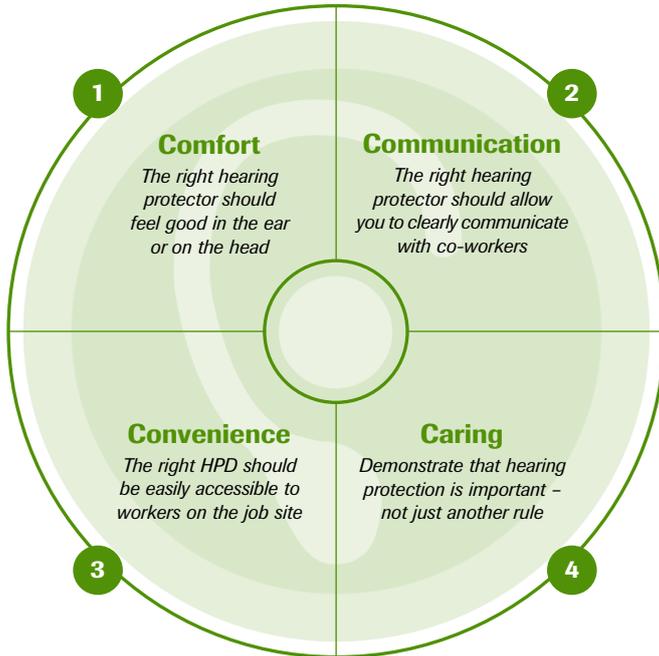
- ⊙ A computed average of all incoming sound levels, that represents what the average noise level would be if that level remained constant over an 8-hour work shift.

Upper Action Value (85 dBA)

- ⊙ The daily noise exposure level at which protective measures must be in place. If noise levels exceed 85 dBA, the employer must ensure the use of hearing protectors among exposed workers (usage is mandatory).

THE 4Cs OF HEARING PROTECTION

In developing an 2003/10/EC Directive-compliant hearing conservation program in your workplace, it is ideal to apply the 4Cs in the selection of your hearing protectors:



1 Comfort

Ears come in all shapes and sizes. The right hearing protection device (HPD) should feel comfortable in the ear or on the head – that means different products for different workers.

Earplugs

Are noise exposures constant or intermittent in your workplace?

- ⊙ Howard Leight® Single-Use and Multiple-Use earplugs are ideal for long-term wear, while Banded earplugs are good for intermittent use.

Does your workforce include women or others with smaller ear canals?

- ⊙ Specially designed earplugs with smaller diameters, such as Max Lite®, Laser Lite® and Matrix™, are intended for smaller ear canals.

Do your workers complain of “tightness” or “stiffness” in the ear canal?

- ⊙ Lower pressure foam products, such as Howard Leight Laser Lite or Max Lite, or products such as SmartFit® with Conforming Material Technology, may provide a more comfortable fit which adapts to the contours of your ear canal.

Do earplugs “hang out” of the ear canal opening instead of going in all the way?

- ⊙ Howard Leight’s Matrix No-Roll earplugs offer easier insertion, while Max® Single-Use earplugs are designed not to back out of the ear canal.



THE 4Cs OF HEARING PROTECTION

1 Comfort *(continued)*

Earmuffs

Are your workers exposed to humid or extreme cold conditions?

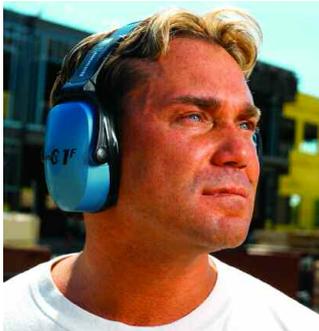
- Workers can adhere Bilsom® Cool® II Pads to ear cushions to absorb perspiration in humid conditions or provide additional warmth in cold climates.

Do your workers wear other PPE, such as helmets, face shields, welding helmets or respirators?

- Bilsom Cap-Mounted, Multiple-Position or Neckband earmuffs can be worn with other PPE without compromising protection from noise.

Do your workers complain of uncomfortable headband pressure from their earmuffs?

- Bilsom Headband earmuffs exert enough force without compromising comfort or protection.



2 Communication

The right hearing protection device reduces noise to a safe level, but avoids overprotection, or compromising communication and worker safety on the job.

Do workers need to communicate with others, hear important signals or warnings on the job?

- HPDs with uniform attenuation, such as Howard Leight® Matrix™ earplug or Bilsom Clarity® earmuffs, block loud noise while allowing important communication to be heard more naturally, decreasing worker isolation and improving personal safety.

Do you have areas of marginal noise where overprotection is a concern?

- Bilsom earmuffs and Howard Leight Matrix earplugs offer multiple attenuation levels that can be appropriately matched to your noise levels.

In addition to hazardous noise, are your workers exposed to additional safety risks on the job?

- Bilsom Lightning® Hi-Visibility earmuffs offer total visibility and hearing protection solution with brightly coloured earcups and a reflective headband, ideal for construction workers, airport ground crews and transit workers.



THE 4Cs OF HEARING PROTECTION

3 Convenience

At work, give employees easy access to hearing protection devices – and make sure that the choices are specifically matched to the work environment.

Earplugs

Do you have budget constraints on PPE spending or require a centralized HPD source in workplace?

- Earplug Dispensers offer a cost-effective solution to outfitting many workers with hearing protection, saving money while eliminating waste.

Do you have operational tolerances for certain packaging?

- Paper bags for process industries and hard cases for earplug storage offer alternatives in packaging.

Do you have workers who need to remove their earplugs during a workday?

- Corded earplugs can be worn around the neck and inserted when entering areas of noise exposure. Banded Earplugs can also be inserted and removed when moving in and out of noisy areas.

Does your process require visual/metal detection?

- Detectable earplugs offer both visual and metal detection for process industries, such as food/beverage, pulp and paper, tobacco and other process industries.



Do you require bright colours for compliance inspections of earplug usage?

- Howard Leight® offers earplugs in the widest variety of colour options for visibility needs.

Is hygiene a concern in the workplace?

- No-Roll earplugs, Multiple-Use earplugs and Bands offer an alternative to roll-down foam earplugs preventing dirt from transferring from their fingers to the earplug.

Earmuffs

Do your workers wear other PPE, such as helmets, face shields, welding helmets or respirators?

- Bilsom® Cap-Mounted, Multiple-Position or Neckband earmuffs offer alternatives in wear with other PPE without compromising protection.

Do your workers need to keep earmuffs close by?

- Folding earmuffs with a belt case offer a compact and accessible solution.

Are your workers exposed to high traffic, low lighting or inclement weather conditions?

- High-visibility products, such as Bilsom Lightning® Hi-Visibility earmuffs, help mitigate additional hazards on site. Bilsom Clarity® sound management earmuffs are also helpful for workers exposed to traffic, enhancing their recognition of approaching vehicles or other signals.



THE 4Cs OF HEARING PROTECTION

4 Caring

Are your workers motivated to wear HPDs on the job?

- ◉ Train your workers on how to properly insert earplugs and wear earmuffs when they start with the company and on an annual basis.
- ◉ Offer a variety of earplugs and earmuffs on the job – not just one type of earplug for the entire team.
- ◉ Allow workers to be part of the selection and education process – worker input and motivation will set an example across your workforce.
- ◉ Hang motivational and informational posters in the lunch room or near your hearing protection source, not just in the safety office. These materials can be obtained from Bacou-Dalloz. Please contact your local Bacou-Dalloz representative to obtain them.
- ◉ Praise workers who always wear their HPDs. Workers who are publicly recognized on the job are more likely to wear their HPDs all the time.
- ◉ Managers should always wear hearing protection in noisy areas. This sends a clear signal that from the top down, the company cares about everyone's hearing safety.

Are your workers exposed to noise at home?

- ◉ Whether your workers mow the lawn, use power tools, attend rock concerts, auto racing events or participate in shooting sports, they are still exposed to hazardous noise. Show that you care by encouraging your workers to take earplugs home with them to prevent additional noise exposure.

**The best hearing protector is
the one that is worn properly – 100%
of the time in hazardous noise.**



BELGIUM

Bacou-Dalloz
Klauwaartslaan 2 Box 5
BE-1853 Strombeek-Bever
Tel +31 (0)2 267 38 03
Fax +31 (0)2 267 60 50

FRANCE

Bacou-Dalloz
Immeuble Edison Paris Nord 2
33 rue des Vanesses
BP 55288 Villepinte - 95958
Roissy Ch de Gaulle Cedex
Tel +33 (0)1 49 90 79 79
Fax +33 (0)1 40 90 71 04

GERMANY

Bacou-Dalloz GmbH & Co.
KG Postfach 11 11 65
D-23521 Lübeck
Tel +49 (0)451 702 740
Fax +49 (0)451 798 058

HUNGARY

Bacou-Dalloz
Hungaria Kft
Forgach U.9B
H-1139 Budapest
Tel +36 1 239 31 33
Fax +36 239 31 35

ITALY

Bacou-Dalloz Italia
Via Vittorio Veneto
142 27020 Dorno (Pavia)
Tel +39 0 382 81 21 11
Fax +39 0 382 84 11 3

RUSSIA

Bacou-Dalloz Bezopasnost
16 pereulok Krasina
stoenie 1 office 813
123056 Moscow
Tel +7 095 980 99 10
Fax +7 095 980 99 13

SPAIN

Bacou-Dalloz Iberica
Avda. Castilla 1
ES-28830 San Fernando
De Henares
(Madrid) Spain
Tel +34 91 676 4521
Fax +34 91 677 0898

SWEDEN

Bacou-Dalloz
Stransbadvägen 15
SE-252 29 Helsingborg
Tel +46 (0)42 881 00
Fax +46 (0)42 739 68

UK

Bacou-Dalloz
Osborn Way
Hook
Hampshire RG 29 9HX
Tel +44 1 256 693 200
Fax +44 1 256 693 300