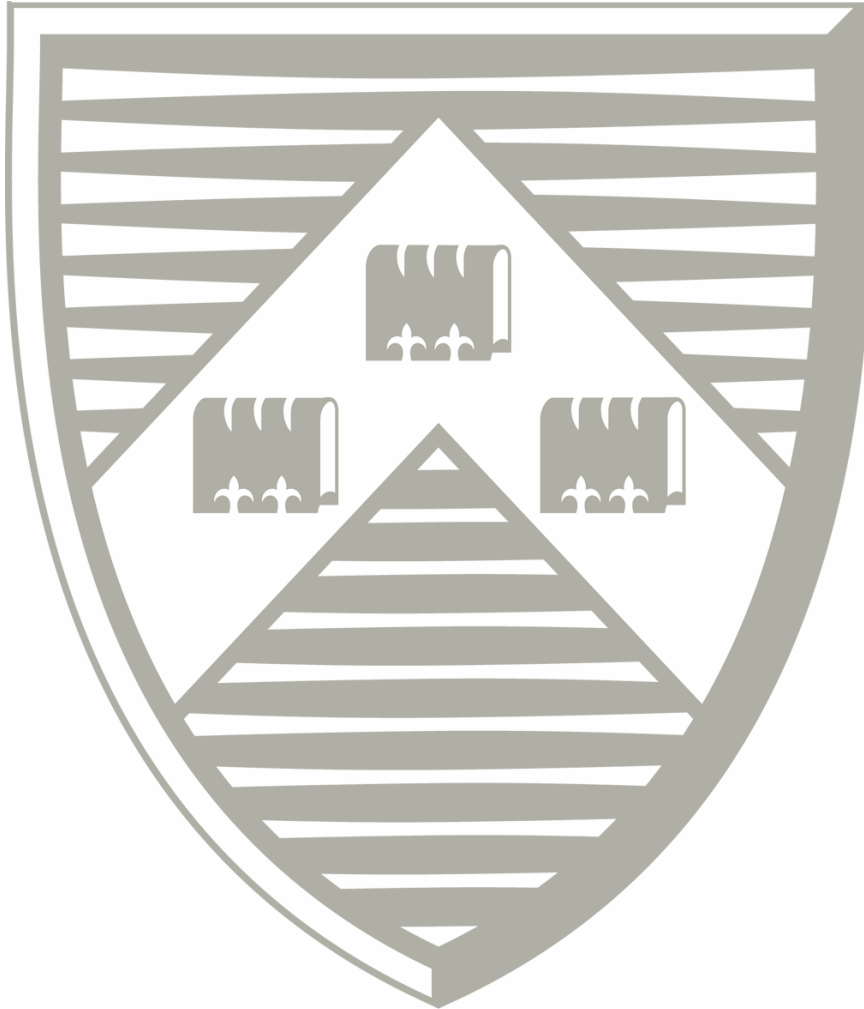




**The Workplace Health and Safety Office**



# **UNIVERSITY POLICY AND MANAGEMENT PROCEDURE**

## **Noise at Work**

## **Statement**

*This Management Procedure was approved and authorised by the Health, Safety and Welfare Committee (now Workplace Health and Safety Committee) on **25 October 2016** on behalf of The University of York Council and forms part of the Health and Safety Policy of the University of York.*

*This document is a Management Procedure for good Health and Safety Management Practice. This Management Procedure provides Deans of Faculty, Heads of Departments, Heads of College and all managers, staff and students with the necessary information to incorporate healthy and safe practices and relevant procedures into their work activities. Divergence from this Management Procedure may leave Deans of Faculty, Heads of Departments, Heads of College and the University being exposed to possible legal proceedings.*

*The use of this Management Procedure and the incorporation of its requirements into working practices and activities will ensure that the University and its community achieves compliance with its moral and legal duties with regards to health and safety.*

*The most recent version of this Management Procedure is available at <https://www.york.ac.uk/admin/hsas/safetynet/atoz.htm>*

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## **UNIVERSITY POLICY**

### **1. INTRODUCTION**

The University of York (University) is fully committed to avoiding or reducing any work-related noise and the impacts of noise induced hearing loss within the workplace.

Noise at work can cause hearing loss that can be temporary or permanent. Staff, Students and visitors including authorised contractors often experience temporary deafness after leaving a noisy place. Although hearing recovers within a few hours, this should not be ignored. It is a sign that if you continue to be exposed to the noise your hearing could be permanently damaged. Permanent hearing damage can be caused immediately by sudden, extremely loud, explosive noises including guns or cartridge-operated machines.

Hearing loss is usually gradual because of prolonged exposure to noise. It may only be when damage caused by noise over the years combines with hearing loss due to ageing that people realise how deaf they have become. This may mean their family complains about the television being too loud, they cannot keep up with conversations in a group, or they have trouble using telephones etc. Eventually everything becomes muffled and people find it difficult to catch sounds like 't', 'd' and 's', so they confuse similar words.

Hearing loss is not the only problem. Staff, Students and visitors may develop tinnitus (ringing, whistling, buzzing or humming in the ears), a distressing condition which can lead to disturbed sleep.

The **Control of Noise at Work Regulations 2005** (CNWR 2005) requires the University to prevent or reduce risks to health and safety from exposure to noise at work. Staff and Students have duties under the Regulations too.

This Management Procedure does not cover the environmental aspects of noise and noise pollution; or the adverse effects on wellbeing which can arise from 'nuisance' noise which is below the levels likely to cause deafness.

#### **1.1 Summary**

Noise has been described as unwanted sound, which may be distracting, annoying or cause physical damage to the body including temporary or permanent hearing damage. The damaging effects of noise are related to the 'dose' that the ear receives and this depends on the duration of exposure and the noise level. Equal doses will cause the same amount of damage. Therefore, short exposure to high levels will cause similar damage to lower levels of noise exposure that are of a longer duration.

The CNWR 2005 are intended to protect against risks to health and safety from workplace exposure to noise, risk of hearing damage and other risks such as interference with the

employee's ability to hear instructions or warnings. Employers in the music, entertainment and commercial/catering and bars sectors are also required to comply with the CNWR 2005.

## **1.2 Scope and Objective**

This Management Procedure applies to all activities and workplaces under the control of the University which create noise which may contribute to hearing loss. The intention of this Management Procedure is therefore to provide a means of controlling noise to minimise effects on hearing by complying with the CNWR 2005 and the associated noise action limits.

## **1.3 Exposure Limits**

The Exposure Action Values (EAV) are the levels of daily exposure to noise above which certain actions are required to reduce exposure. The Exposure Limit Value (ELV) is the level of noise above which a person may not be exposed.

The noise level produced by equipment or processes is measured in decibels (dB). For hearing protection purposes this modified is by a weighting factor (A) which reflects the hearing sensitivity profile of the human ear.

The regulations have set three Values:

- Lower Action Value (LAV) of 80dB (A) over 8 hours (A8)
- Upper Action Value (UAV) of 85dB (A) over 8 hours (A8)
- Exposure Limit Value of 87dB (A) over 8 hours (A8).

To allow different exposure patterns to be compared they are adjusted or normalised to a standard reference period of 8 hours, similar to the approach taken for vibration levels.

The CNWR 2005 describes how an exposure normalised to 8 hours, A(8), can be calculated. To get a rough estimate of whether a risk assessment is required you could consider the simple tests in the table below:

| Test   | Probable Noise Level | Assessment After Exposure |
|--|----------------------|---------------------------|
| The noise is intrusive but normal conversation is possible | 80dB(A)              | 6 hours                   |
| You have to shout to talk to someone 2 metres away         | 85dB(A)              | 2 hours                   |
| You have to shout to talk to someone 1 metre away          | 90dB(A)              | 45 minutes                |

An increase in noise intensity of 3dB represents a doubling in the noise output and hence halves the exposure time required to reach an exposure limit. This is illustrated in the table below:

| Instantaneous Noise Level (dB(A)) | 80(A) | 83(A) | 86(A) | 89(A) | 92(A) | 95(A) | 98(A)     |
|-----------------------------------|-------|-------|-------|-------|-------|-------|-----------|
| Time to reach LAV (hours)         | 8     | 4     | 2     | 1     | ½     | ¼     | 7.5 mins  |
| Time to reach UAV (in hours)      | 24    | 8     | 6     | 3     | 1½    | ¾     | 25 mins   |
| Time to reach ELV (in hours)      | 40    | 20    | 10    | 5     | 2½    | 1¼    | 42.5 mins |

An example of a hand held blower with a noise level of 97dB(A) would result in the exposure of the operator to the equivalent of the LAV in just 10 minutes, hence typical use greater than this would require reasonably practicable exposure reduction measures to be taken. If this was used for 40 minutes a day the ELV would be exceeded and no further use would be permitted.

Generally, at the University, the nature of the work lessens the risk. For instance, work may be seasonal or related to particular projects; exposure is normally not prolonged on a regular basis. University workshops tend not to be operated in the same way as industrial environments so individuals are not continuously carrying out long periods of very noisy tasks on a daily basis, but there is still a need to assess each situation.

## **ARRANGEMENTS**

### **2. MITIGATION AND CONTROL**

#### **2.1 Risk Assessment**

The risk assessment for noise, and any associated measurement should be carried out in conjunction with the Workplace Health and Safety Office (WHSO) to ensure that the assessor has the necessary skills and experience.

A noise risk assessment is required wherever it is likely that exposure will occur at or above the Lower Exposure Action Value. As a guide to this, the following may be considered:

- If noise is intrusive but normal conversation is possible, likely noise level is approximately 80dB(A).
- If you have to shout to talk to someone 2m away, likely noise level is approximately 85dB(A).
- If you have to shout to talk to someone 1m away, likely noise level is 90dB(A).

**How do I assess the risk? - <http://www.hse.gov.uk/noise/risks.htm>**

The decibel scale used to measure noise is logarithmic. An increase in 3dB(A) equates to a doubling of sound. The increase from 80dB(A) to 85dB(A) is almost a four- fold increase in sound level.

A tractor, a power mower and a hand drill are each likely to generate at least 90dB(A). A

chain saw may be well over 100dB(A). Personal noise exposure is a function of noise level and length of exposure. An individual working in an area where the noise level was 80dB(A) would have a personal exposure of 80dB(A) if he or she worked there for 8 hours per day. Working in an area where the noise level was 85dB(A) for 2 hours per day would also give a personal exposure of 80dB(A).

Where noise exposure is accompanied by exposure to vibration or to some chemicals such as solvents, the risk of adverse effects may be higher at a given noise level.

A formal, documented risk assessment should be carried out if any individual works in an area exceeding 80dB(A) on a regular basis (for example, 4 hours or more, most days or if noise levels exceed 85dB(A), even if exposure is infrequent or irregular.

If risk assessment is necessary, this should be recorded, for example as part of a departmental or section's general risk assessment and agreed by the Departmental Safety Advisor (DSA).

Risk assessment requires:

- Assessment of the level and type of noise; this may come from manufacturer's data for individual pieces of equipment, or from sound level measurement (available from WHSO), especially where multiple pieces of equipment operate in an area simultaneously. Additional noise e.g. from background music should also be included.
- Identification of who might be affected.
- The likely exposure time of those individuals, taking into account working patterns, noise exposure during breaks etc.
- Assessment of indirect risk e.g. the risk of individuals not hearing warning alarms due to the noise level.
- Consideration of additional risk factors such as the presence of vibration or solvents.

The risk assessment should include an action plan which documents the measures already in place to reduce the risk from noise exposure and any further measures planned.

The noise risk assessment can be a stand-alone document or can be incorporated into the overall risk assessment document for the Department or process where this is more appropriate.

## **2.2 The HSE's Exposure Calculators and Ready-Reckoners**

To assist you with your risk assessment, the HSE's noise exposure calculators can help you work out your daily noise exposure, weekly noise exposures, and estimate the performance of hearing protection.

The noise exposure ready-reckoners allow you to estimate daily or weekly noise exposure. To use the daily exposure ready-reckoner you will need to know the levels of noise and durations of exposure which make up a person's working day. For weekly noise exposure,

appropriate where somebody's noise exposure varies markedly from day to day, you will need to know the daily noise exposure for each day in the working week. These ready-reckoners can be printed for completion by hand. (Note; The link to the HSE's Noise webpages and in particular, to the HSE Noise calculator and ready reckoner, is available below):

HSE Noise calculator; <http://www.hse.gov.uk/noise/calculator.htm>

HSE Noise at Work website; <http://www.hse.gov.uk/noise/index.htm>

The risk assessment should be reviewed if there is any change in noise exposure, changes in personnel, machinery or the law or simply if people think the existing assessment is no longer valid, and at intervals of no longer than 2 years.

### 3. REDUCING NOISE EXPOSURE

Measures should be put in place to reduce risks from noise exposure to as low a level as reasonably practicable, even if noise levels are below the Lower Exposure Action Value. Consideration should be given as to whether further reductions are practical.

Wherever noise levels may exceed the Lower Exposure Action Level (for example, personal exposure exceeding 80dB), assistance should be sought from the WHSO to assist with risk assessment and noise reduction.

Formal measures to reduce noise exposure must be introduced if the upper exposure action value is exceeded, for example, personal exposure is above 85dB(A). Provision of hearing protection is an adequate solution as an immediate action to reduce exposure below the UAV; however, PPE is the last resort or should be used in conjunction with other measures such as engineering controls.

Personal noise exposure **MUST NOT** exceed the ELV of 87dB(A). (This measurement takes into account the effect of hearing protection (for example Personal Protective Equipment (PPE)).

Measures to reduce noise exposure may include:

- Replacing tools and equipment with alternatives which create lower levels of noise.
- Ensuring all equipment is properly maintained.
- Reducing exposure by reducing time exposed to noise.
- Shielding or enclosure (of either a piece of equipment or the operator).

Detailed guidance on ways of reducing noise exposure can be found via the link below; "Controlling Noise at work: The Control of Noise at Work Regulations 2005 - Guidance on Regulations". <https://www.hse.gov.uk/pubns/books/l108.htm>

#### 3.1 Hearing Protection

Hearing protection can be used as an additional measure once noise has been reduced as



far as is reasonably practicable by other means; or as an interim measure pending noise reduction. It must not be used as the sole method of protection if personal noise exposures exceed the upper action value (85dB(A)). Hearing protection should be made available on request if noise exceeds the lower action value (80dB(A)).

Any area where the daily personal noise exposure levels exceed 85dB(A) (or peak sound level of 137dB(A)) must be designated as 'Hearing Protection Zones' and marked with appropriate signage. Within these areas, wearing of hearing protection will be compulsory, even though exposure may only be for short periods of time.

Hearing protection provided must be suitable for the levels and type of noise individuals are exposed to. Guidance on choosing suitable hearing protection can be found in "Controlling Noise at work: the Control of Noise at Work Regulations 2005 - Guidance on Regulations" via the above link.

Hearing protection shall always be considered, as the last control measure to be used. All areas where the daily personal noise exposure levels exceed 80dB(A) but are not above 85dB(A), suitable hearing protection shall be provided, and all occupants shall be encouraged to wear it. In all areas where the noise levels exceed 85dB(A) or a peak sound pressure of 137dB(A) the occupants shall be provided with and shall wear suitable hearing protection. Suitable hearing protection will limit daily noise exposure to no more than 87dB(A) when hearing protection is worn. The areas concerned shall be designated as an ear protection zone by means of recognised warning notices. No one shall be permitted to enter an ear protection zone without wearing the necessary hearing protection. Hearing protection should be stored properly, well maintained, and regularly inspected by a competent person.

### **3.2 Hearing Protection Zones**

The noise produced by work or study activities being undertaken in some areas of the University may create a significant risk of hearing damage to anyone within that area. In these circumstances the Head of Department/College (HoD/C) or their nominee will designate the area as an ear protection zone. Workplaces designated as ear protection zones shall be marked by the use of the appropriate safety signs. Admission to the area shall be restricted to those persons wearing approved hearing protection.

In ear protection zones, all personnel shall wear the hearing protection provided or required. Employees who regularly work in noise protection zones shall be issued with appropriate personal hearing protection. Personnel visiting noise protection areas shall be loaned suitable hearing protection for the duration of their visit. Appropriate safety signs shall be posted at the entrance to those areas and a stock of hearing protectors shall be kept by the member of staff in charge of the area for issue to students or visitors.

Where operations requiring hearing protection are being carried out on a temporary or intermittent basis, temporary ear protection zones shall be designated and appropriate

signs displayed for the period of the work.

### **3.3 Workplace Design**

When considering a new workplace, noise emissions and noise exposure can be limited by careful choice of design, layout and the construction materials used for the building. For example, the appropriate use of absorption materials within the building can reduce or limit the effects of reflected sound.

### **3.4 Elimination of noisy equipment or process**

Generally, this will not be possible, as the activities creating the noise will need to continue. However, if activities cease or change in the area concerned, the equipment may become obsolete and may then be taken out of use.

### **3.5 Substitution of equipment or processes**

Changes in technology can alter the machine or process resulting in lower noise exposure to those in the area.

### **3.6 Engineering Controls**

Engineering controls to incorporate the principle of a hierarchy i.e. easiest and least descriptive first in the following order:

- Maintenance of equipment can be very effective in limiting noise emission. Machines deteriorate with age and use and maintenance can, if carried out regularly, limit the increased noise emissions due to wear.
- Different machines in the area may need to be used at different times to reduce the overall noise levels.
- If possible, the distance between the noise source and the person should be increased to reduce the level of noise received.
- Isolation and enclosure of machinery from its surroundings will reduce the level of noise an individual is exposed to. For example, screens and barriers can be erected around the machinery.
- Equipment may be fitted with buffers, rubber mountings, cushioning, silencers etc. to reduce the noise emitted.
- Noise refuges. An office area can be created within a workshop by erecting an acoustically designed enclosure to separate the noisy machinery or processes from those based permanently in the area.

### **3.7 Labelling Noisy Machines**

Where machine operators are required to wear ear protection because daily personal noise exposure levels are at or above 85dB(A), a sign shall be posted on the machine.

### **3.8 New Machinery/Equipment/Plant**

All new machinery etc. shall be designed and constructed to ensure that the noise produced is as low as possible. Suppliers shall be asked to provide information about noise emissions under actual working conditions, as well as specific instructions for installation

and assembly to reduce noise.

### **3.9 Health Surveillance**

Health surveillance (audiometry) must be carried out for employees who are regularly exposed to noise above the upper exposure action value (85dB(A)); this can be arranged by the University's Occupational Health Advisor (OHA).

Health surveillance will also be offered to those exposed above the lower exposure action value if they are at increased risk, for example, if they report a known sensitivity to noise damage or a family history of early deafness.

Where the risk assessment shows there is a risk to the hearing of an employee (generally when there is regular exposure to above the upper action level), regardless of hearing protection, then the individual shall be subject to a health surveillance programme.

Where health surveillance is required it will usually be carried out annually for two years then 3 yearly. Wherever possible, audiometry for new employees (or those newly exposed to noise within the University) should be carried out prior to any noise exposure.

Health surveillance will be carried out by OHA. All individual records will be held in confidence. Where appropriate, a summary of results for groups of employees will be reported back to a relevant Line Manager to indicate the effectiveness of noise management systems.

## **4. TRAINING AND INFORMATION**

All employees who are exposed to noise above the lower exposure action value should be given training to include:

- The adverse effects of noise.
- The use of appropriate noise measuring and monitoring equipment.
- The results of the local risk assessments.
- The measures in place to reduce noise exposure.
- The need for hearing protection.
- The correct use and storage of hearing protection.
- The need for health surveillance.
- The responsibilities on employees.

Face to face training may be provided by the manager of the work activity or DSA if they are competent to do so; training can be arranged through the WHSO. Alternatively, the provision of information may be achieved by distributing leaflets or cards.

Measures must be in place to ensure that new employees receive appropriate training prior to exposure to noise.