Screening Audiometry

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1 Purpose and scope

To describe the arrangements for audiometric screening in connection with hearing conservation programmes and fitness for work assessments. Applies to all areas and departments.

2 Definitions


$L_{EP,w}$ – The weekly personal noise exposure of an employee, in dB(A).

$L_{Cpeak}$ – The peak sound pressure level, in dB(C).

Lower exposure action values

(a) a daily or weekly personal noise exposure of 80 dB (A-weighted); and

(b) a peak sound pressure of 135 dB (C-weighted).

Upper exposure action value

(a) a daily or weekly personal noise exposure of 85 dB (A-weighted); and

(b) a peak sound pressure of 137 dB (C-weighted).
Exposure limit value

(a) a daily or weekly personal noise exposure of 87 dB (A-weighted); and

(b) a peak sound pressure of 140 dB (C-weighted).

Noise exposed workers – Employees whose exposure to noise represents a risk to their health. This means all workers regularly exposed above the upper exposure action level. If it is discovered that a worker may be particularly sensitive to noise they should also be considered to be a noise exposed worker if their exposure is above the lower exposure action level or if it is only occasionally above the upper action level.

3 Principles

Audiometric screening programmes will be in accordance with HSE guidance\(^1\). Audiometric screening will be carried out in order to ensure that individuals are fit for their work, to identify features of noise induced hearing loss and to detect pre-existing disease, which may later be confused with the effects of current exposure.

Populations requiring audiometric screening will be identified as a result of a risk assessment process.

Employees working in an environment where exposure to noise equals or exceeds the upper exposure action value will normally be included.

Screening audiometry will be performed in an environment that permits measurements of hearing thresholds down to 0 dB.

All equipment will be regularly maintained and calibrated in accordance with the manufacturers recommendations.

Wherever possible the criteria described in EN26189 will be followed\(^3\).

4 Responsibilities

1) First Line Manager
2) Employee
3) Screening audiometrician - Nurse, doctor or other person who has received appropriate training in the techniques of screening audiometry
4) Occupational physician - Registered medical practitioner with diploma or higher qualification in occupational health (AFOM, MFOM, FFOM or specialist accreditation)

4.1 First line manager will

Ensure that risk assessments have been completed in respect of workers who are exposed to noise and specific occupations requiring a particular standard of hearing.

Identify to occupational health any population requiring screening audiometry. Notify any joiners and leavers.

4.2 Employee will

Attend for audiometric screening as directed.

Report any hearing difficulties to occupational health or their first-line manager.
Comply with hearing conservation measures.

4.3 Screening audiometrician will

Perform audiometry as detailed in appendix 1.
Instruct employee regarding hearing conservation measures.
Advise employee and first line manager of outcome of assessment, any restrictions and the date of next assessment
Make an entry in the health record and medical record.
Discuss cases of suspected hearing abnormality with the occupational physician.

4.4 Occupational physician will

Provide advice regarding risk assessments and hearing conservation programmes.
Assess employees referred by the screening audiometrician and advise on fitness for work. Communicate as appropriate with other health professionals.
Notify line management regarding any cases of unfitness, noise induced hearing loss or suspected failure of control measures.

5 Key performance indicators and audit criteria

Are correct populations identified?
Are records made and information given to managers?
Are employees referred to occupational physician in accordance with criteria?
Is equipment correctly maintained and calibrated?

6 References

3) EN 26189:1991 “Specification for Pure Tone Air Conduction Threshold Audiometry for Hearing Conservation Purposes”.
4) OHS questionnaire AudioQ.doc
### 7 Revision History

<table>
<thead>
<tr>
<th>Author</th>
<th>Issue</th>
<th>Date</th>
<th>Reason for Revision</th>
<th>Review by</th>
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<tbody>
<tr>
<td>David Shackleton</td>
<td>1</td>
<td>March 2000</td>
<td>First issue</td>
<td>March 2002</td>
</tr>
<tr>
<td>David Shackleton</td>
<td>2</td>
<td>October 2006</td>
<td>Incorporate Control of Noise at Work Regs 2005</td>
<td>October 2009</td>
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These occupational health instructions have been based on current best practice and official guidance. They are aimed at a level analogous to local rules or work instructions within a corporate hierarchy of policies on health, safety, environment and human resources.

Principles, which are applicable to a range of operating units, are followed by specific standards and criteria for use by occupational health professionals. Inevitably the material cannot be applicable in every workplace without some interpretation or amendment.

Current versions will be available to OHS clients at [www.occhealth.co.uk](http://www.occhealth.co.uk) and will be updated when necessary. Any comments will be gratefully received at [policies@occhealth.co.uk](mailto:policies@occhealth.co.uk)

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Appendix 1 - Audiometric Assessment

1) Criteria for inclusion

New employees

All new employees or transferees except those whose normal duties will be confined to an office environment.

Noise exposed employees

Employees whose exposure to noise represents a risk to their health. This means all workers regularly exposed above the upper exposure action level. If it is discovered that a worker may be particularly sensitive to noise they should also be considered to be a noise exposed worker if their exposure is above the lower exposure action level or if it is only occasionally above the upper action level.

Specific occupations

Employees who are required to have a particular standard of hearing to carry out the duties safely and effectively -- as defined in individual policies.

2) Frequency of assessment

New employees

As part of a pre-employment or pre-transfer medical assessment.

Noise exposed

Annually for the first two years of exposure and at least three yearly thereafter.

Specific occupations

As directed in individual policies.

Additional audiometry may be required as directed by the occupational physician.

3) Content of assessment

Initial or baseline audiometry must be performed when the subject is free from the effects of temporary threshold shift. The subject must be instructed to avoid noise exposure (any environment where they have to shout to be heard) for 24 hours prior to the test.

Regular screening audiometry can be performed regardless of noise exposure providing the details are recorded. However, if the result is not normal (category 1) then a further recording will be made after avoiding noise exposure for 24 hours.

Examine nose, oropharynx, external auditory meati and tympanic membranes using auriscope.

Complete history and examination findings on form AudioQ.doc

Perform audiometry

The subject may be instructed as follows:

"We are going to test your hearing by finding out the quietest sounds you can hear. You will hear a series of tones, first low pitch and getting higher before becoming low pitch again. Do your best to listen for the quietest tones. We test the left ear first, then the right. Whenever you hear a tone in the headphone, press the button. Keep it pressed until the tone goes away, then let go" (some procedures require a single press each time a tone is heard).
Fit headphones. Remove glasses, earrings and hearing aids, ensure that hair is out of the way and position middle of each headphone cup directly opposite the external auditory meatus.

Start automatic or manual audiometry sequence and ensure that the subject does not receive any cues.

Print results and record relevant comments directly on the audiogram e.g. history of noise exposure on day of test or subject complaint of tinnitus / external noise.

Record category, action to be taken, date of next test and advice given to subject. Update health record and notify first line manager of outcome of assessment.

4) **Criteria for Referral**

### Specific occupations

In accordance with the relevant fitness standard.

Noise exposed and new employees

Action is based on HSE categorisation:

1) For each ear separately, add up the hearing losses at the frequencies 1,2,3,4 and 6 kHz and record the two resulting figures.

2) Compare each figure with the table below, taking into account the subjects age and sex.

3) If both figures are below the warning level the individual has **acceptable hearing ability - category 1**. Hearing is within normal limits.

4) If either figure is equal to or above the warning level the individual has **mild hearing impairment – category 2**. Hearing below 20th centile.

5) If either figure is equal to or above the referral level the individual has **poor hearing – category 3**. Hearing below 5th centile.

6) If the individual falls into category 2 or 3, and their last test was performed within the last three years then another calculation is performed to determine whether there has been a rapid loss of hearing since the last examination. For each ear separately add up the hearing losses at 3,4 and 6 kHz and do the same calculation for the last examination. If the sum of losses has increased by 30 dB or more then there is **rapid hearing loss – category 4**

7) Finally, for each ear add up the hearing losses at 1,2,3 and 4 kHz. If the difference between the two ears is greater than 40 dB there is **unilateral hearing loss**, which may be due to ear disease or infection. There is no categorisation for this problem and the individual should be referred to their doctor.

<table>
<thead>
<tr>
<th>age in years</th>
<th>Males</th>
<th>Females</th>
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<tbody>
<tr>
<td></td>
<td>warning level</td>
<td>referral level</td>
</tr>
<tr>
<td>18-24</td>
<td>51</td>
<td>95</td>
</tr>
<tr>
<td>25-29</td>
<td>67</td>
<td>113</td>
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<td>60-64</td>
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<td>296</td>
</tr>
<tr>
<td>65+</td>
<td>235</td>
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NB: A subject may be placed in more than one category. Automated equipment can perform these calculations if previous readings are known.
Appendix 2 - Equipment - Use maintenance and calibration

Append details for audiometer in use