Hearing Conservation Program

Purpose
This program has been written in accordance with OSHA standard 29 CFR 1910.95, and applies to all operations and work areas where employees and other personnel may be exposed to hazardous noise levels.

Program Statement
It is the policy of the University of Central Oklahoma to protect the hearing of all workers whose noise exposures equal or exceed an action level of 85 decibels (dB) for an 8-hour day. In accordance with this policy, this organization has established a Hearing Conservation Policy. This policy applies to all persons working in areas or with equipment that have noise levels of 85 decibels, A weighting (dBA) or higher.

Program Administration
The program administrator will:
   Administer the Hearing Conservation Program
   Provide initial and annual training
   Conduct and document noise surveys areas/activities where potential noise exposures may equal or exceed an 8-hour time weighted average (TWA) of 85 dBA
   Cooperate with the departments to assure compliance
   When notified by employee or employee supervisor, perform a sound-level survey in areas where a change in activity, process, equipment, or controls may have resulted in either an increase or a decrease in employee exposure
   Identify noise hazard areas and post appropriate signs
The audiometric testing coordinator will:

- Schedule baseline audiograms for all new employees
- Maintain all medical records associated with this program
- Provide medical follow-up when necessary

The supervisor will:

- Assist EH&S in identifying employees who are required in the Hearing Conservation Program by identifying potential areas of concern in their units
- Schedule annual audiometric testing on employees enrolled in the hearing conservation program
- Notify EH&S if excessive losses are detected
- Notify EH&S of potential noise hazard areas
- Identify employees exposed to sound levels equaling or exceeding the action level, and report such information to EH&S
- Provide a choice of hearing protection devices to those employees requiring them and insure that they are being worn

Employees will:

- Wear HPDs when entering or working in identified noise hazard areas in accordance with the posted warning
- Report potential noise hazard exposures to the supervisor
- Comply with Hearing Conservation Program requirements when identified as being exposed to sound levels equaling or exceeding the action level
- Attend all scheduled audiogram appointments
- Attend the required initial and annual training

Procedures

When employee noise exposures equal or exceed an 8-hour time weighted average (TWA) sound level of 85 dBA, feasible administrative or engineering controls shall be utilized. If such controls fail to reduce 8-hour TWA exposures to less than 85 dBA, personal protective equipment shall be provided and used to reduce the exposure
levels. Protective equipment shall also be used to lower exposures to less than 85 dBA TWA until feasible administrative or engineering controls are implemented.

A hearing conservation program shall be implemented whenever employee noise exposures equal or exceed an 8-hour TWA sound level of 85 dBA.

Monitoring
When information indicates that any employee’s exposure may equal or exceed an 8-hour TMA of 85 dBA, a monitoring program shall be implemented to identify employees for inclusion in the hearing conservation program and to enable the proper selection of hearing protectors.

Where circumstances as high worker mobility, significant variations in sound level, or a significant component of impulse noise make area monitoring generally inappropriate, representative personal sampling shall be used to comply with the monitoring requirements of this paragraph.

Monitoring shall be repeated whenever a change in production, process equipment, or controls increase noise exposures.

Employee Notification
Each employee, whose noise exposure is monitored, shall be notified of the results of the monitoring.

Audiometric Testing Program
All employees whose exposures are equal to or exceed an 8-hour TWA of 85 dBA shall be included in an audiometric examination program. A baseline audiogram shall be performed within 6 months of an employee’s first exposure at or above 85 dBA TWA. Annual audiometric testing shall be performed for each employee exposed at or above an 8-hour TWA of 85 dBA.
The audiometric test data shall be evaluated in accordance with 29 CFR 1910.95.

Hearing Protectors
Hearing protectors shall be provided to all employees who are exposed to an 8-hour TWA of 85 dBA. Employees should be required to use hearing protectors in areas where noise levels exceed 85 dBA (8-hour TWA). Hearing protectors shall be worn as required by section e.1.
Hearing protectors shall be worn by any employee who is exposed to an 8-hour TWA of 85 dBA or greater, and who:
- Has not yet had a baseline audiogram established or has experienced a standard threshold shift.
- Employees shall be given the opportunity to select their hearing protectors from a variety of suitable hearing protectors.

Hearing Protectors Attenuation
Hearing protection must be worn by all employees who are exposed to noise above 85 dBA. The hearing protector should reduce the noise level below an 8-hour TWA of 85 dBA. All hearing protectors are assigned a noise reduction rating (NRR) which can be found on the individual package or box the hearing protectors came in. This NRR is based on a dBC scale, although most sound measurements are given in a dBA scale. To account for this difference, the NRR number must be reduced by a value of 7 to determine how much protection it will afford in the work environment.
The equation is as follows: $dBA' = dBA - (NRR - 7)$
Where: $dBA'$ = effective noise level for the hearing protector
$dBA$ = measured A-weighted noise level (sound level meter readings)
$NRR$ = noise reduction rating obtained on package

If the noise of a piece of equipment is measured at 96 dBA, a hearing protector with a NRR of at least 18 would be needed:

$dBA' = dBA - (NRR - 7)$
$85 = 96 - (NRR - 7)$
NRR – 7 = 96 – 85,
NRR = 11 + 7
NRR = 18

In a case where the hearing protector does not offer enough protection, earmuffs and pugs can be worn together. In this case, determine the effective NRR of the plugs and then add 5dBA. This number is then subtracted from the 8-hour TWA to determine the actual exposure at the employee’s ear. This number should be less than 85dBA. Hearing protection must be worn properly to provide maximum protection.

Training Program
A training program must be established for all employees who are exposed to noise at or above an 8-hour TWA of 85 decibels. This training program must be repeated annually for each employee included in the hearing conservation program.

The employees must be informed of the following:
- The effects of noise on hearing
- Physical damage of cochlea
- Location of high noise areas
- Off the job hearing hazards such as air boating, chain saws, gun fire, etc.
- Purpose of hearing protection devices and how they work
- Instructions on selection, fitting, use and care of hearing protectors
- The types and styles of hearing protection devices available and attenuation of the various types
- Where to obtain hearing protectors
- The purpose of audiometric testing and an explanation of test procedures
Definitions

Audiogram – A chart, graph, or table that results from an audiometric test. An audiogram shows an individual’s hearing threshold level as a function of frequency (hertz).

Baseline Audiogram – Reference audiogram against which future audiograms are compared.

Decibel (dB) – Unit of measurement of sound level.

dBA (decibels on an A-weighted level) – A measurement of noise intensity obtained using a sound-measuring instrument commonly used to define degrees of auditory risk. The A-weighted is a measurement that closely parallels the auditory characteristics of normal human hearing.

Hearing Conservation Program – An annual audiometric testing and hearing conservation training program for employees exposed to sound levels equaling or exceeding the action level.

Standard Threshold Shift (STS) – A change in hearing threshold, relative to the baseline audiogram, of an average of 10 dB or more at 2000, 3000, and 4000 Hz in either ear, taking into account any changes due to presbycusis (age-related hearing loss).

Time-Weighted Average (TWA) – Noise exposure averaged over a designated period of time (example: 8-hour TWA).

References

U.S. Department of Labor, Occupational Safety and Health Administration, 29CFR1910.95, Occupational Noise Exposure Standard


## Noise Levels for Common Equipment

The following table can be used to determine if employees should participate in the University of Central Oklahoma’s Hearing Conservation Program. If an employee’s use of equipment exceeds the allowable time more than two times per month, that employee needs to be included in the Hearing Conservation Program. If an employee uses a piece of equipment that exceeds 85 decibels, regardless of duration, hearing protectors need to be used. The Noise Reduction Rating (NRR) needed for each piece of equipment is given. For equipment not listed, please contact EH&S at 974-2216 for an evaluation.

<table>
<thead>
<tr>
<th>Noise Source</th>
<th>Sound Level</th>
<th>NRR Needed</th>
<th>Time Allowed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Band Saw</td>
<td>104 dBA</td>
<td>26</td>
<td>6 minutes</td>
</tr>
<tr>
<td>Blower</td>
<td>99 dBA</td>
<td>21</td>
<td>19 minutes</td>
</tr>
<tr>
<td>Chain Saw</td>
<td>110 dBA</td>
<td>32</td>
<td>1 ½ minutes</td>
</tr>
<tr>
<td>Compressed Air</td>
<td>92 dBA</td>
<td>14</td>
<td>1 hour 35 minutes</td>
</tr>
<tr>
<td>Fire Alarms</td>
<td>95 dBA</td>
<td>17</td>
<td>48 minutes</td>
</tr>
<tr>
<td>Front End Loader</td>
<td>95 dBA</td>
<td>17</td>
<td>48 minutes</td>
</tr>
<tr>
<td>Hedge Trimmer</td>
<td>103 dBA</td>
<td>25</td>
<td>7 ½ minutes</td>
</tr>
<tr>
<td>Miter Saw</td>
<td>109 dBA</td>
<td>31</td>
<td>2 minutes</td>
</tr>
<tr>
<td>Pressure Washer</td>
<td>100 dBA</td>
<td>22</td>
<td>15 minutes</td>
</tr>
<tr>
<td>Radial Arm Saw</td>
<td>103 dBA</td>
<td>25</td>
<td>7 ½ minutes</td>
</tr>
<tr>
<td>Riding Lawn Mower</td>
<td>90 dBA</td>
<td>12</td>
<td>2 hours 30 minutes</td>
</tr>
<tr>
<td>Sprayer, 1,000 gal.</td>
<td>101 dBA</td>
<td>23</td>
<td>12 minutes</td>
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<tr>
<td>Tablesaw</td>
<td>93 dBA</td>
<td>15</td>
<td>1 hour 16 minutes</td>
</tr>
<tr>
<td>Tractor</td>
<td>92 dBA</td>
<td>14</td>
<td>1 hour 35 minutes</td>
</tr>
<tr>
<td>Vacuum</td>
<td>87 dBA</td>
<td>7</td>
<td>5 hours</td>
</tr>
<tr>
<td>Weedeater</td>
<td>96 dBA</td>
<td>18</td>
<td>38 minutes</td>
</tr>
<tr>
<td>Wet/Dry Vac</td>
<td>94 dBA</td>
<td>16</td>
<td>1 hour</td>
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