University Safety Policy

Iowa State University strives to be a model for environmental, health and safety excellence in teaching, research, extension, and the management of its facilities. In pursuit of this goal, appropriate policies and procedures must be developed and followed to ensure this community operates in an environment free from recognized hazards. Faculty, staff and students are responsible for compliance with established policies and are encouraged to enculturate practices that ensure safety, protect health and minimize the institution's impact on the environment.

As an institution of higher learning, Iowa State University
- fosters an understanding of and a responsibility for the environment;
- encourages individuals to be knowledgeable about environmental, health and safety issues that affect their discipline;
- shares examples of superior environmental health and safety performance with peer institutions, the State of Iowa and the local community.

As a responsible steward of facilities and the environment, Iowa State University
- strives to provide and maintain safe working environments that minimize the risk of injury or illness to employees, students and the public;
- continuously improves operations, with the goal of meeting or exceeding required and applicable environmental, health and safety regulations, rules, policies, or voluntary standards;
- employs innovative strategies of waste minimization and pollution prevention to reduce the use of toxic substances, promote reuse, and encourage the purchase of renewable, recyclable and recycled materials.

The intent of this statement is to promote environmental stewardship, protect health, and encourage safe work practices within the Iowa State University community. The cooperative efforts of the campus community to remain mindful of these goals will ensure that Iowa State University continues to be a great place to live, work and learn.

Dr. Steven Leath
President
University Nondiscrimination Statement
Iowa State University does not discriminate on the basis of race, color, age, religion, national
origin, sexual orientation, gender identity, sex, marital status, disability, or status as a U.S.
veteran. Inquiries can be directed to the Director of Equal Opportunity and Diversity, 3210
Beardshear Hall, (515) 294-7612.
Directory of Service and Emergency Providers

Environmental Health and Safety
2809 Daley Drive  |  294-5359
www.ehs.iastate.edu

Occupational Medicine Office
G11 TASF  |  294-2056

Thielen Student Health Center
Sheldon and Union Drive  |  294-5801

McFarland Clinic Occupational Medicine
1018 Duff Avenue  |  239-4496

Mary Greeley Medical Center (Emergency Room)
1111 Duff Avenue  |  239-2011 or 911

Department of Public Safety
Armory  |  294-4428 or 911 on campus
A. Introduction

Employee hearing protection at Iowa State University is considered an important objective in overall worker health.

In an effort to maintain effective hearing protection for employees at the university, the Hearing Conservation Program has been established. The primary objective of the Hearing Conservation Program is to eliminate employee hearing loss as a result of job-related noise exposure. This program includes the following requirements for those employees exposed to a TWA “action level” of 85 decibels A weighted (dBA):

- an ongoing program of monitoring, identification and evaluation of noise hazards
- annual hearing test (audiograms) of employees
- employee training concerning the effects of noise on hearing and proper use and care of hearing protection
- appropriate follow-up procedures for those individuals who have experienced a standard threshold shift (STS)

Employees participating in the Hearing Conservation Program will be required to wear hearing protection devices, as needed, to reduce noise exposure levels below 90 dBA TWA. Employees who have experienced an STS will have noise exposure levels attenuated below 85 dBA TWA.
Occupational noise exposure is regulated by the Occupational Safety and Health Administration (OSHA) Standard 1910.95.

Within the standard are two allowable noise exposure levels measured in decibels (dB). An action level (AL) is 85 dB and a permissible noise level is 90 dB. These noise levels are each the TWA of an employee’s exposure throughout an eight-hour work shift. Noise levels from 80 dB to 130 dB are measured in calculating a TWA. If a TWA is above 85 dB, inclusion into the Iowa State University Hearing Conservation Program is required. Hearing protection is required if the TWA noise level exceeds 90 dB. Hearing protection devices (HPDs) must attenuate or reduce an employee’s noise exposure <90 dBA TWA. Changes in a noise exposure time or noise producing equipment may require additional noise evaluation. Any employee has a right to observe noise monitoring being conducted and will be notified if they work in areas where noise is ≥85 dB TWA.

Another aspect of 1910.95 is an audiometric testing program. This program is available to all employees with noise exposure ≥85 dBA TWA, at no cost to the employee. A baseline audiogram must be taken within six months after the employee is exposed to noise levels ≥85 dBA TWA. An employee must be aware that high noise levels (≥ 85 TWA) must be avoided 14 hours prior to examination (HPDs may be used). An annual audiogram is required for all employees in the program. The annual audiogram will be compared to the employee’s baseline audiogram, to determine if an STS has occurred. Hearing testing is performed by a licensed professional or certified technician (certified by the Council of Accreditation in Occupational Hearing Conservation).

An STS is a reduction in several frequencies of the many that an ear can hear. If an STS is diagnosed, an employee will be notified within 21 days and notified within 30 days if a retest is necessary. Employees with an STS must be refitted and trained again on the use of hearing protection. If further examination is necessary, the physician must be provided pertinent information. For employees with an STS, noise attenuation with an HPD must be <85 dBA TWA.

A training program is mandatory for all employees exposed to noise ≥ 85 dBA TWA. Training shall be repeated annually and includes the effects of noise on hearing and the correct use and purpose of hearing protection (advantages, disadvantages, types, selection, fitting, use, and care). Also included in the training shall be information on the purpose of audiometric testing and an explanation of the test procedures.

Record keeping is also a requirement of the standard. Files must be kept on exposure measurements, audiometric tests and measurements of background sound pressure levels in audiometric testing rooms. This information must be made available to the employee and the Assistant Secretary of Labor (upon request). Noise exposure records must be retained for two years. Audiometric test records are retained for the duration of an affected employee’s employment.
Decision Tree for Determining Participation in the Hearing Conservation Program

Initial inquiry
- routine survey
- employee request
- changes in operations
- noise source recognized

Yes

Initial monitoring with sound level meter
Is noise > 85 dBA?

No

Follow-up monitoring with sound dosimeter
Is noise > 85 dBA?

No

Record keeping

Yes

EH&S documents problem and notifies supervisor and Occupational Medicine

Yes

Include employee in Hearing Conservation Program
C. Program Elements

The program elements of the Hearing Conservation Program include exposure monitoring, medical surveillance, employee training, and record keeping. Specific details about each program element follows.

Exposure Monitoring

Monitoring employee exposure to potential noise hazards will be conducted by an EH&S Industrial Hygienist. Employee noise exposure monitoring will be initiated:

- through routine noise hazard surveys (i.e., general surveys, inquiries, etc.)
- when a change in an activity or process occurs that potentially increases the noise hazard to a level of 85 dBA or above (i.e., supervisor initiated)
- when a potential “noise” problem is indicated on the Physician’s Examiners Report, Hazard Information Request or Hazard Inventory form

If a potential noise hazard is identified in the initial exposure monitoring using a sound level meter, a more detailed investigation may follow, using a sound dosimeter to determine whether an employee should be included in the hearing conservation program. A noise dosimeter will monitor an employee’s noise exposure for an entire shift. All employees who are exposed to an action level of 85 dBA TWA or higher will be notified of the noise hazard by EH&S and included in the Hearing Conservation Program.

Noise exposure limits, as specified by the Occupational Safety and Health Administration (OSHA), are shown in Table 1. The table shows the maximum time period allowable for the noise exposure level listed. The acceptable sound level (limit) is a TWA value. Impulsive or impact noise exposures above 140 dBA are not allowed by OSHA.
Table 1  
OSHA Noise Exposure Limits

<table>
<thead>
<tr>
<th>Time (Hours)</th>
<th>Acceptable Sound Level (dBA) (Time Weighted Average)</th>
</tr>
</thead>
<tbody>
<tr>
<td>16.00</td>
<td>85</td>
</tr>
<tr>
<td>8.00</td>
<td>90</td>
</tr>
<tr>
<td>4.00</td>
<td>95</td>
</tr>
<tr>
<td>2.00</td>
<td>100</td>
</tr>
<tr>
<td>1.00</td>
<td>105</td>
</tr>
<tr>
<td>0.50</td>
<td>110</td>
</tr>
<tr>
<td>0.25 or less</td>
<td>115</td>
</tr>
</tbody>
</table>

**Medical Surveillance**

Medical surveillance is the responsibility of the Occupational Medicine Department located in G11 Technical and Administrative Services Facility (TASF).

Specific sections of the OSHA standard (29 CFR 1910.95) are listed for easy reference.

**Audiometric testing by a certified technician**

A baseline audiogram must be provided within six months of initial employment, for all employees with noise exposures greater or equal to 85 dB TWA. Also, an annual audiogram is required.

An audiogram is evaluated to determine if an employee has an STS. An STS is the reduction in hearing at several frequencies. An employee must be notified of an STS within 21 days and must be re-tested within 30 days. A physician will then determine if a referral for a clinical audiological evaluation is necessary.

**Audiometer and audiometric booth evaluations**

Perform or secure daily, acoustic, and exhaustive calibrations as required.

**Training**

Specific issues will be addressed in the training, including the effects of noise on hearing. The purpose and an explanation of audiometric testing procedures will also be reviewed. An overview of hearing protection devices will be discussed, explaining their purpose, advantages, disadvantages, attenuation provided and instructions on selection, fitting, use, and care.

Supervisors are required to conduct employee training at their work site. That training must orient the worker to:

- noise hazard areas and operations
- the availability and location of hearing protection devices
• any warning signs or labels indicating the need for wearing hearing protection
• a satisfactory location where hearing protection devices can be cleaned, if applicable

Record Keeping

Records pertaining to the Hearing Conservation Program are categorized and are filed as follows:

**Hazard Inventory form**

A [Hazard Inventory form](#) must be completed for employees exposed to loud noise sources. An instruction page is part of the form, and explains the process and purpose of the form’s completion.

**Noise exposure records**

The records are filed and maintained by EH&S personnel.

**Audiometric test records**

The records are filed by the audiometric technician and stored at the Occupational Medicine office. The file shall include the employee’s name and job classification, date of examinations, examiner’s name, date of acoustic or exhaustive calibrations and the background sound pressure level of the audiometric testing booth.

**Employee training records**

The records are filed and maintained by the audiometric technician and stored at the Occupational Medicine office.

Copies of the OSHA Hearing Conservation Standard will be made available to employees and/or their representative(s) on the Environmental Health and Safety website.
D. Program Responsibilities

At Iowa State University a shared employee responsibility is required for ensuring workplace safety and meeting the requirements of the Hearing Conservation Program. These responsibilities are summarized below. The Occupational Medicine Department (Occ Med) works in conjunction with the Health and Safety section of Environmental Health and Safety (EH&S), to facilitate and maintain the Hearing Conservation Program.

**Employees**

Employees have responsibility for completing the Hazard Inventory Form and ensuring that they wear HPDs when required.

**Supervisors**

Supervisors are responsible for implementing the Hearing Conservation Program requirements. A supervisor must report to EH&S any potential noise hazards and ensure that employees wear their hearing protection when required. Training employees on their workplace noise hazards and providing HPDs to employees are two other areas of supervisory responsibility. Also, a supervisor must ensure that noise hazard areas or equipment requiring hearing protection have signs or are labeled.

**Environmental Health and Safety (EH&S)**

EH&S is responsible for maintaining Occupational Medicine record files for those employees in the Hearing Conservation Program. EH&S will also route and maintain Hazard Inventory and Hazard Information Request forms, Physician’s Reports and noise monitoring memos. Conducting exposure monitoring, notifying an employee’s supervisor of noise hazards and maintaining noise exposure records are also the responsibility of EH&S.

**Occupational Medicine Department (Occ Med)**

The Occ Med Department is responsible for hearing examinations, training and hearing test record retention. Occ Med is also responsible for all aspects of audiometric testing and the medical surveillance program.
E. Hearing Protection

It is the supervisor’s responsibility to make hearing protection devices accessible to employees, ensure they are used as required, and post “Hearing Protection Required” signs in a noise hazard area or “Hearing Protection Required” labels affixed to noise hazard equipment (see examples below).

**Hearing Protection Devices**

Employees working with loud equipment or in noise hazard areas at or above 90 dBA TWA are required to wear hearing protection devices. Appropriate hearing protection must be provided to the employee free of charge. Several types of hearing protection meet acceptable protection criteria and are available at Central Stores, in the General Services Building.

**Warning Signs**

Equipment generating noise levels >90 dBA and noise hazard areas must be identified through the following sign(s) posted in a noise hazard area or posted on loud equipment.

<table>
<thead>
<tr>
<th>NOTICE</th>
<th>CAUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIGH NOISE AREA WEAR HEARING PROTECTION</td>
<td>WEAR EAR PROTECTION IN THIS AREA</td>
</tr>
<tr>
<td>NOTICE</td>
<td>DO NOT OPERATE THIS EQUIPMENT WITHOUT HEARING PROTECTION</td>
</tr>
</tbody>
</table>

Appropriate area warning signs and equipment stickers are available through EH&S. Any modification in wording must be approved by EH&S.

Examples of loud equipment:

<table>
<thead>
<tr>
<th>air chisels</th>
<th>air hammers</th>
</tr>
</thead>
<tbody>
<tr>
<td>air nozzles</td>
<td>air wrenches</td>
</tr>
<tr>
<td>compressor pumps</td>
<td>vacuum systems</td>
</tr>
<tr>
<td>electric and power saws</td>
<td>high pressure washers</td>
</tr>
<tr>
<td>power lawn mowers</td>
<td>electric drills (hammer drills)</td>
</tr>
<tr>
<td>garden tractors</td>
<td>power weed trimmers</td>
</tr>
<tr>
<td>grinding and emery wheels</td>
<td>heavy equipment</td>
</tr>
</tbody>
</table>
Date:
To:
From: Hearing Conservation Program
Subject: Notification of Hearing Retest

The results of the recent hearing test you received at Occupational Medicine indicate your hearing ability has changed from previous measurements. This hearing loss may have been caused by unusual noise exposure, current medication, common cold, or other conditions that affect hearing. Your hearing must be retested to determine whether your hearing change is persistent.

Your hearing retest has been scheduled for          . Call Occupational Medicine to confirm this appointment (294-2056).

It is important that you be in a quiet area for at least 14 hours prior to the hearing examination. If you must be in a noisy area (85 dBA*), it will be necessary for you to wear hearing protection. Your supervisor should tell you if you need to wear hearing protection at work.

* If you need to “raise your voice” in order to be heard by another person within three feet of you, the sound is probably above 85 dBA.

cc: <Supervisor>
Appendix II: Employee Notification - Hearing Loss

Date:

To:

From: Hearing Conservation Program

Subject: Notification of Hearing Loss (Standard Threshold Shift)

The results of the recent hearing screening you received at Occupational Medicine indicate your hearing ability has changed from previous measurements. Hearing loss was noted in the: Q left, Q right, Q both (appropriate response checked) ear(s). Your average hearing loss is ___ decibels (dBA) and represents what is known as a permanent Standard Threshold Shift (STS). This degree of hearing loss is categorized as: Q slight, Q moderate, Q high (appropriate response checked).

It is very important that you minimize your exposure to elevated noise levels. (If you have to raise your voice to be heard by another person within a three foot distance, that would be considered an elevated noise level.)

You are required to wear hearing protection devices when measured noise levels exceed 85 dBA. Wearing hearing protection devices such as ear plugs and/or muffs will reduce on-the-job noise levels to within acceptable limits and should minimize further loss of your hearing ability. Hearing protection devices are available from your supervisor and Central Stores.

Please contact the Occupational Medicine Office (294-2056) or the Department of Environmental Health and Safety (294-5359) if you have any questions related to the hearing conservation program.

cc: <Supervisor>
Environmental Health and Safety
ISU Workers’ Compensation
Appendix III: Employee Training Information

Employee Training Information
Hearing Conservation Program

A. Reasons for wearing a hearing protection device (HPD)
   1. Compliance with standards – various locations and job assignments have been designated as “noise hazard” areas.
   2. Noise exposure in the work area may damage hearing over a given time.
   3. People with a known hearing loss may accentuate the loss rate if hearing protection is not worn.
   4. Many employees notice a reduction of anxiety and fatigue at the end of the work day.

B. Insure earplugs and/or muffs fit properly
   1. Different types are available.
   2. Comfort and effectiveness are important (but if the ear plugs or muffs are not effective, comfort means nothing).
   3. Your voice will sound “muffled” or “hollow” (similar to how voice sounds when talking into a hollow tube).
   4. Insertion technique
      a. Allow time for foam plugs to expand after insertion. See instructions on package.
      b. The muff cushion should fit comfortably (make sure it is always flexible and forms a good seal around the ear).

C. Proper cleaning and care of the hearing protection device (HPD).
   1. Expandable foam: dispose of when dirty.
   2. Preformed: wash with warm water and mild soap.
   3. Muffs: clean cushions with damp cloth rinsed in mild soapy water.
   4. Do not tamper with plugs or muffs – drilling or poking holes in them destroys their effectiveness. Remember, it is your hearing that will suffer.

D. Who to contact when you have problems or need replacements.
   1. Immediate supervisor.
   2. Central Stores (replacement hearing protection devices).
   3. Occupational Medicine (hearing problems or discomfort/persistent ear pain, drainage, dizziness, or ringing in the ears). Environmental Health and Safety (changes in procedure, equipment or other noise related problems). The designated person coordinating the Hearing Conservation Program is an EH&S Industrial Hygienist.

E. Failure to wear HPDs as required.
   1. Disciplinary action will be taken as required (flagrant and purposeful violation may lead to termination).
Employee Training Handout
Hearing Conservation Program

The following points of review are included in employee training for the Iowa State University Hearing Conservation Program. Keep this form stored where you can review it, if you have questions.

A. The effects of noise on hearing

Hearing can be damaged by loud noise. Noise can destroy tiny “hair cells” inside your inner ear, that cannot be replaced. The noise does not have to be a constant sound to damage hearing. Short loud bursts are damaging too. Your supervisor should tell you which work areas may cause hearing damage. If not, ask. You can protect your hearing by wearing ear plugs or muffs in noisy areas.

B. Hearing Protection Devices (HPD)

1. Advantages and disadvantages of the different types

   Ear muffs are simple to wear and are fairly comfortable. They are easy to clean. However, eyeglass bars, hair and other obstructions reduce protection provided by breaking the seal between head and muff.

   Ear plugs also provide good protection. However, they must be inserted correctly. For some, slight wearing discomfort may be expected until the person becomes accustomed to the fit.

2. Hearing protection provided by different types

   HPD attenuation or the ability to reduce noise from entering the ear is defined as a noise reduction rating (NRR). The higher the NRR, the better the HPD. Ear plugs and ear muffs are available at Central Stores and have different NRRs, (depending on the brand). Check with your supervisor or Environmental Health and Safety (294-5359) if you have any questions about the appropriate HPD to wear in your workplace.

3. Selection and fitting of hearing protection devices

   HPDs are available through your supervisor or at Central Stores. Follow the manufacturer’s specific instructions to ensure a proper fit. If you experience difficulty in fitting or wearing an HPD, contact Occupational Medicine at 294-2056.

   General Instructions:

   MUFFS
   Ear muffs should be placed over the ear so a good seal is formed between the head and the muff cushion.
PLUGS
To insert ear plugs, reach over the head with your opposite hand and pull the ear up and outward to open the ear canal. Holding the plug between thumb and forefinger of the hand, insert the plug into the ear with finger pressure and a slight turning motion until a seal is made. (Expandable “foam” plugs will need to be “rolled” prior to insertion into the ear canal and held in place for about 30 seconds while the foam expands).

4. Proper use and care of HPDs

Clean your hands prior to inserting plugs into the ear canal. Reusable plugs should be washed after each use. Mildly warm, soapy water will do. Rinse with clean water. Disposable plugs must be discarded if they become dirty. Do not tamper with the design of a plug or muff.

Store plugs and muffs in the original container or a clean plastic bag. Contact Occupational Medicine (294-2056) if you experience continued difficulty in HPD use and/or care.

C. Audiometric testing

1. Purpose of hearing test

The test is conducted to determine if your ability to hear has changed since your last examination. In other words, it’s a way to ensure adequate steps are being taken to protect your hearing. Report any hearing related problems to Occupational Medicine.

2. Explanation of testing procedures

During the test, the Occupational Medicine nurse uses an “audiometer” to produce special frequencies of sound. The sound that you hear in the earphones will vary in loudness and “pitch.” The machine records when an employee indicates that they “hear” the sound. A record (audiogram) is made of the lowest level (threshold) of hearing. A comparison of this record is made with an average person’s hearing. All test records for an employee are kept and compared to see if a change in hearing has occurred from year to year. You will be notified if any significant changes occur in your hearing ability.