Section C.4  
University of South Carolina Safety Program Guide  
NOISE AND HEARING CONSERVATION

Introduction

Noise is defined as unwanted sound. Individuals who work in areas where high noise levels (more than 85 decibels averaged over eight hours) exist should be enrolled in a Hearing Conservation Program. The purpose of the program is to prevent noise-induced hearing loss caused by exposure to loud and prolonged noise.

The federal Occupational Safety and Health Administration (OSHA) permissible exposure limit for noise is a time-weighted average (sound levels averaged over an 8 hour day) of 90 dB(A). A healthy person exposed below this level, day after day, is unlikely to experience noise-induced hearing loss. No individual may be exposed above 115 dB at any time.

OSHA currently regulates occupational noise exposure under 29 CFR 1910.95.

Scope and Application

- If employees in your department experience noise exposures that exceed an eight hour time weighted average of 85 dB(A), those employees must be enrolled in a Hearing Conservation Program. All areas and/or equipment should be labeled accordingly. Your department should also develop and maintain a Written Hearing Conservation Program. A model written program is available from EHS, or you may download one in MS Word 6.0 format here.
- If there are locations in your department defined as high noise areas, but no employees exceed the eight hour TWA, locations should be labeled as such and hearing protection is recommended while working in area.
- If people in your department use equipment or machines which are capable of exposing a worker to 85 dB(A), but no employees operated equipment long enough to exceed the eight hour TWA, equipment should be labeled. Hearing protection is recommended while using this equipment.

Noise levels below 85 dB(A) (averaged over 8 hours) are considered nuisance noise. While nuisance noise does not generally cause injury directly, in some instances it may mask sounds indicative of other developing hazards and may be a source of annoyance. While EHS may take measurements or provide other consultative services in instances of nuisance noise, it is not the purpose of the Hearing Conservation Program to deal with such situations.

Program Description

Regulatory Requirements
If it has been determined that employee exposures in your department may exceed 85 dB(A), averaged over eight hours, those employees must:

- Receive annual Hearing Conservation Training, conducted by EHS. This training covers: (1) effects of noise on hearing (2) purpose of hearing protection (3) types of hearing protection (4) selection, use, fitting and care of hearing protectors (5) purpose and procedures for audiometric testing. The EHS Industrial Hygienist conducts this training.
- Receive an audiogram (hearing test) within six months of beginning work. The audiogram must be repeated annually thereafter and compared to the baseline to determine if a standard threshold shift (STS) has occurred.

Noise Monitoring

Monitoring surveys of high noise areas and jobs are conducted on a periodic basis by EHS. For those areas in which a variation in sound level may be expected to occur on a seasonal basis (such as the Energy Facilities), some minor adjustments in scheduling may be necessary to ensure that a peak load condition exists during the survey. In the event of process changes, facility renovations, equipment additions, or upon request, additional noise surveys may be necessary. Contact EHS if any of these changes occur.

Results of noise monitoring are forwarded to the person monitored and his or her supervisor in a confidential letter. Individuals may observe any noise measurements taken by EHS.

Labeling of Areas/Equipment

All areas with noise levels exceeding 85 dB(A) should be thus labeled to warn people entering of need for hearing protection:

CAUTION

HEARING PROTECTION MUST BE WORN

IN THIS AREA

Stationary sources of high noise such as table saws should have the following label affixed:

CAUTION

HEARING PROTECTION MUST BE WORN

WHEN THIS EQUIPMENT IS IN OPERATION
Where high noise sources are mobile (i.e. weed trimmers, circular saws), small stickers should be affixed that warn the user to wear hearing protection.

EHS can assist you in obtaining the proper labels, signs and stickers for your department.

**Audiometric Testing**

All individuals in the Hearing Conservation Program must be enrolled in the Audiometric Testing Program. Within six months of the first high noise exposure, these individuals must receive a hearing test to establish a baseline audiogram. The audiogram can be performed by Occupational Health personnel in the Thomson Student Center, free of charge. High noise exposure must be avoided for 14 hours prior to an exam.

Audiograms are then given at least annually and compared to the baseline audiogram to determine if a threshold shift exists. A threshold shift has occurred if the hearing threshold has changed by an average of 10 dB or more in either ear, measured at 2000, 3000, or 4000 Hz. If any changes in hearing are noted, the individual is notified by Thomson Health Center.

Persons enrolled in the Audiometric Testing Program must have a termination audiogram upon leaving the University of South Carolina.

**Hearing Protection**

Noise reduction may be accomplished through use of engineering controls such as enclosing or altering noisy equipment. Sound absorbing materials, which usually absorb 70% or more of the sound that strikes them, may be placed above or around noisy equipment or work areas.

When engineering controls are not enough to reduce exposure to acceptable levels, hearing protectors may be worn. Hearing protectors act as barriers to reduce sound entering the ear. Use of hearing protection is mandatory for anyone exposed at or above a TWA of 90 dB(A), and are recommended for those exposed at or above a TWA of 85 dB(A). Those who have not yet received a baseline audiogram and those experiencing a threshold shift are required to wear hearing protection when exposures exceed 85 dB(A).

There are many types of hearing protectors available, including disposable or reusable plugs, headband plugs, and muffs. Reusable hearing protectors should be cleaned often and replaced when the plugs or muff cushions become hardened or discolored. It is important that the plugs are seated properly in the ear, that the muffs form an adequate seal around the ear and that the headband is not bent. All of these precautions will improve the noise attenuation (reduction) achieved by the hearing protection.

A Noise Reduction Rating (NRR), usually stamped on the hearing protector or its packaging, indicates how much noise the particular hearing protector attenuates, usually
between 20-29 dB. EHS will evaluate what type of hearing protector offers adequate attenuation for the work area.

Training

All personnel exposed at or above a time-weighted average of 85 dB must receive Hearing Conservation Training annually. This training is provided by EHS via stand-up presentation and/or videotape. Also, EHS has developed a text-based internet training module for Hearing Conservation training. This training can be accessed over the internet at http://ehs.sc.edu/modules/Noise/noise_intro.htm

Access to Information and Recordkeeping

Persons enrolled in the Hearing Conservation Program should be given a copy of the OSHA Occupational Noise standard. An additional copy is posted should be posted in high noise workplaces.

Exposure monitoring results are filed at EHS. Audiometric testing reports are filed at Thomson Student Health Center. Either of these records may be accessed upon request and may be transferred to a new employer when an individual leaves the University.

Roles and Responsibilities

Department

- Notify EHS when new noise sources are introduced.
- Minimize noise through use of engineering controls.
- Offer a variety of hearing protectors
- Work with Industrial Hygienist and Occupational Health Nurse to ensure workers receive training and audiograms.
- Develop and establish a written Departmental Hearing Conservation Program.

Supervisor

- Post signs or stickers on high noise areas.
- Ensure workers wear hearing protection.

EHS

- Conduct monitoring and offer training.
- Advise on noise reduction through administrative or engineering controls.
- Recommend appropriate hearing protectors.
- Audit departmental program periodically.

Individual
- Attend training and receive audiometric testing.
- Wear appropriate hearing protection when needed at work and minimize noise exposure outside of work.

For More Information

- Contact the EHS Industrial Hygienist at 777-5269.
- A Departmental Written Hearing Conservation Program is available from EHS. It can be downloaded here in Microsoft Word 6.0 format.
- A Noise and Hearing Conservation Self-Audit Checklist is available through EHS. The checklist and key, both in Microsoft Word 6.0, may be downloaded and either printed as is or customized to meet the needs of the particular user. Instructions on how to download, assemble and use the checklist and key are available by clicking here.
- A copy of the OSHA Occupational Noise Exposure Standard (29 CFR 1910.95) is available through EHS or the OSHA web page.