



UNIVERSITY OF WYOMING

HEARING CONSERVATION PROGRAM

I. INTRODUCTION

The University of Wyoming (UW) is committed to protecting the health and safety of students, employees, faculty, and volunteers at the various UW facilities. Therefore, it is UW's policy to implement a hearing conservation program compliant with the Wyoming Department of Workforce Services – OSHA General Industry 1910, Chapter 7, Occupational Health and Environmental Controls (G) to ensure UW personnel are not incurring hearing loss due to occupational noise exposure.

II. PURPOSE

The purpose of this program is to help protect University of Wyoming (UW) personnel from hearing loss due to occupational noise exposure. While UW attempts to control noise exposures, some operations and tasks may expose students, personnel, faculty, or volunteers to higher noise levels.

III. SCOPE

This Hearing Conservation Program applies to UW personnel employed at locations owned or operated by UW. Additionally, this program applies to UW personnel who are exposed to an eight-hour time weighted average of 85 dBA.

IV. DEFINITIONS

COMMON ACRONYMS/TERMS	DEFINITIONS
Action Level (AL)	An 8-hour time-weighted average of 85 decibels measured on the A-scale, slow response, or equivalently, a dose of fifty percent.
Audiogram	A chart, graph, or table resulting from an audiometric test showing an individual's hearing threshold levels as a function of frequency.
Audiologist	A professional, specializing in the study and rehabilitation of hearing, who is certified by the American Speech-Language-Hearing Association or licensed by a state board of examiners.
Baseline Audiogram	The audiogram against which future audiograms are compared.
Decibel (dB)	Unit of measurement of sound level.
Decibels, A-Weighted (dBA)	The A-weighted decibel level is the scale used for most occupational noise measurements. The A weighting approximates the range of human hearing by reducing the effects of lower and higher frequency noises with respect to the medium frequencies.
Decibels, C-Weighted (dBC)	The C weighted scale filters include both high and low frequency noise and is used for impact noise and in the selection of hearing protection.
Frequency	A sound's pitch measured in Hertz (Hz), High pitches are high frequency sounds.



UNIVERSITY OF WYOMING

HEARING CONSERVATION PROGRAM

Hearing Protection Device	Personal protective equipment that is designed to be worn in the ear canal or over the ear to reduce the sound pressure level reaching the ear. Examples include ear muffs or plugs.
Hertz (Hz)	Unit of measurement of frequency, numerically equal to cycles per second.
Impulse/Impact Noise	Noise that is a sharp burst of sound, generally less than one-half second in duration, that does not repeat itself more than once per second.
Noise	Unwanted sound.
Noise Dosimeter	An instrument that integrates a function of sound pressure over a period of time in such a manner that it directly indicates a noise dose.
Noise Reduction Rating (NRR)	The Noise Reduction Rating (NRR) of hearing protection devices indicates the theoretical amount of reduction of noise levels that can be achieved if the hearing protection device is worn correctly. This rating is shown on the hearing protection device packaging.
Permissible Exposure Limit (PEL)	90 dBA, 8-hour TWA
Representative Exposure	Measurements of an employee's noise dose or 8-hour time-weighted average sound level that the employers deem to be representative of the exposures of other employees in the workplace.
Sound	A vibration or pressure oscillation that is detectable by the ear drum.
Sound Level Meter	An instrument for the measurement of sound level.
Speech Interference Level	The frequencies most associated with speech, which are the 500-4000 Hz (frequency) range. Vowels (a, e, i, o, u) are low frequency sounds (below 2000 Hz) and consonants (b, c, d, etc.) are high frequency sounds. The low frequencies are the least affected by noise. If the high frequencies are affected, t's and p's or s's and f's may be easily confused.
Standard Threshold Shift (STS)	An average shift from the baseline measurement of 10dB or more at 2000, 3000, and 4000 Hz. These frequencies are the most important frequencies for communication and the most sensitive to damage by occupational noise exposure.
Time-Weighted Average Sound Level (8-hr TWA)	That sound level, which if constant over an 8-hour exposure, would result in the same noise dose measured in an environment where noise level varies.
Pain Threshold	A noise level of 120 dB.
UW	University of Wyoming
Wyoming OSHA	Wyoming Department of Workforce Services Occupational Safety and Health Administration Program.



UNIVERSITY OF WYOMING

HEARING CONSERVATION PROGRAM

V. IMPLEMENTATION

A. Responsibilities

1. Department Heads, Managers, Supervisors, and Principal Investigators
 - a. Provide work environments that minimize noise exposure to the greatest extent reasonable.
 - b. Provide hearing protective devices for personnel where needed and ensure their personnel utilize the appropriate hearing protection as applicable.
 - c. Request assistance from the UW Safety Office to help evaluate noisy operations.
 - d. Ensure personnel exposed to noise exposures over the action level (AL) are enrolled in the UW Hearing Conservation Program.
 - e. Provide access to hearing protection equipment and ensure personnel use the hearing protection.
 - f. Provide signage that identifies the noise hazard environment and provide hearing protection near the entrance.
 - g. Notifying personnel of the locations where hearing protection is required.
2. UW Personnel, Students, Visitors, and Guests
 - a. Wear approved hearing protective devices in posted noise hazard areas.
 - b. Maintain hearing protection in sanitary condition and proper working order.
 - c. Report noise hazards and hearing protection problems to the appropriate supervisor.
3. UW Safety Office
 - a. Monitor sound pressure levels and provide monitoring results to affected personnel and supervisors.
 - b. Recommend engineering and administrative control measures.
 - c. Assist with the selection of proper hearing protective devices and provide the applicable instructions.
 - d. Provide audiogram results to the affected employee.
4. Audiometric Testing Contractor/Consultant
 - a. Provide baseline, annual, and post-employment audiometric exams.



UNIVERSITY OF WYOMING

HEARING CONSERVATION PROGRAM

- b. Communicate identified standard threshold shifts to the employee, the employee's supervisor, and the UW Safety Office.
- c. Provide information and training on noise hazards and hearing conservation.
- d. Recommend any work restrictions necessary to prevent additional hearing loss.

B. Departments/Locations with Risk for Elevated Noise Levels

UW Operations: Plumbing, Mechanical Trades, Carpentry, Equipment Services, Waste Services, Grounds Services, Technical Services, and Central Energy Plant (CEP).

Agriculture Research Centers: Research and Extension locations (Powell, Lingle, Sheridan and Laramie).

Athletics: Athletics Facilities Group.

Residential Life and Dining Services (RLDS): Facilities/Grounds Group.

Engineering: Labs and Shops.

Mechanical Engineering: Labs and Wind Tunnel.

Arts and Sciences: Machine Shop.

UW Police: Law Enforcement Officers and Security Officers.

UW Safety Office: Office personnel.

C. Noise Exposure Assessments

Noise exposure is described either in terms of an 8-hour time-weighted average sound level or a noise dose (in percent at the 8-hour allowable exposure).

1. The UW Safety Office, or a designated consultant, will conduct noise exposure monitoring to help determine the personnel to be included in the UW Hearing Conservation Program and to help determine the proper hearing protection.
2. When personnel occupational noise exposure is expected to equal or exceed an 8-hour time-weighted average of 85 dBA, or equivalently, a dose of 50 percent or greater, those personnel will be included in the UW Hearing Conservation Program. Additionally, these individuals will be offered audiometric testing, will



UNIVERSITY OF WYOMING

HEARING CONSERVATION PROGRAM

have hearing protection made available to them, and will be provided training regarding fitting, use, and care of these devices.

3. UW personnel, or their Supervisors, should contact the UW Safety Office to request noise monitoring if they suspect excessive or higher than normal noise exposures. Additionally, if previously monitored noise levels have changed due to modifications to equipment or processes, contact the UW Safety Office to request noise monitoring.
4. Contact the UW Safety Office for additional evaluation if the current hearing protection is suspected of being inadequate.

D. Controls

Personnel occupational noise exposure is controlled as much as technologically and economically feasible by applying engineering principles intended to reduce noise levels. These engineering principles may include:

- Quieter machinery
- Quieter processes
- Reduction of noise transmission
- Isolation of equipment or equipment operator
- Proper maintenance of machinery and equipment
- Purchasing procedures that specify criteria for maximum noise levels

Administrative controls may be applied, when feasible. These include, but are not limited to:

- Personnel rotation to limit exposure times
- Flexible machinery operation schedules to limit exposures
- Work task arrangements that reduce the time an employee must spend in a noise environment.

Where engineering and administrative controls are not feasible or during the evaluation and implementation of such controls, hearing protection is used to protect employees from excessive noise exposure.

E. Signage

Signage indicating hearing protection requirements must be posted at work area entrances or at specific machines where the permissible exposure limit (90 dBA) is exceeded. Hearing protection will be provided to personnel working in these areas or with these machines.



UNIVERSITY OF WYOMING

HEARING CONSERVATION PROGRAM

F. Audiometric Testing

Personnel enrolled in the UW Hearing Conservation Program must complete baseline, annual, and post-employment audiometric tests. The employee's Supervisor is responsible for scheduling audiometric exams. Audiometric exams can be scheduled with the UW Communication Disorders Department. Costs associated with the audiometric testing is the responsibility of the employee's department. The UW Communication Disorders Department will maintain audiometric testing records and will provide documentation to the UW Safety Office indicating whether a standard threshold shift has occurred. To ensure accuracy, the audiometric exam should be preceded by at least 14 hours without exposure to workplace noise.

1. Baseline Audiograms

Personnel enrolled in the UW Hearing Conservation Program must complete a baseline audiogram to determine the employee's "hearing threshold" and against which to compare subsequent audiograms. It is desirable to obtain the baseline audiogram as soon as possible (within 60 days) from the employee's first exposure to high noise levels. To ensure accuracy, the audiometric exam should be preceded by at least 14 hours without exposure to workplace noise.

2. Annual Audiogram

A new audiogram must be obtained at least annually for personnel enrolled in the UW Hearing Conservation Program. To ensure accuracy, the audiometric exam should be preceded by at least 14 hours without exposure to workplace noise.

3. Post-Employment Audiograms

A post-employment audiogram must be completed when an employee leaves the job or workplace where they are no longer routinely exposed to noise levels at or above an 8-hour time-weighted average of 85 dBA. The employee's Supervisor is responsible to ensure the post-employment audiogram is completed.

4. Audiogram Evaluation

An audiologist will evaluate audiometric test results and schedule any necessary follow-up evaluations. Additionally, the audiologist will notify the UW Safety Office if a standard threshold shift has occurred.



UNIVERSITY OF WYOMING

HEARING CONSERVATION PROGRAM

G. Hearing Protection

UW departments must provide hearing protection (usually earplugs or earmuffs) to personnel exposed at or above the 85 dBA action level. Hearing protection will be provided at no cost to the employee and must be replaced when broken, defective, or unsanitary.

At UW, hearing protection is required:

For personnel exposed at or above the 85 dBA action level.
In areas posted or otherwise designated as requiring hearing protection.

A hearing protection device's ability to attenuate noise is identified as its Noise Reduction Rating (NRR). The greater the NRR, the greater noise attenuation (provided the earplug is properly inserted into the ear canal). The UW Safety Office can help determine the appropriate hearing protection for specific situations and can provide training regarding the proper use of hearing protection.

H. Training

Personnel will receive information regarding the UW Hearing Conservation Program through online training, classroom training, and/or job-specific training and instruction. Training records will be maintained by the UW Safety Office.

Training will include:

Basic concepts and terms relating to sound pressure level.
Anatomy of the ear.
Types of hearing loss.
Types of hearing protection and proper usage.
Activities related to non-occupational hearing loss.
Elements of UW's Hearing Conservation Program.

Personnel enrolled in the UW Hearing Conservation Program are required to attend annual training either in class or online.



UNIVERSITY OF WYOMING

HEARING CONSERVATION PROGRAM

I. Recordkeeping

Noise exposure measurement records and audiometric exam results are maintained by the UW Safety Office.

Audiometric test results are also maintained by the employee's department and should be retained for the duration of the person's employment at UW.

VI. EVALUATION

This program will be evaluated periodically to ensure the program remains effective.

VII. REFERENCES

Wyoming Department of Workforce Services, OSHA – General Industry 1910, Chapter 7: Occupational Health and Environmental Control (G).

29 CFR 1910.95