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# General Requirements

Augustana College strives to protect employees from reasonably forseeable hazards in the workplace. While OSHA's Personal Protective Equipment regulation, found at 29 CFR 1910.132-.140(Subpart I), does not explicitly require a written Personal Protective Equipment (PPE) Program, Augustana College has developed a written PPE program to document and specify all information relative to our PPE needs. This plan includes requirements for respirators and hearing conservation, which are required under OSHA standards.

NOTE: PPE in our laboratories is addressed separately in the Chemical Hygiene plan. The Fall Protection program is also provided under separate cover.

Department chairs, managers and supervisors will assist in identifying hazards that require PPE, evaluating PPE for selection, training employees and monitoring the use of PPE in their departments. Human Resources will coordinate the overall effort to help ensure compliance with OSHA standards. The written program will be kept in the Office of Human Resources and will be updated and reviewed as necessary.

The purpose of protective clothing and equipment (PPE) is to shield or isolate individuals from chemical, physical, biological, or other hazards that may be present. The basic goals of this program are to:

* Identify workplace hazards necessitating PPE
* Evaluate the equipment needed to protect against the hazards
* Protect the wearer from incorrect use and/or malfunction of PPE
* Provide documentation of the hazard assessment, protective measures in place, and PPE in use at this company.

PPE devices are not to be relied on as the only means of protecting our workers, but will be used in conjunction with guards, engineering controls, and sound business practices. If possible, hazards will be abated first through engineering controls. PPE will be provided to protect against hazards that cannot reasonably be abated otherwise.

## Hazard Assessment

In order to assess the need for PPE, the departmental manager / safety officer, with other appropriate employees designated by the supervisors, identifies job classifications where exposures occur or could occur based on their knowledge of the tasks. Human Resources evaluates these conclusions in light of additional information such as injury/illness records and monitoring data as applicable.

These basic hazard categories have been recognized at Augustana College and are associated with the following departments:

|  |  |  |
| --- | --- | --- |
| Hazard Type | Examples of Sources | Affected Departments / Groups |
| Impact, compression (struck by) | Powered industrial trucks, moving vehicles, moving objects (packages, food, furniture, trash bags), equipment in motion (ladders, carts, mixers, hand tools, power tools) | Central Receiving, Dining Services, Garage, Structural, Mechanical, Custodial, Special Services |
| Temperature extremes | Furnaces, boilers, welding, torch cutting, gas grills, steam pipes & cookers, deep fryers, ovens and stoves, freezers, exterior ice/snow/summer heat | Mechanical, Custodial, Dining Services, Art, Power House, Grounds |
| Excessive noise | Leaf blowers, lawn mowers, chain saws, air compressors, security / fire alarms, commercial sized blenders, large dishwashers, Air scribing tools | Grounds, Garage, Mechanical, Security, Dining Services, Geology |
| Penetration (punctures, lacerations) | Slicers, Hand tools, Scientific sharps (needles, scalpels), Art supplies (hand tools, wire, carving tools), Archeological instruments (hammers, chisels, etc.) | Dining Services, Structural, Mechanical, Chemistry, Biology, Art, Geology |
| Air contaminants | Dust from mulch, soil & leaves, dirt & mold from cleaning, powdered glazes, cleaning chemicals, paint fumes | Grounds, Custodial, Art, Custodial, Dining Services, Structural |
| Light / optical radiation | Welding, laser experiments | Mechanical, Physics |
| Chemical exposure by respiration and absorption | Dishwashers, paint, glazes, strippers, fertilizers / pesticides | Dining Services, Art Dep’t, Structural, Grounds, Custodial |
| Electric current | High and low voltage electrical | Electrical, Mechanical, Structural |

## General Selection Guidelines

Once a hazard has been identified and evaluated through hazard assessment, the general procedure for selecting protective equipment is to:

1. Confirm that the identified hazard cannot be engineered out of the task.
2. Become familiar with the potential hazards and the type of protective equipment (PPE) that are available, and what they can do.
3. Compare types of equipment to the hazards associated with the environment.
4. Select the PPE that meets selection requirements found in the OSHA regulations and ensures a level of protection commensurate with the risk.
5. Fit the user with proper, comfortable, well fitting protection and instruct employees on care and use of the PPE. It is very important that users are aware of all warning labels for and limitations of their PPE. (See the Employee Training guidelines outlined in the next section of this program for a more detailed description of training procedures.)

Once selected, it is the ongoing responsibility of the Department Chairs, and/or Department Supervisor (or their designated representative) to ensure:

1. The department complies with the required training schedule for their PPE,
2. PPE is promptly replaced if found to be damaged or defective,
3. PPE is used and maintained in sanitary and reliable conditions,
4. PPE is paid for under the departmental budget, and provided at no cost to the employee. PPE that may be used by employees at work or at home may be partially paid for by the College through the use of stipends and/or reimbursement programs, and
5. Workplace hazards are periodically re-evaluated whenever processes or equipment change to identify new hazards and evaluate new PPE that may be required. Supervisors should also re-evaluate their choice of PPE whenever the department’s incident history indicates that PPE may not be adequate for the identified hazards.

Because failure to comply with company policy concerning PPE can result in OSHA citations and fines as well as employee injury, an employee who does not comply with this program will be disciplined for noncompliance according to the standard disciplinary guidelines publish by the College through the Department of Human Resources. This disciplinary action may include verbal warnings, written warnings that are placed in the employee’s permanent file, temporary suspension without pay and ultimate termination.

## Applicability

Employees will wear **safety glasses, goggles, and/or face shields** when exposed to eye or face hazards from:

* Flying particles
* Molten metal
* Liquid chemicals, particularly those with extreme pH, or
* Potentially dangerous light or radiation

Employees will wear **hard hats** or other protective helmets when working in areas where they may be struck by falling objects, or when they are working in close proximity to electrical conductors.

Employees will wear **safety shoes** protecting the arch, toes and sole of the foot in areas where there is a danger of foot injuries due to electrical hazards, falling or rolling objects, and objects piercing the sole of the foot. **Slip resistant shoes** are required in areas with a significant hazard of slip/fall injuries due to ice, soap, wet floors or chemicals.

Employees will wear **gloves** when their hands are exposed to hazards such as:

* Skin absorption of harmful substances
* Severe cuts or lacerations, abrasions, or punctures
* Chemical burns
* Harmful temperature extremes

Employees will wear **respiratory protection** in areas where the air contains, or, based on previous air monitoring data, has historically contained harmful concentrations of contaminants. These contaminants may be present as dust, fog, mist, gas, smoke, spray, or vapor. Respirators may ONLY be used by those employees who are included in the College’s Respiratory Protection Program, and have undergone medical evaluation, fit testing and specific training. Supervisors who believe their employees may require respirators as PPE should contact the Office of Safety to have their areas evaluated and their employees included, as needed, in the Respiratory Protection Program.

Employees will wear **hearing protection**, and be included in the College’s Hearing Conservation Program, when the employee is exposed to sound at levels exceeding 85 dB, as adjusted under OSHA time weighted average schedules, and this noise cannot be controlled by engineering or administrative control methods.

## Training (CFR 1910.132)

The College provides training for each employee who is required to use personal protective equipment. Training includes:

* When PPE is necessary
* What PPE is necessary
* How to wear assigned PPE
* Limitations of PPE
* The proper care, maintenance, useful life, and disposal of assigned PPE

Employees must demonstrate an understanding of the training and the ability to use the PPE properly before they are allowed to perform work requiring the use of the equipment. Employees are prohibited from performing work without donning appropriate PPE to protect them from the hazards they will encounter in the course of that work.

If the Manager/Supervisor has reason to believe an employee does not have the understanding or skill required, the employee must be retrained. Circumstances where retraining may be required include changes in the workplace or changes in the types of PPE to be used, which would render previous training obsolete. Also, inadequacies in an affected employee's knowledge or use of the assigned PPE, which indicates that the employee has not retained the necessary understanding or skills, would require retraining.

Managers/Supervisors are responsible for ensuring that the employee has received and understands the PPE training.

## Cleaning and Maintenance

It is important that all PPE be kept clean and properly maintained by the employee to whom it is assigned. Cleaning is particularly important for eye and face protection where dirty or fogged lenses could impair vision or contaminate the skin. PPE is to be inspected, cleaned, and maintained by employees at regular intervals as part of their normal job duties so that the PPE provides the requisite protection. Supervisors are responsible for ensuring compliance with cleaning responsibilities by employees. If PPE is for general use, the Department Supervisor has responsibility for cleaning and maintenance. If a piece of PPE is in need of repair or replacement it is the responsibility of the employee to bring it to the immediate attention of his or her supervisor or Human Resources. It is against work rules to use PPE that is in disrepair or unable to perform its intended function. Contaminated PPE that cannot be decontaminated will be disposed of in a manner that protects employees from exposure to hazards.

# Specific Program Requirements

## Eye and Face Protection (1910.133)

Employees will use eye protection with side shields or wrap-around lenses when there is a hazard from flying objects. Detachable side shields (i.e. clip-ons or slide-on) meeting the requirements of 1910.133 are acceptable.

Employees who wear prescription lenses while engaged in tasks that require safety glasses, goggles or shields will wear eye protection that incorporates the prescription in its design or can be worn safely and effectively over the prescription lenses. Safety glasses that incorporate a prescription will be obtained at the employee’s expense unless special approval has been obtained from HR.

Eye and face PPE will be distinctly marked to facilitate identification of the manufacturer and ANSI compliance standards.

Employees will use equipment with filter lenses that have a shade number appropriate for the work being performed for protection from potentially dangerous light radiation. See 29 CFR 1910.133 for appropriate shade numbers for various operations. Employees working in areas with high-glare hazards (due to ice, or on metal roofs) may wear glare-reducing eyewear. Eyewear with tinted or mirrored lenses meant for high-glare conditions may not be worn indoors, since the eyewear may impair vision indoors and cause safety hazards.

Protective eye and face devices will comply with American National Standards Institute (ANSI) Standard Z87.1-1989, the "American National Standard Practice for Occupational and Educational Eye and Face Protection", which is incorporated by reference, or will be demonstrated by the employee to be equally effective.

## Head Protection (1910.135)

Protective helmets designed to reduce electrical shock hazard will be worn by employees when near exposed electrical conductors which could contact the head. Protective helmets will comply with American National Standards Institute (ANSI) Standard ANSI Z89.1-1986, the "American National Standard for Personnel Protection - Protective Headwear for Industrial Workers-Requirements," which is incorporated by reference, or will be demonstrated to be equally effective.

Protective helmets purchased before July 5, 1994 will comply with the ANSI standard "American National Standard Safety Requirements for Industrial Head Protection," ANSI Z89.1-1969, or will be demonstrated by the employer to be equally effective.

## Foot Protection (1910.136)

Employees working in the following departments are required to wear foot protection that meets ANSI standards:

* Facility Services: Central Receiving, Electrical, Grounds, Mechanical, Painting / Structural, Recycling, Special Services, and Custodial
* Dining Services

Supervisors will identify the precise specifications for the footwear, and may require, for example, steel-toe shoes, steel shanks, slip-resistant soles, insulated boots, or ice cleats as needed to protect the employee. All protective footwear will comply as relevant with American National Standards Institute (ANSI) Standard ANSI Z41-1991, the "American National Standard for Personal Protection-Protective Footwear," or will be demonstrated to be equally effective.

Augustana College Facilities Services Department will provide up to $120 per designated full-time employee toward the purchase of ANSI approved boots. Part-time employees and student employees are required to wear the same foot protection as full-time employees in their department. Part-time employees and student employees will be allowed $90 per year toward purchase of specified shoes. These employees may purchase their footwear at pre-arranged, selected sites. The employee may choose more expensive styles, but any additional expense will be paid by the employee. New employees will be expected to comply with this requirement within three (3) days of employment, and may not participate in hazardous activities until the proper footwear is obtained. Safety shoes will be replaced by the College up to $120 when worn beyond repair as the result of normal usage in the workplace less than one-year from date of purchase. Shoes which are damaged or worn due to negligence on the part of the employee or activities not associated with the workplace will be replaced at the expense of the employee.

Exceptions to this policy, including going barefoot or wearing tennis shoes, is not allowed in any work environment unless deemed appropriate by the supervisor and the Office of Safety. Structural employees, for example, working on steep roofs may wear athletic shoes with slip resistant soles to reduce the possibility of slip/fall hazards.

In particular, appropriate safety footwear is required for student, temporary, part-time and summer workers. These employees may be sent off the job site, without pay, if they are informed of footwear requirements, arrive in inappropriate attire, and need to leave to don proper footwear. Repeatedly arriving at work without proper attire may be grounds for disciplinary action in line with existing College policy.

## Hand Protection (1910.138)

Augustana department chairs, supervisors, and safety officers will base the selection of the appropriate hand protection on an evaluation of the performance characteristics of the hand protection relative to the task(s) to be performed, the conditions present on the job, the duration of use and identified hazards.

See 1910.132 Hazard assessment and equipment selection.

## Respiratory Protection Program

### General Usage Requirements

Respirators will only be issued when the need for protection is validated by Human Resources, the employee has met the criteria set forth by the Occupational Safety and Health Administration (OSHA), and all other means of correcting the cause(s) for the exposure have failed to eliminate or reduce the exposure.

Individual departments will establish and maintain their own written change schedules. These schedules will be sent to Human Resources for approval.

Employees who use respirators as part of their work duties may not wear a full-face beard since facial hair may prevent a good seal. Employees may wear a goatee or mustache if this does not impair the fit of their respirator.

Individuals who elect to use a respirator, even though their exposure does not meet the criteria set forth by OSHA, may do so at their own expense. They must comply with all portions of this policy and provide the Office of Safety with documentation of their medical evaluation, respirator selection, seal testing, and training.

Terms

|  |  |
| --- | --- |
| Air-Line | Does not carry its own air supply, but obtains its air from a cylinder or compressor. The wearer is connected via a hose to the supply.  |
| Air Purifying Respirator | Purifies air by passing it through a medium such as a cartridge. This type includes half-face, full-face, and powered air |
| Filtering Facepieces (Disposable paper Respirators with Dust Masks) | Negative pressure particulate respirator with a filter that is an integral part of the facepiece or with the entire facepiece composed of the filter medium. |
| Self-Contained | Carries its own supply of air and is used in atmospheres that have high airborne contaminant levels or are immediately dangerous to life and health (IDHL.) |
| Single-Use Dust Mask | Air-purifying particulate respirators, acceptable for use in nuisance dust situations where particulate levels have been demonstrated to be well below the Permissible Exposure Limit (PEL.) |
| Supplied Air Respirator | Provides clean air for breathing from an outside source such as a compressor or cylinder.  |

### Medical Evaluation

A medical evaluation will be conducted before the employee is fit tested or required to use a respirator in the workplace. The medical evaluation must be based on the mandatory medical questionnaire or an initial medical examination that obtains the same information as the OSHA medical questionnaire. Augustana College intends to use physicians at Concentra to evaluate the health and physical condition of the employee and determine whether s/he is physically able to use a respirator and perform assigned tasks while wearing the device. At a minimum, the baseline exam will include a pulmonary function test and a medical history. The physician may at his/her discretion tailor the requirements of the employee’s annual re-exams on a case-by-case basis. A chest x-ray will be performed on all new employees in the program. Employees exposed to asbestos will have an x-ray performed by a qualified out-of-state specialist who is authorized to read x-rays for asbestos. Written verification that an employee can or cannot use a respirator must be provided by the examining physician.

Augustana will provide additional medical evaluation if:

* An employee reports medical signs or symptoms that are related to his/her ability to use a respirator.
* A physician, supervisor or the respirator program coordinator informs the employer that an employee needs to be re-evaluated.
* Information from observations made during fit testing and program evaluation indicates a need for employee evaluation.
* A change occurs in workplace conditions (i.e. physical work effort, protective clothing, and temperature) that may result in a substantial increase in the physiological burden placed on an employee.

### Respirator Selection

The departmental supervisor or safety officer will select respirators and cartridges appropriate to the specific work environment and expected air contaminants. Augustana College adopts the American National Standards Practice for Respiratory Protection Z88.2-1969 as guidance in this area. The type of respirator to be worn by the individual will be identified as a result of quantifiable testing conducted by an industrial hygienist or other qualified person.

### Storage, Maintenance and Inspections

Respirators will be stored in re-sealable plastic bags. A sanitary location will be selected by the employee’s department to store and protect the respirator from damage. Suitable storage areas will prevent damage to the respirator from dust, sunlight, heat, extreme cold, excessive moisture, and damaging chemicals.

Employees will maintain their respirators according to manufacturer’s recommendations. At a minimum, respirators will be cleaned and disinfected after each use.

While the respirator is broken down for cleaning, the user will inspect the unit for worn, deteriorated and malfunctioning parts. If the respirator is worn, damaged or malfunctioning the unit will be repaired or replaced immediately by the employee’s department. A record of maintenance for each respirator will be maintained by each wearer. As a precaution, employees will also inspect their respirators immediately before use, checking seals, cartridge compatibility with the expected hazards, straps, etc. to avoid respirator failures during use.

Augustana College does not currently authorize self-contained breathing apparatus. If a supervisors suspects this equipment is needed, s/he will inform Human Resources and they will develop a suitable procedure for the equipment.

### Training

Respirator training is required before respirators are assigned and worn. It will be provided by an industrial hygienist or other qualified individual at the time an employee is fit tested for respirator usage. Refresher training will be provided annually.

Training will include:

* A discussion of the respiratory protection standard, including the employer’s and employee’s responsibilities.
* Information on how to put on a respirator properly and position it on the face, how to set up strap tension, and how to assess a “comfortable” respirator.
* How to properly clean, disinfect, maintain, and store the respirator.
* How to inspect and evaluate the condition of the respirator and its working parts.

Employees are required to use the respiratory protection provided in accordance with instructions and training received.

### Fit Testing/User Seal Checks

Before an employee may be required to use any respirator with a negative or positive tight-fitting face piece, the employee must be fit tested with the same make, model, style, and size of respirator that will be used. Fit testing will re-occur annually, and whenever a different respirator face piece (size, style model or make) is used. Additional seal tests must be conducted whenever conditions that could affect respirator fit develop. Fit testing will be conducted by an industrial hygienist or other qualified personnel.

Respirators may not be worn when conditions prevent a good face seal. Examples of such conditions are excessive facial hair, a skull cap that projects under the face pieces, or glasses. Augustana will make all reasonable efforts to locate a respirator that provides a good face seal.

Either a qualitative fit test (QLFT) or quantitative fit test (QNFT) using an OSHA-accepted QLFT or ANFT protocol must be passed. QLFT will be performed annually whenever employees will be wearing negative pressure air-purifying respirators that must achieve a fit factor of 100 or less (APF < 10). If the fit factor measured during a QNFT is equal to or greater than 100 for tight-fitting half face pieces or equal to or greater than 500 (APF < 50) for tight–fitting full face pieces, the QNFT has been passed with that respirator. The OSHA-accepted QLFT and QNFT protocols and procedures are contained in Appendix A of 1910.134.

The user seal check will be conducted as follows:

* Before an employee participates in this program, he/she must meet physical standards.
* The test subject will be allowed to select a respirator from different manufacturers. These respirators will come in different sizes and materials. The respirator that supplies the user with the most comfortable fit will be used during the seal test.
* Respirators will be fit with organic vapor cartridges or an equivalent product for isoamyl acetate testing and HEPA cartridges for irritant smoke testing.
* After selecting, donning, and properly adjusting a respirator, the user will wear it to the fit testing area. The area will be separated from the room used for respirator selection and will be well ventilated to prevent general room contamination.
* Before the user enters the seal test area, he/she will check for proper face piece-to-face seal by using the “positive pressure” test and “negative pressure” test.

Negative Pressure Test

The users can perform this test by themselves at each location. The test consists of blocking off the inlet of the cartridges or filter by covering them with the palm of the hand, inhaling so the face piece collapses, and holding their breath for 15 seconds. If the face piece remains collapsed, a good face piece-to-face seal has been achieved.

Positive Pressure Test

The test subject will perform this test in conjunction with the negative pressure test. The test is conducted by blocking off the exhalation valve by covering it with the palm of the hand and exhaling slowly into the face piece. If positive pressure can be produced and maintained for five seconds, a good face piece-to-face seal has been achieved.

**If the test subject fails the seal test** wearing a half-mask respirator, a full-face respirator will be provided. If the subject fails the test using a full-face respirator and all administrative and engineering controls have been exhausted, the employee may not work in that area. Employees using respirators will be subsequently seal tested annually or immediately when the test subject has any of the following:

* Weight change of 20 pounds or more
* Significant facial scarring in the area of the face piece seal
* Significant dental changes
* Reconstructive or cosmetic surgery
* Other conditions that may interfere with the face piece seal.

It is the responsibility of the employee to notify the HUMAN RESOUCES Office if any of these conditions occur.

Users who are successfully seal tested will be issued their own respirator by their department and trained in accordance with this policy by arrangement with the HUMAN RESOUCES Office.

### Filtering Face Piece Respirators (Dust Mask)

Employees may choose to wear a single-use dust mask on a voluntary basis during jobs where only nuisance dust is in the air. The supervisor and employee must determine that the dust mask will not itself create a hazard. Dust masks may not be worn if they are dirty, contaminated, or interfere with the employee's ability to work safely.

Prior to the use of a dust mask, the Office of Safety must provide each voluntary wearer with the information contained in OSHA'S Respiratory Protection Standard's Appendix D, which is included in this document. The appendix provides basic information on the proper use of respirators for employees who are voluntary users of the equipment and thus not required to undergo formal training. The information may be transmitted either in written form or verbally.

Employees who use filtering face piece respirators on a voluntary basis are not required to have medical evaluations. Respirators worn voluntarily do not require a fit test. Voluntary users are not prohibited from wearing a beard, even though good industrial hygiene practice recommends that facial hair that interferes with the face-to-facepiece seal should be avoided. Even when workplace hazards do not warrant respiratory protection, employees who voluntarily wear filtering face pieces need to understand how to use and care for them properly to provide the best protection.

### Recordkeeping

A summary of all qualitative seal test results will be maintained by Human Resources for three years after each test. Medical screening records will be maintained for thirty years after the employee is no longer employed by Augustana College.

## Hearing Conservation

The purpose of this program is to ensure that employees are protected from noise that produces sound levels exceeding those established by the Occupational Safety and Health Administration (CFR 1910.95) without approved protection.

Under this program, supervisors and Department Chairs at the College are responsible for:

1. Reporting possible hazardous noise sources to Human Resources for evaluation.
2. Assisting the Human Resources Office in scheduling employees for baseline, annual and special audiometric testing as required.
3. Ensuring the employees under their direction:
	1. have hearing protection available and wear it correctly and consistently.
	2. are identified as requiring Hearing Conservation Protection
	3. receive a baseline audiogram prior to starting work
	4. Receive annual training
	5. Report to Human Resources following their audiogram for explanation of results and a written copy of their audiogram results

Employees will:

1. Wear recommended hearing protection whenever working in an environment where hazardous noise is present.
2. Use the device correctly and consistently
3. Inspect the device regularly and seek replacement or repair whenever necessary.
4. Comply with all provisions of the Hearing Conservation Protection Program and hazardous noise training. Employees who do not comply with wearing required hearing protection will be subject to disciplinary procedures.

###

### Sound Surveys and Exposure Monitoring

Employee and/or area monitoring shall be performed, as recommended by the industrial hygienist or insurance carrier, when potential exposure has been identified and is suspected of being at or above the 8-hour time-weighted average of 85 decibels (dB). It is the responsibility of the employee and/or supervisor to contact the Office of Safety whenever they suspect a certain source of noise may be over 85 dB.

There are three classes of noise exposure. “Continuous Noise” exposes employees to noise intervals of 1 second or less, “Intermittent Noise” indicates exposure to broadband sound pressure levels several times during the day, and “Impact-Type Noise” indicates sharp bursts of noise.

All continuous, intermittent, and impact-type sound levels from 80 decibels to 130 decibels will be incorporated into the noise survey measurement. The degree of noise reduction required will be determined by comparing the measured levels with the acceptable noise levels as presented in Table 1. Monitoring may be repeated when a change in workplace conditions expose additional employees at or above the action level or the attenuation provided by hearing protectors may be rendered inadequate. Employees will be removed from the Hearing Conservation Program once noise levels have been measured and determined to be at acceptable levels.

Table 1: Permissible Noise Exposures (Table 1.G-16)

|  |  |
| --- | --- |
| **Duration per day in hours** | **Sound level dBa slow response** |
| 8 | 90 |
| 6 | 92 |
| 4 | 95 |
| 3 | 97 |
| 2 | 100 |
| 1.5 | 102 |
| 1 | 105 |
| .5 | 110 |
| .25 or less | 115 |

##### Notes about Table 1:

* If the variations in noise level involve maxima at intervals of 1 second or less, the noise is to be considered continuous.
* When the daily noise exposure is composed of two or more periods of noise exposure of different levels, their combined effect should be considered, rather than the individual effect of each.
* If the sum of the following fractions: C1/T1 + C2/T2 Cn/Tn exceeds unity, then the mixed exposure should be considered to exceed the limit value.
* Cn indicates the total time of exposure at a specified noise level, and Tn indicates the total time of exposure permitted at that level.
* Exposure to impulsive or impact noise should not exceed 140 dB peak sound pressure level

When noise levels are measured in octave band analysis, the equivalent A-weighted sound level may be converted to the equivalent A-weighted sound level by plotting them on this graph and noting the A-weighted sound level corresponding to the point of highest penetration into the sound level contours. This equivalent A-weighted sound level, which may differ from the actual A-weighted sound level of the noise, is used to determine exposure limits from Table 1 (Table G 16.)



### Control Measures

When employees are exposed to sound exceeding sound levels listed in Table 1, feasible engineering and administrative controls will be utilized as the first step in noise control. Engineering controls will be used when any modification or replacement of equipment or related physical change at the noise source or along the transmission path can be altered to reduce the noise level to the employee’s ear.

Typical engineering controls may involve the following:

* Reducing noise at the source
* Interrupting the noise path
* Reducing reverberation
* Reducing structure-borne vibration
* Employee/equipment isolation and
* Equipment/process substitution

Administrative controls normally alter work schedules or operations to reduce noise exposure. Other examples of Administrative Controls include operating a noisy machine when fewer people are exposed, or shifting an employee to a less noisy job once a hazardous daily noise dose has been reached.

If controls fail to provide the desired protection, PPE will be used to reduce sound levels to those listed in Table 1. During the implementation of administrative and/or engineering controls, affected employees will be provided with hearing protection devices and trained in accordance with this program. The Office of Safety will work with the affected departments for management and implementation of this type of control.

### Hearing Protection Devices

Protection against the effects of noise exposure, in the form of a “hearing protection device,” will be provided when the sound levels exceed those shown in Table 1 (TableG-16 ) when measured on the A scale of a standard sound level meter at slow response. A “hearing protection device” refers to a piece of equipment that has been manufactured for the purpose of being worn to reduce the level of sound entering the ear, and includes ear plugs, muffs, etc. Employees will be given an opportunity to individually select the type of hearing protection device prior to utilization.

The most popular type of hearing protection devices are earplugs, which are inserted into the ear canal to provide a seal against the canal walls. Pre-formed ear plugs are commonly made of flexible, vinyl materials and often come in different sizes. Formable earplugs are made of materials which conform to the shape of the wearer’s ear canal. Formable type plugs generally provide a better fit for the wearer than the preformed type. Both types will be available to the employee during selection.

Ear muffs enclose the entire external ear inside rigid cups. The inside of the muff cup is lined with acoustical foam, which must not be removed, and the perimeter of the cup is fitted with a cushion that seals the area around the ear by the force of the headband. These types of devices are less popular than the ear plug; however, they may provide a more comfortable fit for some wearers.

Hearing protector attenuation shall be evaluated in relation to the specific noise environments in which the protector will be used. Protectors shall attenuate employee exposure to an 8-hour time-weighted average of 90 decibels. Employees who have experienced a standard threshold shift will have their hearing protection re-evaluated whenever noise exposures increase to the extent that the hearing protectors may prove to be inadequate.

Methods of determining the adequacy of hearing protector devices shall be in accordance with Appendix B of 29 CFR 1910.95 (See **Appendix A** of this document). OSHA recommends by the NRR rating adjustment formula:

NRR - 7 = A-weighted ÷ 2 = Adjusted NRR

8-hr TWA - Adjusted NRR = Attenuation

### Audiometric Evaluations

Baseline audiograms will be performed within six months of an employee’s first measured exposure above the action level. The evaluations are the responsibility of the affected employee’s department to arrange through the HUMAN RESOUCES Office. All audiogram testing requirements will be performed in accordance with the criteria established by the Occupational Safety and Health Administration Standard 29 CFR 1910.95.

Audiogram testing shall be preceded by at least 14 hours without exposure to workplace noises. High levels of non-occupational noise should be avoided during the 24-hour period immediately preceding audiometric examination. Hearing protectors may be used as a substitute for the requirement that audiograms be preceded by 14 hours without exposure to workplace noise.

Audiograms will be performed annually, at no cost to the employee, after obtaining the baseline audiogram for each employee exposed at or above the 8-hour time-weighted average of 85 decibels. If the annual audiogram shows that an employee has suffered a standard threshold shift, the employee may obtain a re-test within 30 days and the re-test may be considered the annual audiogram. If a comparison of the annual audiogram to the baseline indicates a standard threshold shift, the employee will be notified in writing of this within 21 days. A “*Standard Threshold Shift”* is defined as 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. Allowances for aging may be made by using correction factors found in Appendix F of 29 CFR 1910.95 (See **Appendix B** of this document.)

The supervisor is responsible for referring the employee to the HUMAN RESOUCES Office for an explanation of the results after their audiometric testing has been completed. Supervisors will not be informed of actual audiometric results, but will be informed of employees with significant shifts for supervisory purposes. The HUMAN RESOUCES Office will be the only department involved in notification of results to employees. A signed copy of the test results will be given to the employee and a copy will be retained for their confidential file in Human Resources.

### Information and Training

The HUMAN RESOUCES Office will provide annual training to each employee included in the hearing conservation program. Information provided in the training shall be updated to be consistent with changes in protective equipment and work processes. Annual training for employees included in the hearing conservation program will include:

* The effects of noise on hearing
* The purpose of hearing protectors.
* The advantages, disadvantages and attenuation of various types. Instruction on selection, fitting, use and care of various hearing protectors.
* The purpose of audiometric testing, and explanation of test procedures

The training program will be updated to ensure consistency with changes in protective equipment and work processes. Copies of the OSHA “Occupational Noise Exposure” Standard 29 CFR 1910.95 are available upon request by contacting the HUMAN RESOUCES Office. A copy of this standard will be provided to all departments affected by this program.

### Recordkeeping

Records of all employee exposure measurements shall be retained by the HUMAN RESOUCES Office for the duration of employment and for 30 years from the date of termination. These records will include:

* Name and job classification of the employee
* Date of the audiogram
* The examiner’s name
* Date of last acoustical or exhaustive calibration of the audiometer
* Employee’s most recent noise exposure assessment
* Background sound pressure levels in audiometric rooms which shall be measured and maintained by Genesis Occupational Health
* Date of initial and subsequent surveys and related data.

All records will be made available upon written request to the employee or designee at any time without regard to employment status. If this college is closed and there is no successor employer to receive and retain the records for the prescribed period, the Director of the NIOSH shall be contacted for final disposition.