



NOISE MANAGEMENT

&

HEARING CONSERVATION

STANDARD



CAMPUS SAFETY

CONTENTS

1.0	Purpose and Scope	2
2.0	Criteria for Noise Exposure.....	2
3.0	Responsibilities.....	2
3.1	Deans, Directors, and Department Heads are responsible for	2
3.2	Supervisors are responsible for	3
3.3	Workers are responsible for.....	4
3.4	Facilities – is responsible for:	4
3.5	Staff Wellness is responsible for.....	4
3.6	Campus Safety is responsible for:	4
4.0	Duty to Reduce using Hazard Controls.....	5
4.1	Engineering Controls	5
4.2	Administrative Controls.....	5
4.3	Personal Protective Equipment	5
5.0	Noise Control Design.....	5
6.0	Worker Exposure to Noise.....	6
6.1	Occupational Exposure Limits	6
6.2	Ototoxic Substances.....	7
6.3	Sudden Noise-Induced Hearing Loss.....	8
7.0	Noise Exposure Assessment.....	9
7.1	Instrumentation.....	9
7.2	Windscreen.....	10
7.3	Microphone.....	10
7.4	Calibration	10
8.0	Recorded Results	10
8.1	Location Assessments.....	10
8.2	Activity Assessments.....	10
8.3	Dosimetry (Personal) Assessments.....	11
8.4	Baseline Noise Assessment	11
9.0	Worker Education	12
10.0	Posting Warning Signs	12
11.0	Audiometric Testing	13
12.0	Annual Program Review	14
13.0	Definitions	14
14.0	Related Documents and Training	15
15.0	References and Additional Resources.....	15

1.0 PURPOSE AND SCOPE

The University of Lethbridge is committed to promoting the health and safety of its community, in accordance with the University's Safety Policy. The purpose of the University's Noise Management and Hearing Conservation Standard is to aid in minimizing worker exposure to noise hazards present in the workplace as developed with reference to Part 16 of the Alberta Occupational Health and Safety (OH&S) Code to promote hearing conservation.

The University strives to control excessive noise levels; however, certain locations and/or operations may expose personnel to significant noise levels. This program aims to reduce the potential for noise induced hearing loss as a result of occupational noise exposure, and addresses how potential noise exposure is assessed and managed. When noise is identified as a hazard through Hazard Assessment, it must be eliminated or controlled with engineering controls, then administrative controls and finally consideration be given to personal protective equipment. The second part of this standard is monitoring a noise-exposed worker for changes in hearing.

The scope of this program applies to University employees who are exposed to noise at or above an 8-hour time-weighted average (TWA) of 82 dBA (or 80 dBA TWA for a 12-hour shift), and for University employees who work in areas with noise levels at or above 85 dBA.

2.0 CRITERIA FOR NOISE EXPOSURE

2.1 Individual Exposure

An individual is considered noise-exposed if he/she has the potential to develop occupational noise-induced hearing loss, as a result of his/her work activities. The development of noise-induced hearing loss may occur due to regular exposure to sound levels greater than a time-weighted average of 85 dBA or an "equivalent" noise exposure (using a 3dB exchange rate), as listed in Table 1.

The definition of "noise-exposed" for this Standard is not intended to be a fine line between safe and hazardous noise exposures. It is important to recognize that some individuals are more susceptible to the effects of noise and may be at risk of developing noise-induced hearing loss when regularly exposed to sound levels between 80 and 85 dBA. Although the risk between 80 and 85 dBA is lower than that associated with regular exposure to noise levels greater than 85 dBA, workers who work in such situations should be informed and provided with appropriate hearing protection.

2.2 Area and Activity Noise Levels

Within an area/location or activity, a noise hazard should be considered if sound levels are regularly at, or above, 85 dBA. Equipment sound levels should be assessed based on manufacturers operating manual and other criteria for sound levels. See Appendix 6 for considerations with noise in the workplace that may lead a supervisor to begin to address noise hazards in the workplace.

Note: Nuisance noise is the type of noise which may be irritating or annoying to some people but it is not loud enough to be hazardous or associated with noise-induced hearing loss. Nuisance noise is not covered by this document. Given the subjective nature of nuisance noise, concerns of this type will be assessed separately, as required.

3.0 RESPONSIBILITIES

3.1 Department Heads

- Ensuring that all components of the Noise Control and Hearing Conservation Standard are implemented and enforced.
- Ensuring that potentially noise-exposed personnel attend training and refresher courses.
- Ensuring that workers are provided with appropriate noise reduction controls, including hearing protection, audiometric testing and support for hazard elimination or other controls.

3.2 Supervisors

- Being familiar with and adhering to this Standard.
- Ensuring workers are familiar with and follow this Standard.
- Completing a Hazard Assessment Form prior to any work being undertaken.
- Reviewing and updating the Hazard Assessment post incident or when changes to the operation are implemented (i.e. new equipment or a process is introduced).
- Ensuring that all workers review the Hazard Assessment to understand the hazards of the workplace.
- Notifying Campus Safety to initiate a noise assessment for work areas and/or work activities where a worker must raise their voice to be heard over background noise.
- Notifying Campus Safety of new employees to be included in the Health Surveillance Program for Noise Exposure based on previous work-related noise assessments and/or program inclusion.
- Ensuring all workers are trained in the correct use, care, limitations, and maintenance requirements of hearing protection devices as per manufacturer specifications.
- Ensuring workers complete the online Hearing Conservation Training course.
- Maintaining training records in personnel files.
- Selecting hearing protection devices in accordance with legislative requirements and work activities.
- Implementing noise reduction controls as per the hierarchy of controls where the use of engineering controls, and the use of administrative controls supersede the use of personal protective equipment (hearing protection devices) as a hazard control measure.
- Implementing noise reduction strategies when introducing a new work process or equipment.
- Ensuring workers complete a Field Level Hazard Assessment (FLHA) for any non-routine work activities.

3.3 Workers

- Being familiar with and adhering to this Standard.
- Reviewing the completed Hazard Assessment in the workplace and completing a field level hazard assessment (FLHA) prior to any non-routine work activities.
- Following all health and safety standards, rules, and regulations, and reporting all hazardous conditions to their supervisor immediately.
- Using implemented noise reduction controls as per the hierarchy of controls where the use of engineering controls, and the use of administrative controls supersede the use of personal protective equipment (hearing protection devices) as a hazard control measure.

- Reporting to their supervisor and Campus Safety any work areas and/or work activities where a worker must raise their voice to be heard over background noise to initiate a noise assessment.
- Reporting to their supervisor and Campus Safety when conditions have changed to initiate re-assessment.
- Wearing, maintaining, inspecting, and understanding limitations of hearing protection devices as per manufacturer specifications.
- Never altering hearing protection devices to perform any function other than intended;
- Participating in the Health Surveillance Program for Noise Exposure and training, as required.

3.4 Facilities

- Supplying and posting signage on all entrance doors to locations determined to have noise levels equal to or greater than 85 dba as determined by a noise assessment.
- Providing hearing protection devices for those locations where signage has been posted.
- Implementing and documenting noise reduction strategies when constructing or modifying a work area, or introducing a new work process or equipment.
- Achieving and documenting a noise level less than 85 dBA, or as low as reasonably practicable, when constructing or designing a new work area, conducting significant physical alterations, renovations, or repairs to an existing work area, or new equipment and/or processes are introduced.

3.5 Wellness and Recognition

- Reporting to WCB any noise induced hearing loss.
- Advising Campus Safety and the Supervisor of the work area where the hearing loss occurred.

3.6 Campus Safety

- Reviewing and updating the Hearing Conservation Program with annual evaluation and re-assessment as needed as changes to Alberta Health and Safety Code occur.
- Conducting noise assessments to determine areas where signage is required, and potential exposures to noise above occupational exposure limits as outlined in the Alberta OHS Code.
- Verifying signage is posted, as appropriate.
- Providing support for Supervisors and the campus in noise control design.
- Working with supervisors to determine work-related exposure groups to be included/excluded in the Health Surveillance Program for Noise Exposure.
- Assisting supervisors and department heads in conducting reviews of controls and/or work processes as needed.
- Maintaining and facilitating the Health Surveillance Program for Noise Exposure as defined in Part 16 of the Alberta OHS Code.
- Retaining medical documentation and informing workers of their test results.
- Informing supervisors (and/or deans/directors) if test results indicate that additional controls and/or a review of work processes should be conducted.
- Providing annual reporting of hearing test results.

4.0 DUTY TO REDUCE EXCESS NOISE EXPOSURE

The University recognizes and adheres to the hierarchy of controls expressed in Part 2 of the Alberta OH&S Code where hazard elimination, the use of engineering controls, and the use of administrative controls supersede the use of personal protective equipment as a hazard control measure.

4.1 Engineering Controls

To reduce or eliminate noise hazards, engineering controls can be used to reduce noise generated at the source. In consideration of effectiveness, cost, technical feasibility, and implications for equipment use, service, and maintenance, there are four main types of engineering controls for noise:

- substitution e.g. replacing noisy equipment, machinery, or processes with quieter ones;
- modification e.g. installing mufflers or sound absorbing materials, reducing vibration, operating at lower speeds;
- isolation e.g. segregating with sound barriers or partitions, enclosing equipment or processes; and
- maintenance e.g. performing scheduled maintenance as per manufacturers specifications.

4.2 Administrative Controls

If a noise hazard cannot be controlled by an engineered control, or in addition to an engineering control, administrative controls can be used to reduce noise. Examples of administrative controls include scheduling noisier operations for times when fewer workers are present, using job-rotation schedules to limit the amount of time a worker is exposed, and training for how to conduct work activities while minimizing exposure to noise hazards.

4.3 Personal Protective Equipment

When engineering and administrative controls are insufficient to reduce noise exposure, hearing protection devices must be provided for workers. Hearing protection devices should also be supplied for those workers concerned with noise hazards regardless of the noise levels produced. Ear muffs and ear plugs are hearing protection devices designed to reduce the level of sound reaching the eardrum. The amount of protection provided by ear muffs and ear plugs is dependent on device characteristics and how it is worn. The type of hearing protection selected must be capable of keeping noise exposure at the ear below the occupational exposure limits for noise as outlined in Section 6.1 of this program and Schedule 3, Table 1 of the Alberta OH&S Code.

5.0 NOISE CONTROL DESIGN

The construction or design of a new work area or building, or significant physical alterations, renovations, or repairs to an existing work area or building must achieve a noise level of no more than 85 dBA, or as low as reasonably practicable. Considerations for achieving the lowest sound level should be documented and include:

- orientation and size of the work area or building;
- number and location of workers in the work area or building;
- parameters such as temperature, pressure, and humidity;
- types of building materials and construction techniques available to reduce noise levels;
- type of equipment that will be used in the work area or building;
- how much noise will be generated once installed in the work area or building (how noise travels, direction of noise, ability of noise to be absorbed, total number of noise sources, etc.); and
- cost constraints.

The introduction of new equipment or processes will consider design, construction, and installation methods to achieve a noise level of no more than 85 dBA, or as low as reasonably practicable. If noise reduction is not practicable, then other noise hazard control methods must be implemented.

As per the Alberta OH&S Code, the above noise control design stipulations do not apply to alterations, renovations, repairs begun, work processes, or equipment introduced before April 30, 2004.

6.0 WORKER EXPOSURE TO NOISE

Noise is considered to be any unwanted sound which may or may not have the potential to affect health, while nuisance noise is considered to be any unwanted sound that may be annoying or frustrating but does not have the potential to affect health.

6.1 Occupational Exposure Limits

As noise intensity (loudness) increases, the amount of time an unprotected worker can be safely exposed decreases. The occupational exposure limits represent conditions under which it is believed nearly all workers may be repeatedly exposed without adverse effect on the ability to hear and understand normal speech. The occupational exposure limits should not be referred to as the lines between safe and dangerous noise levels as individual responses can vary.

Schedule 3, Table 1 of the Alberta OH&S Code outlines occupational exposure limits for noise, without the use of hearing protection. This same table is provided below for reference as Table 16.1. Table 16.2 is an expanded version of Schedule 3, Table 1 that includes exposure durations for each incremental exposure level. A ceiling limit of 115 dBA is the noise level at which no unprotected worker may be exposed as there is an assumption of instant damage to unprotected ears.

Table 16.1 Occupational exposure limits for noise (appears as Table 1 of Schedule 3 of the OHS Code)

Exposure Level (dBA)	Duration
82	16 hours
83	12 hours and 41 minutes
84	10 hours and 41 minutes
85	8 hours
88	4 hours
91	2 hours
94	1 hour
97	30 minutes
100	15 minutes
103	8 minutes
106	4 minutes
109	2 minutes
112	56 seconds
115 and greater	0

Note: Values have been rounded to the nearest digit.

Table 16.2 Expanded version of Table 16.1

Exposure Level (dBA)	Duration
82	16.0 hours
83	12.7 hours
84	10.1 hours
85	8.0 hours
86	6.3 hours
87	5.0 hours
88	4.0 hours
89	3.2 hours
90	2.5 hours
91	2.0 hours
92	1.6 hours
93	1.3 hours
94	1.0 hour
95	48 minutes
96	38 minutes
97	30 minutes
98	24 minutes
99	19 minutes
100	15 minutes
101	12 minutes
102	9 minutes
103	8 minutes
104	6 minutes
105	5 minutes
106	4 minutes
107	3 minutes
108	2 minutes
109	2 minutes
110	1 minute
111	1 minute
112	56 seconds
113	45 seconds
114	35 seconds
115 and greater	0

6.2 Ototoxic Substances

Some chemicals have been found to be ototoxic substances; those substances that can have a toxic effect on hearing and balance organs, or on the nerves that go to these organs. Exposure to ototoxic chemicals while working in a noisy environment could result in greater hearing impairment than when exposed to noise alone. Workers in noisy environments who are working with chemicals considered to have ototoxicity, should be using controls to minimize both potential noise and chemical exposure.

The American Conference of Governmental Industrial Hygienists (ACGIH) recommends that where there is exposure to noise and the following chemicals, periodic hearing tests should be conducted and reviewed:

- carbon monoxide
- lead
- manganese
- styrene
- toluene
- xylene

Chemicals that are currently under investigation for ototoxicity include:

- arsenic
- carbon disulfide
- mercury
- trichloroethylene

In addition, some medications can cause damage to the inner ear which could result in hearing loss. Similar to ototoxic chemicals, use of ototoxic medications while working in a noisy environment could result in greater hearing impairment than when exposed to noise alone. Workers in noisy environments, who are using prescription medication, should consult their doctor in addition to using controls to minimize exposure to noise.

6.3 Sudden Noise-Induced Hearing Loss

Noise-induced hearing loss workplace programs focus on long term effects of hearing loss due to work environment issues. However, there can be sounds that damage sensitive ear structures that can cause sudden noise-induced hearing loss. These tend to be 'impulse' sounds like explosions, or gun noises etc. Worker should report any sudden hearing loss to their supervisor immediately if affected by an impulse sound at work. The supervisor will ensure proper reporting mechanisms to Campus Safety-Safety Services (through CAIR), WCB reporting systems and Incident Investigations (on request of Safety Services) which leads to a fuller investigation of the issue leading to the 'impulse' sound. Should the worker not have had any impulse sounds at work but noticed sudden hearing loss, they should be reporting that hearing to their family physician IMMEDIATELY/SAME DAY and begin the process of getting a diagnosis as to cause. This sudden hearing loss should also be reported to Supervisor or via a Campus Accident Incident Report (CAIR) as an investigation MAY be initiated to ensure workplace hearing protection programming has been followed.

Worker Process for Noise-Induced Hearing Loss

Worker will:

- a) Report to Supervisor and fill out CAIR report (this triggers WCB connection and ensure WCB forms completed). Cooperate with workplace investigation of any workplace incident involved in sudden noise-induced hearing loss
- b) Go to Emergency Room and/or contact Family Physician Immediately/SAME day for initial assessment. Or if needed, contact Human Resources-Wellness and Recognition for OIS (Occupational

Injury Service) which assists to ensure same day physician care if work-related injury and family physician is not available

- c) Follow-through on Physician Directed Medical Care which may include ear examination by physician or Ears, Noise Throat (ENT) specialist and/or a hearing test (or several hearing tests over time to more accurately assess hearing issues)

7.0 NOISE EXPOSURE ASSESSMENT

A noise exposure assessment (sound level survey) will be conducted where workers are, or may be, exposed to noise levels greater than the occupational exposure limits shown in Schedule 3, Table 1 of the Alberta OH&S Code, and/or exceed a noise level of 82 dBA TWA. As the University is a complex and large organization, any work areas and/or work activities where a worker must significantly raise their voice to be heard over background noise should be reported to a supervisor and Safety Services (Campus Safety) to initiate a noise assessment. Reporting these situations assists in confirming noise-related work activities have been assessed, and appropriate controls have been recommended and/or implemented as required.

A noise exposure assessment will be performed by a competent worker who:

- is trained in conducting noise assessments;
- is trained in the calibration, operation, and maintenance of the equipment;
- can explain measurement methods; and
- can interpret assessment results.

A noise exposure assessment will be conducted in accordance with the Alberta OH&S Code and the Canadian Standards Association (CSA) Standard Z107.56-13, *Measurement of Noise Exposure* and will consider the following:

- path that noise travels;
- direction of the noise source;
- transmission through vibration;
- frequency of the noise;
- seasonal or production variations; and
- work activities – including participation from workers to help identify noise sources, variations in potential exposure, identification of typical vs. atypical noise levels, etc.

Once a noise assessment has been completed, it will be repeated when the following conditions have been reported to Campus Safety:

- new equipment or work processes that generate noise are introduced;
- noise levels change due to equipment deterioration;
- work practices or work procedures change; or
- workers indicate they experience ringing in the ears, temporary changes in hearing, or increased levels of noise in their work area or during their work activities.

7.1 Instrumentation

Equipment used to measure noise levels and/or to determine potential noise exposure will be a sound level meter or noise dosimeter meeting the requirements of the American National Standards Institute (ANSI) Standards S1.4-1983 (R2006), *Specification for Sound Level Meters*, and S1.25-1991 (R2007), *Specification for Personal Noise Dosimeters* as per the Alberta OH&S Code.

In addition to the ANSI requirement, noise dosimeters will be set with the following parameters as per the Alberta OH&S Code:

- a criterion level of 85 dBA with a 3 dB exchange rate;
- a threshold level at or below 75 dBA or “off”; and
- slow response.

The selection of equipment used will be based on the type of information to be collected. Typically a sound level meter will be used to measure noise levels generated during a specific work activity, from specific equipment, or within an area. A noise dosimeter will be used to measure noise exposure experienced by a worker over a typical 'worst-case scenario' work shift. This equipment may be used independently or in conjunction with each other.

7.2 Windscreen

Windscreens are designed to be placed over microphones of both sound level meters and noise dosimeters to reduce the effects of air movement across the microphone. Without the use of a windscreen, it may be difficult to distinguish work-related noise measurements from air-related noise measurements. For noise assessments conducted at the University, windscreens will be installed on the instrument used to conduct noise measurements.

7.3 Microphone

When using a sound level meter, directionality of the microphone will be taken into account e.g. pointing directly at the noise source vs. pointing away from the noise source. When using a noise dosimeter, the microphone will be mounted on a worker's shoulder or in the ear depending on the type of dosimeter used.

7.4 Calibration

Pre and post calibration of sound level meters and noise dosimeters is required for each assessment, and is to be documented. Sound level meters, noise dosimeters, and calibrators are to be sent for factory calibration either annually or every two years as determined by Safety Services.

8.0 RECORDED RESULTS

Noise assessment results will be recorded and distributed to workers and supervisors involved in the assessment. Dosimetry results can apply to a group of people conducting the same type of work even if they were not individually assessed. Results may also be forwarded to Staff Wellness to update information pertaining to the Health Surveillance Program for Noise Exposure.

Noise assessment results will be retained for as long as the University is in operation within Alberta as required by the Alberta OH&S Code.

8.1 Location Assessments

Recorded results will include the following information for location assessments:

- date of the assessment;
- name of person conducting the assessment;
- instrument used to conduct the assessment;
- pre and post calibration dates and values for the instrument used to conduct the assessment;
- faculty and department participating in the assessment;
- location where the assessment was completed;
- identification of noise sources within the area (e.g. general room, compressor, pump, etc.) and if they are operating under normal conditions;
- if signage requiring the use of hearing protection upon entering the area is posted, and following the assessment if signage is required;
- type of hearing protection currently used, as applicable, and following the assessment the type of hearing protection recommended, as applicable;
- noise levels measured;
- noise map of the area and/or photos of equipment within the area, as applicable; and
- any notes related to the assessment.

8.2 Activity Assessments

Recorded results will include the following information for activity assessments:

- date of the assessment;
- name of person conducting the assessment;
- instrument used to conduct the assessment;
- pre and post calibration dates and values for the instrument used to conduct the assessment;
- faculty and department participating in the assessment;
- location where the assessment was completed;
- identification of equipment measured during the assessment (e.g. grinder, table saw, drill press, etc.) and if they are operating under normal conditions;
- photos of equipment that was measured;
- frequency and duration that measured equipment is typically used for;
- type of hearing protection currently used, as applicable, and following the assessment the type of hearing protection recommended, as applicable;
- noise levels measured;
- recommendations to conduct noise dosimetry, as applicable; and
- any notes related to the assessment.

8.3 Dosimetry (Personal) Assessments

Recorded results will include the following information for dosimetry assessments:

- date of the assessment;
- name of person conducting the assessment;
- instrument used to conduct the assessment;
- pre and post calibration dates and values for the instrument used to conduct the assessment;
- faculty and department participating in the assessment;
- location where the assessment was completed;
- name of employee, job title, and work shift;
- participants are to keep a log of activities conducted during the assessment (including location, activity conducted, equipment used, duration of activity, if hearing protection was used for an activity, and any notes related to the work shift);
- type of hearing protection currently used, as applicable, and following the assessment the type of hearing protection recommended, as applicable;
- the time-weighted average (TWA) noise level measured;
- current inclusion, and recommendation for inclusion in the Health Surveillance Program for Noise Exposure, as applicable; and
- any notes related to the assessment.

8.4 Campus Noise Assessments

Noise assessments are arranged by Safety Services and completed by a certified technician to verify locations where signage is required, work activities where hearing protection should be worn, and exposure groups for inclusion/exclusion in the Health Surveillance Program for Noise Exposure.

If excessive noise exposure is a concern in any campus location it should be reported to supervisor and Campus Safety to initiate a noise assessment. Similarly, any work activities where potential noise exposure is suspect should be reported.

Examples of identified locations where hearing protection is required:

- mechanical rooms
- Heating Plant
- indoor emergency generator rooms

- double hearing protection required when generator is in operation
- outdoor emergency generator locations
 - double hearing protection required when generator is in operation

Examples of identified work activities where hearing protection may be required were associated with:

- theatre shops
- wood and metal shops, other activity rooms
- Facilities – various areas
- Kinesiology – some activities
- Music areas

Examples of identified job titles which may be considered for inclusion/continued inclusion in the Health Surveillance Program for Noise Exposure include:

- | | |
|---|---|
| <ul style="list-style-type: none"> ● Facilities – electricians ● Facilities – emergency generator testers ● Facilities – heating plant shift engineers | <ul style="list-style-type: none"> ● Facilities – auto mechanics ● Facilities – carpenters ● Facilities – building operators ● Facilities – millwrights ● Facilities – grounds operators |
|---|---|

9.0 WORKER EDUCATION

Employee understanding of their role, reasons for, and requirements of this Program are fundamental to an effective Hearing Conservation Program. Review of both this Program document and completion of the online Hearing Conservation Training course is required for University employees who are exposed to noise at or above an 8-hour TWA of 82 dBA (or 80 dBA TWA for a 12-hour shift) and for University employees who work in areas with noise levels at or above 85 dBA.

This Program has been written with respect to the regulatory requirements as outlined in Part 16 of the Alberta OH&S Code. This Program outlines responsibilities for employees and departments, includes information on what occupational exposure limits are and why they are needed, explains how noise controls can be used to eliminate or reduce noise as a hazard, describes the different types of noise assessments and how results are recorded and used, and introduces audiometric testing which is the Health Surveillance Program for Noise Exposure.

The online Hearing Conservation Training course compliments this Program by providing additional education on the effects of noise on hearing, how to properly select, care, and use hearing protection devices, and more information on audiometric testing. A link to this training can be found in Section 14.0 Related Documents and Training.

10.0 POSTING WARNING SIGNS

Signage indicating that the use of hearing protection is required upon entering a space will be posted on all doors leading into an area where noise levels have been determined by a noise assessment to be 85 dBA or greater (signage is not to be posted without a noise assessment).

Although it may not be apparent at the time, levels at or greater than 85 dBA may be generated by equipment that operates automatically or intermittently.

Hearing protection devices will be made available where signage has been posted for use by personnel entering the area; with the exception of generator locations where workers without double hearing protection are expected to leave the area in the event the generator becomes operational.

Examples of signage:



11.0 AUDIOMETRIC TESTING

The Alberta OH&S Code defines a noise-exposed worker as someone who is or may be exposed to noise in excess of 85 dBA TWA and/or the noise exposure limits in Schedule 3, Table 1. Noise-exposed workers must undergo audiometric testing.

At the University identified personnel who are regularly exposed to noise levels at or exceeding an established action level of 82 dBA TWA over an 8-hour shift, or 80 dBA TWA over a 12-hour shift, are to be included in the Health Surveillance Program for Noise Exposure as facilitated by Campus Safety for audiometric testing. A TWA for noise exposure is determined by conducting a noise dosimetry assessment over a work shift.

Audiometric testing is conducted to establish a baseline with follow-up monitoring at regular intervals to identify any changes in hearing ability. Audiometric testing can be used to determine if occupational hearing loss is being prevented. Occupational hearing loss tends to occur gradually over time, with this gradual decline in hearing ability often going unnoticed by an individual until a relatively large change occurs. Through the comparison of audiometric test results, hearing damage can be identified earlier and appropriate protective measures implemented or reviewed to prevent further damage.

Additional information on audiometric testing can be found in the online Hearing Conservation Training course. Frequently asked questions and information on the Health Surveillance Program for Noise Exposure can be found at www.uleth.ca/risk-and-safety-services/campus-health

12.0 ANNUAL PROGRAM REVIEW

The Hearing Conservation Program will be reviewed annually by Campus Safety and updated as changes to legislation, best practices, and/or University requirements are implemented. Program evaluations will include a review of the Hearing Conservation Program document, and online Hearing Conservation Training course. Review of this program will also occur if audiometric test results from Campus Safety identify trends indicating controls may not be effective at preventing work-related noise-induced hearing loss.

13.0 DEFINITIONS

Audiometric Testing	is an assessment to test an individual's ability to hear sounds.
ANSI	is the American National Standards Institute.
Criterion Level	is the maximum allowable exposure to accumulated noise e.g. 85 dBA over an 8-hour period.
dBA (decibels on the A-scale)	best fits the frequency response of the human ear. The A-weighted scale responds to the frequency components of sound much like your ear responds.
Dosimeter (noise)	is an instrument used to measure the noise exposure of a person over a period of time.
Employee	an individual who is engaged to work for the University under a contract of service, that is, there is an employer-employee relationship between the individual and the University. For clarity, this term includes support staff, management and professional staff, the senior administration group, researchers, graduate students who are remunerated by the University, and faculty members.
Exchange Rate	is the relationship between noise level and exposure duration. For every 3 dB increase in noise level, exposure time must be halved (as demonstrated in Table 16.2 in Section 6.0 Worker Exposure to Noise).
Lex	means the level of a worker's total exposure to noise in dBA, averaged over the entire workday and adjusted to an equivalent 8-hour exposure measured in accordance with Section 216 and based on a 3 dB exchange rate.

Field Level Hazard Assessment (FLHA)	is completed in addition to a formal hazard assessment, when activities and/or conditions are non-routine.
Formal Hazard Assessment	is the identification of all jobs and tasks performed by employees, assessment of the hazards associated with each task and the prioritization of the hazards based on the level of risk they pose. At the University of Lethbridge, formal hazard assessments are completed using the Hazard Assessment Form.
Occupational Noise-Induced Hearing Loss	is a permanent hearing impairment resulting from prolonged exposure to high levels of noise in a work environment.
Ototoxic Substances	are chemicals or medications that can have a toxic effect on the hearing and balance organs, on the nerves that go to these organs, or can cause damage to the inner ear, any of which could result in hearing loss.
Reasonably Practicable	when used is a term to indicate a preferred action that should be taken and is usually associated with the minimum requirements that should be met. Use of this term is not intended to provide an opportunity or an excuse for not meeting requirements.
Slow Response	is a 1-second response. Instruments that measure time-varying signals are limited in how fast they can response to changes in the input signal.
Sound Level Meter	is the basic measuring instrument for noise.
Threshold	is the level at which all sound below this level is considered non-existent noise.
Time-Weighted Average (TWA)	means the level of a worker's total exposure to noise averaged over the workday, and typically adjusted to an equivalent 8-hour exposure – the Alberta OH&S Code defines this as Lex.

14.0 RELATED DOCUMENTS AND TRAINING

- Hearing Conservation Training <http://www.uleth.ca/risk-and-safety-services/training>
- Health Surveillance Program for Noise Exposure www.uleth.ca/risk-and-safety-services/campus-health
- Hazard Management <https://www.uleth.ca/risk-and-safety-services/hazard-management>
- University of Lethbridge Health & Safety Policy <https://www.uleth.ca/policy/resources/environment-health-and-safety-policy>

15.0 REFERENCES AND ADDITIONAL RESOURCES

- Alberta Occupational Health and Safety Act, Regulation and Code <https://www.alberta.ca/ohs-act-regulation-code.aspx>

- University of Lethbridge, Safety Services www.uleth.ca/risk-and-safety-services
- Wellness and Recognition <https://www.uleth.ca/hr/wellness>
- University of Calgary, Environment Health and Safety
<https://www.ucalgary.ca/safety/programs/hearing-conservation>
- Canadian Centre for Occupational Health and Safety <http://www.ccohs.ca/>