HEARING LOSS PREVENTION PROGRAM

REVISION HISTORY

Revision Number	Document Section	Details of Amendments	Date
0	—	New Program	May 2012
1	All	Review & Update	Sept 2015
2	All	Review & update for alignment with O. Reg. 381	Aug 2018
3	All	AODA Compliance	February 2020

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1.0 INTRODUCTION

1.1 PURPOSE

The University of Guelph's Hearing Loss Prevention Program has been established to manage hazardous noise in the workplace, protect employees who have the potential to develop occupational hearing loss and comply with applicable legislation.

1.2 SCOPE

This Program applies to University of Guelph employees who work in noise hazard areas or who have the potential to develop occupational hearing loss. Contractors retained by the University of Guelph must adhere to the applicable requirements of this Program.

1.3 PROGRAM ELEMENTS

The major elements of the Hearing Loss Prevention Program are:

1) Responsibilities
2) Criteria for noise exposure
3) Noise assessment
4) Noise control measures
5) Education and Training
6) Audiometric testing
7) Reporting and recordkeeping
8) Program audit and review

2.0 REGULATORY REQUIREMENTS

The Hearing Loss Prevention Program is written in accordance with the requirements of Ontario Regulation 381/15 made under the Ontario Occupational Health and Safety Act, R.S.O. 1990.

https://www.ontario.ca/laws/regulation/150381

3.0 TERMS AND ABBREVIATIONS

3.1 GLOSSARY

Terms	Definitions
Action Limit	As best practice, the University has adopted an equivalent noise exposure action level of 82 dBA. Employees routinely exposed to these levels or greater are required to enroll in the Hearing Loss Prevention Program. Specifically they must complete training on the Hearing Loss Prevention Program and are offered audiometric testing.

Terms	Definitions
Audiometric Testing	Hearing tests offered to employees to assess the extent of any existing hearing loss and/or early detection of noise-induced hearing loss.
A-weighted decibel (dBA)	A value that is weighted by frequency to approximate human hearing sensitivity. Specifically, it de-emphasizes the lower frequencies and emphasized frequencies around 2500 Hz.
Baseline Audiogram	The audiogram against which future audiograms are compared
Decibels (dB)	A measure of the sound pressure level (loudness). The decibel scale is logarithmic.
Equivalent Sound Exposure Level (Lex)	The steady sound level in dBA which, if present in a workplace for 8 hours in a day, would contain the same energy as that generated by the actual and varying sound levels to which a worker is exposed in his or her total work day. *O. Reg. 381/15 s.1(2)*
Noise Dosimetry	A measure of an employee's personal noise exposure over a period of time.
Noise Exposed	An employee is considered noise-exposed if the 8-hour time-weighted average (TWA) exceeds 85 dBA or an "equivalent" exposure (see Table 1).
Noise Hazard Area	An area is considered a noise hazard area if sound levels are regularly at or above 85 dBA.
Noise-Induced Hearing Loss	A preventable hearing disorder that may result from prolonged exposures to high noise levels.
Occupational Exposure Limit	In Ontario, the regulated occupational exposure limit is an equivalent sound exposure level (Lex) of 85 dBA, *O. Reg. 381/15.*
Threshold Shift	A shift from the baseline measurement in either ear of 10 dB or more at 2000, 3000 and 4000 Hz. These frequencies are the most important frequencies in communication and sensitive to damage by industrial noise exposure.

3.2 ACRONYMS

Acronym	Explanations
EHS	Environmental Health and Safety
OHW	Occupational Health and Wellness
WSIB	Workplace Safety Insurance Board

4.0 ROLES AND RESPONSIBILITIES

This section outlines the roles and responsibilities of workplace parties in the implementation and maintenance of the Hearing Loss Prevention Program at the University of Guelph.

4.1 MANAGERS/SUPERVISORS

Managers/Supervisors have the following responsibilities:

1) To identify noise hazards areas and potentially noise-exposed employees;

2) To maintain a current list of noise hazard areas and noise-exposed employees under their supervision;

3) To establish safe work procedures for working in noise hazard areas, as required;

4) To enroll noise-exposed employees in Hearing Loss Prevention Program training offered by EHS;

5) To implement the use of engineering and administrative controls where feasible and/or provide appropriate hearing protection devices;

6) To provide general training on the proper use, fit, and care of hearing protection devices;

7) To enforce the proper use and maintenance of hearing protection by their staff;

8) To advise noise-exposed employees of the audiometric testing program offered through OHW and to engage such employees to participate in the program;

9) To arrange baseline audiometric testing with OHW within the first six months of an employee being hired by their department;

10) To update EHS of new employees in the department who may be noise-exposed, as well as those who have terminated employment with the University or transferred to other departments or work areas;

11) To inform a health and safety representative or the local health and safety committee when sound level surveys or noise dosimetry will be conducted; provide them the opportunity to be present at the start of testing and consulted regarding testing strategies; and

12) To forward a copy of noise assessment reports to the local Joint Health and Safety Committee/Health and Safety Representative and communicate to the affected employees.

4.2 NOISE-EXPOSED EMPLOYEES

Noise-exposed employees have the following responsibilities:

1) To understand the hazards and safe work procedures associated with working in noise hazard areas;

2) To work in accordance with the safe work procedures in noise hazard areas;

3) To report noise hazards and damaged hearing protection devices to the manager/supervisor immediately;

4) To participate in Hearing Loss Prevention Program training;

5) To use and care for hearing protection devices, wherever it is required; and

6) To participate in audiometric testing.

4.3 ENVIRONMENTAL HEALTH AND SAFETY

Environmental Health and Safety has the following responsibilities:

1) To develop, implement, and maintain the Hearing Loss Prevention Program; and assess compliance with legislative requirements and industry best practice;

2) To maintain an up-to-date university-wide registry of noise hazard areas and noise-exposed employees and provide this information to OHW;

3) To assess hazardous noise by means of workplace noise assessments, surveys and personal dosimetry;

4) To provide a copy of noise assessment report(s) to the department Manager/Supervisor;

5) To communicate the results of personal dosimetry to the employee, supervisor and OHW;

6) To provide training to noise-exposed employees on the elements of the Hearing Loss Prevention Program;

7) To provide technical guidance to managers/supervisors regarding engineering and administrative controls;

8) To assist managers/supervisors/employees in the selection of appropriate hearing protection devices;

9) To identify noise hazard areas where hearing protection is required and warning signage must be posted;

10) To develop a re-assessment schedule for areas where workers are subject to hazardous noise exposure; and

11) To review the Hearing Loss Prevention Program on a three-year cycle.

4.4 OCCUPATIONAL HEALTH AND WELLNESS

Occupational Health and Wellness has the following responsibilities:

1) To develop, implement and maintain the Audiometric Testing Program;

2) To schedule and conduct audiometric testing for noise-exposed employees;

3) To maintain audiometric testing results within confidential medical files;

4) To reinforce the proper use of hearing protection devices during audiometric testing sessions;

5) To communicate the results of audiometric testing to the worker and conduct follow up evaluations as required;

6) To report observed trends in threshold shifts to the departmental supervisor and EHS; and

7) To initiate follow up for cases of reported noise induced hearing loss.

5.0 CRITERIA FOR NOISE EXPOSURE

5.1 AREA NOISE LEVELS

A work space is considered a noise hazard area if sound levels are regularly at or above 85 dBA.

5.2 PERSONAL EXPOSURE LEVELS

An employee is considered noise-exposed if they have the potential to develop occupational-induced hearing loss. Regular exposure to sound levels greater than 85 dBA for an 8-hour period or an equivalent noise exposure as identified in Table 1 is associated with noise-induced hearing loss.

TABLE 1: EQUIVALENT NOISE EXPOSURES

Duration in a 24-h period	Equivalent Exposure Level (dBA)
16 h	82
8 h	85
4 h	88
2 h	91
1 h	94
30 min	97
15 min	100
7 min 30 s	103
3 min 45 s	106

6.0 NOISE HAZARD ASSESSMENT

In noise hazard areas, the potential for noise induced hearing loss may exist as a result of continuous exposure to equipment and processes, or exposure to changing noise levels over varying durations of time. Noise hazard areas and noise exposures are assessed and quantified through sound level surveys and personal noise dosimetry.

- Managers/Supervisors shall identify equipment and processes that may produce potentially hazardous noise levels or potentially noise-exposed employees, and request an assessment by EHS. See Appendix A for examples of work environments at the University where there may be noise hazard areas.
    - *In general, difficulty in communicating by speech, where employees have to raise their voice to talk to someone about one metre (3 feet) away is an indicator of potentially hazardous noise levels.*

- Noise assessments shall be conducted by means of workplace sound level surveys and/or personal noise dosimetry.

- Based on the results of the noise assessments, EHS shall identify noise hazard areas and/or noise-exposed employees, in conjunction with the Manager/Supervisor.

- A noise assessment report shall be provided by EHS as a written record to the Manager/Supervisor documenting noise hazard areas, equipment/processes and employee noise exposure. If applicable, the assessment shall also identify the noise-exposed employee groups to be included in the hearing loss prevention program, specifically those who must participate in training and audiometric testing.

- Noise hazards shall be re- assessed for the following reasons:

    - Any operational changes in equipment, processes, room configurations etc. that may impact resulting ambient sound levels or noise exposures.
    - OHW reports departmental trends in threshold shifts based on audiometric testing results; and
    - Noise hazard areas and worker noise exposures shall be re-assessed at least every three years.

6.1 SOUND LEVEL SURVEYS

- EHS may conduct a sound level survey for the following reasons:
    - To identify noise hazard areas – locations, equipment, processes and activities where sound levels regularly exceed 85 dBA;
    - To identify locations where warning signs must be posted;
    - To identify noise-exposed worker groups and determine if noise dosimetry is warranted;
    - To provide information required for the selection of hearing protection devices; and
    - To assess to adequacy of noise controls.

- Sound level surveys shall be conducted in accordance with CSA Z107.56 Measurement of Noise Exposure.

6.2 PERSONAL NOISE DOSIMETRY

- EHS may conduct noise dosimetry for the following reasons:
    - To assess personal noise exposures and identify noise-exposed worker groups to be included in the Hearing Loss Prevention Program (i.e., participate in training and audiometric testing).
    - To provide information required for the selection of hearing protection devices; and
    - To assess to adequacy of noise controls.

- Noise dosimetry shall be conducted in accordance with CSA Z107.56 Measurement of Noise Exposure.

7.0 NOISE CONTROL MEASURES

Hazardous noise levels shall be reduced or eliminated through the use of engineering and/or administrative controls, where feasible. If engineered and/or administrative controls do not adequately reduce the hazard or are not feasible, hearing protection devices must be used in noise hazard areas and by noise-exposed employees.

Departments must ensure that noise control measures are investigated and implemented. Managers/Supervisors may seek input from EHS for technical guidance.

7.1 ENGINEERING CONTROLS

Engineering controls may include reducing noise at the source by retrofitting existing equipment, selecting quieter machinery when purchasing new equipment, source enclosures, sound barriers, baffles, worker enclosures or positioning workstations away from noise generating equipment.

7.2 ADMINISTRATIVE CONTROLS

Administrative controls may include adjusting work schedules to reduce noise exposures, changes to work procedures, hazard communication to indicate requirements on the use of hearing protection devices, and/or establishing regular maintenance schedules for equipment, as maintained equipment tends to be quieter.

O. Reg. 381/15 requires that clearly visible warning signs be posted at the approaches to an area where sound levels regularly exceed 85 dBA. These warning signs must clearly indicate that the use of hearing protection is mandatory for entry. In situations where a piece of equipment or machinery presents a noise hazard, a sign must be affixed to the machine in a clearly visible location, indicating that the operator must wear hearing protection.

7.3 HEARING PROTECTION DEVICES

If the implementation of engineered or administrative controls is not feasible or practical, occupational noise-induced hearing loss may be prevented through the use of hearing protection devices in areas where the sound levels regularly exceed 85 dBA or where employee exposures exceeds the limits identified in Table 1. Examples of hearing protection devices include earplugs and/or earmuffs.

Managers/Supervisors are responsible for providing appropriate hearing protection devices to their employees. Hearing protection devices should be selected in consultation with EHS, based on the sound level/exposure data provided in the noise assessment report and attenuation information and product specifications reported by the manufacturer. Consider the following factors when selecting hearing protection devices:

1) Job activities while wearing hearing protection (e.g., face-to-face communication, telephone, radio or electronic communication, other personal protective equipment worn)

2) Comfort, duration of use (e.g., full-shift, periodic)

3) Compatible with other communication devices the worker may use

4) Ease of use

Prior to the initial use of hearing protection devices, employees must receive general training from their supervisor on the use, care and workplace-specific applications of the hearing protection device. Hearing protection devices must be properly fitted and worn at all times in noise hazard areas. Managers/supervisors must notify workers of the noise sources in their work area and train them to understand the meaning of warning signs and their locations; and the importance of wearing hearing protection.

8.0 EDUCATION AND TRAINING

All employees who are required to wear hearing protective devices must be trained on their selection, use, fit, care and maintenance, prior to initial use and at least every two years thereafter. Managers/supervisors of hearing protection device users are responsible for providing general training on wearing hearing protection devices and work-site specific noise control measures. Noise-exposed employees will be offered refresher counselling on the proper use of hearing protection devices at the time of audiometric testing, as appropriate.

As a best practice, employees who are regularly exposed to equivalent sound levels greater than or equal to the Action Limit of 82 dBA for 8 hours a day will be trained on the elements of the Hearing Loss Prevention Program. They shall complete this training at the start of employment and every three years thereafter. Instruction shall include the following topics:

- Effects of hazardous noise on hearing
- Workplace roles and responsibilities
- Regulatory requirements
- Noise hazard assessment
- Noise control measures
- Use, selection, fit, and care of hearing protection devices
- Purpose and procedures of audiometric testing
- Provisions of the Hearing Loss Prevention Program

9.0 AUDIOMETRIC TESTING

Noise-exposed employees at risk of developing occupational noise-induced hearing loss will be offered confidential audiometric testing through OHW.

Routine audiometric testing allows for early detection of noise-induced hearing loss. Changes in an employee's audiometric results may indicate changes in noise exposure in the workplace or that hearing protection is not effective or being used properly.

The Ontario Occupational Equivalent Exposure Limit of 85 dBA for 8 hours should not be regarded as a line between safe and unsafe noise exposure levels. Some individuals may be more susceptible to the effects of noise and at risk of developing noise-induced hearing loss when regularly exposed to sound levels less than an equivalent exposure of 85 dBA for 8 hours. Accordingly, identified employee groups routinely exposed to an equivalent noise exposure level equal or greater than the Action Limit of 82 dBA for 8 hours shall be included in the Audiometric Testing Program.

- Confidential audiometric testing shall include:

- Reference Testing: Baseline audiograms within the first six months of commencing work for all noise-exposed new hires and employees transferring into the department. Managers/Supervisors are asked to engage OHW to arrange this;
- Monitoring: Biennial (i.e., every two years) audiograms for employees exposed to equivalent sound exposure levels equal to or greater than 82 dBA;
- Exit Audiogram: Final audiogram for noise-exposed employees prior to withdrawal from the Hearing Loss Prevention Program or termination of employment with the University. Managers/Supervisors are asked to engage OHW to arrange this.

- EHS shall maintain a noise registry that identifies noise-exposed worker groups/departments included in the audiometric testing program. The registry shall be provided to OHW;
- Audiometric testing monitoring appointments will be scheduled by OHW in consultation with the department Manager/Supervisor;
- Noise-exposed employees shall be provided refresher counselling regarding the proper use of hearing protection devices during their audiometric testing session;
- Changes in an employee's audiometric results may require follow-up evaluations, as determined by OHW;
- OHW will offer a copy of the audiometric testing results to the employee; and
- OHW will report observed trends in threshold shifts to the departmental supervisor and EHS, to determine if a noise reassessment and/or retraining is required.

10.0 INCIDENT MANAGEMENT

When changes in an employee's audiometric results occur, OHW may require follow up evaluations or re-testing. EHS may be required to provide a noise reassessment and/or retraining.

If an employee suspects they may be experiencing symptoms of hearing loss they attribute to working in a noisy environment, they are directed to report it to OHW by following the University's Incident or Injury reporting process (Illness or Injury Incident Report Form). Submission of an incident report will initiate follow up by OHW.

11.0 REPORTING AND RECORDKEEPING

1) Managers/Supervisors shall maintain a list of noise hazard areas and sources, noise-exposed employees and training records for their department(s).
2) Upon completion of a noise assessment, EHS shall provide a copy of the report(s) to the department Manager/Supervisor;
3) Upon receipt, Managers/Supervisors shall forward a copy of noise assessment report(s) to the local Joint Health and Safety Committee/Health and Safety Representative(s) and communicate to the affected employees.

4) EHS shall maintain a noise registry that identifies noise-exposed worker groups/departments included in the audiometric testing program and Hearing Loss Prevention Program Training records

5) OHW will maintain records pertaining to the Audiometric Testing Program within confidential medical files.

12.0 PROGRAM AUDIT AND REVIEW

12.1 PROGRAM AUDIT

EHS will audit the Hearing Loss Prevention Program on an on-going basis. This may include a review of:

- status of noise assessments
- registry of noise-exposed employees
- status of employee training
- use of engineering and administrative controls
- use and care of hearing protection devices
- status of reporting and recordkeeping

12.2 PROGRAM REVIEW

EHS will review the Hearing Loss Prevention Program on a three year cycle.

APPENDIX A – NOISE HAZARD AREAS

In noise hazard areas, the potential for noise induced hearing loss may exist as a result of noisy equipment and processes, as well as different levels of exposure over varying durations of time. The areas listed below are examples of those in which there is the potential for sound levels to regularly be at or above 85 dBA.

BUILDING SYSTEMS/MAINTENANCE

- Building Mechanical Rooms
    - Chillers
    - Stand-by Generators
- Central Utilities Plant (CUP)
    - Compressors
    - Boilers
    - Chillers
    - Cooling Towers
- Roof-Tops
    - Exhaust Fans
- Trades Structural Shop
    - Saws
    - Planers
    - Drills
- Trades Mechanical and Building Mechanical Shops
    - Metal Cutters
    - High-speed Drills
    - Electric Motors
- Grounds
    - Heavy Equipment Operation
    - Lawn Mowers
    - Blowers
    - Weed Trimmers
    - Chainsaws

ATHLETICS

- Building/Utility Areas
- Chillers
- Compressors
- “Zamboni” Operations
- Generators

ACADEMIC FACILITIES/OTHER CAMPUSES/RESEARCH STATIONS

- Machine Shops
- Animal Holding Areas
- Pilot Plants
- Operating Equipment (Tractors, etc.)