

Hearing Conservation Program

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Written By:	Manager, Environmental Health & Safety		
Approved By:	Vice President, People, Culture & Student Services		
PURPOSE			
<p>This procedure ensures that all workplace parties at Trent University understand and comply with the Ontario <i>Occupational Health and Safety Act</i> and <i>Ontario Regulation 381/15: Noise</i>. Trent University will take all reasonable precautions to protect employees from hazardous noise exposure.</p> <p>This program applies to all workers, students, volunteers, and any other individuals who may be exposed to potentially hazardous noise levels on Trent University campuses, including noise generated during research activities.</p>			
OBJECTIVES			
<p>The objective of Trent University's Hearing Conservation Program is to identify and control noise hazard areas and to protect employees who may be at risk of developing occupational noise-induced hearing loss.</p>			
SCOPE			
<p>This program applies to all University workers, students, and volunteers who work in noise hazard areas or who may develop noise-induced hearing loss because of their job duties.</p> <p>It is the University's intent that, whenever practical and feasible, excessive noise exposure will be reduced or eliminated through engineering controls or improved work practices before the mandatory use of hearing protection is required.</p>			
DEFINITIONS AND ACRONYMS			
Audiometry	A method of hearing assessment that tests an individual's ability to hear sounds of different intensities and frequencies. Audiometry detects early, asymptomatic noise-induced hearing loss before the affected individual is even aware that it is happening.		
A-weighted decibel	The A-weighted decibel or dBA is a type of decibel measurement which closely represents the manner in which a human ear responds to noise.		
Decibel	The decibel is a unit of measurement of sound pressure level that is logarithmic and dimensionless.		
dB(A)	A measurement of sound level in decibels using a reference sound pressure of 20 micropascals when measured on the A-weighting network of a sound level meter.		
Continuous Noise	Sound that has unbroken sound waves.		

Intermittent noise	Sound that has broken or interrupted sound waves.
Exchange Rate	The increase (decrease) in sound level for which permissible exposure time is halved (doubled). The two common exchange rates are 3 dB and 5 dB. The University's Noise Control and Hearing Conservation Program uses the 3dB exchange rate since it is more conservative and provides better protection against noise-induced hearing loss. See Table 1.
Noise	In general, noise is considered to be any unwanted sound. The University's Noise Control and Hearing Conservation Program targets noise levels and noise exposures that are associated with noise-induced hearing loss (refer to the definitions for "noise-exposed" and "noise hazard area" for clarification). Unwanted sound. Sound, like water, travels in waves; it is similar to dropping a rock in the middle of a still body of water: the waves (of sound or water) ripple outward from the source.
Noise dosimetry	This noise assessment technique measures an employee's personal noise exposure and is particularly useful and applicable when employees work in numerous noisy areas for short durations at a time or perform different noisy operations on any given day.
Noise-exposed	Any worker whose work activities, tasks, or work location results in: <ul style="list-style-type: none"> • An equivalent sound exposure level (Lex,8) of 85 dBA or greater over an 8-hour workday, or • An equivalent exposure for longer or shorter shifts, using a 3 dB exchange rate, where exposure is determined without taking hearing protection into account.
Noise hazard area	An area is considered a noise hazard if the sound levels regularly exceed 85 dBA
Noise surveys	Noise survey is another noise assessment technique that provides valuable information regarding sound levels in an area. The most common type is a general noise survey which measures sound levels in A -weighted decibels (dBA). Another important type of noise survey is octave band frequency analysis. This type of analysis assists in the selection of potential noise control measures.
Nuisance noise	Refers to sound that may be irritating or annoying but is not loud enough to be hazardous or associated with hearing loss. Nuisance noise is not covered under the University's Noise Control and Hearing Conservation Program. Because nuisance noise is subjective, related concerns will be assessed separately as needed.
Sound	Oscillations in pressure above and below ambient atmospheric pressure.
Supervisor	The OHSA defines supervisor "a person who has charge of a workplace or authority over a worker." Trent University recognizes supervisors as university workers who have a duty and effective power to ensure that one or more workers comply with

	the OHS or safety related policies and procedures. The definition is not subject to factors such as job title, union affiliation, or even employment status.
Time-weighted average	The time-weighted average (TWA) represents the average (noise) exposure measured over a typical 8-hour workday.
Worker	Means any of the following: <ul style="list-style-type: none"> • A person who performs work or supplies services for monetary compensation. • A secondary school student who performs work or supplies services for no monetary compensation under a work experience program authorized by the school board that operates the school in which the student is enrolled. <p>A person who performs work or supplies services for no monetary compensation under a program approved by a college of applied arts and technology, university, private career college or other post-secondary institution.</p>
Workplace	Means any land, premises, location or thing at, upon, in or near which a worker works, i.e. where the academic and administrative activities of Trent University take place.

ROLES & RESPONSIBILITIES

Employer

Trent University's Board of Governors has delegated the responsibilities of Employer to the President and Vice-Presidents. The OHS outlines a number of Employer responsibilities, including:

- Ensuring the requirements of this Program are met in each of the workplaces and activities that operate under their authority.

Manager/Supervisor

Supervisors must ensure that all noise exposed employees under their supervision are properly trained, understand the associated noise hazards, and have the necessary means to protect their hearing.

When hearing protection devices are required, supervisors must select appropriate devices based on measured sound levels, the attenuation provided by the protectors, and the manufacturer's guidance on their proper use and limitations. Supervisors are responsible for ensuring hearing protection devices are available and accessible, enforcing the use of hearing protection and taking appropriate action if employees do not comply.

Human Resources Department, Health and Safety

Trent University's office of Health and Safety are responsible for:

- Establishing and reviewing Trent's Hearing Conservation Program
 - Arranging for noise surveys and personal dosimetry assessments to be conducted, as necessary

- Providing advice regarding control measures and hearing protection
- Providing appropriate general noise training and education
- Reporting noise-induced hearing loss cases to the Workplace Safety and Insurance Board
- Reporting general summaries of the results of workplace noise exposure testing to pertinent Supervisors and the Joint Health and Safety Committee, as appropriate.

Joint Health and Safety Committee (JHSC) Members

The Joint Health and Safety Committee is responsible for inspecting the workplace and identifying potential hazards. If noise hazards are detected or suspected, the JHSC will notify the Health & Safety Office for further investigation and follow-up.

In accordance with Section 11 of the *Occupational Health and Safety Act* (Ontario), the H&S Office must inform the JHSC when sound level measurements are scheduled in the workplace. A worker member of the JHSC is entitled to be present at the start of any noise testing.

Workers

Trent university staff and faculty are responsible for:

- Reporting workplace noise exposures/concerns immediately to their supervisor
- Using and caring for hearing protective devices where these devices are required
- Notifying their supervisor when hearing protective devices are damaged or need replacement
- Attending noise training workshops as required
- Responding to requests for participation in the audiometric screening program

PROCEDURE

Background

It is incumbent on supervisors to identify potential occupational noise hazards, assess the risk, and institute proper measures to mitigate the risk.

If a worker has reasonable concern of noise exposure in their work area, they should report these concerns to their supervisor and may request a noise risk assessment. The H&S Office may be contacted to assist, as necessary.

Regular exposure to sound levels greater than a time-weighted average of 85 dBA or an "equivalent" noise exposure (using a 3 dB exchange rate), as listed in Table 1, is associated with the development of noise-induced hearing loss.

Noise Hazard Assessments

An employee is considered noise-exposed if they can develop occupational noise-induced hearing loss, because of their work activities.

Noise-exposed employees and/or noise hazard areas will be identified by means of workplace noise surveys and/or dosimetry. If conditions in the workplace change at any time (e.g. new equipment or

processes that increase the risk of noise exposure), supervisors are responsible for contacting the H&S Office to arrange for an assessment.

In most cases, an external party will be contracted to conduct baseline noise surveys and dosimetry. Follow-up testing may be completed by the H&S Office or may be performed by an external vendor, depending on the circumstances and resources available.

Occupational noise exposure limits should be interpreted carefully due to the additive nature of noise. For example, an exposure of 85 dBA for 8 hours is considered 100% of the allowable “dose” of noise to a worker. Similarly, an exposure of 94 dBA for 1 hour is considered 100% of the allowable “dose”. Without any noise controls, or personal protective equipment, once a worker’s “dose” is at 100% they would be required to stop work for the day.

It is also important to understand that noise exposure levels and limits are defined under an assumption of ‘rest’ outside of workplace exposure. If an employee has high noise exposure outside of their work hours, these occupational exposure limits may not be fully protective. Therefore, hearing protection measures will be implemented for any task or job, with a **measured exposure over 85 dBA regardless of duration**, to help ensure hearing is protected.

Engineering controls or work practices must be investigated as protection measures first. Only if the engineering controls or work practices are not feasible is the use of personal protective equipment an acceptable noise control.

Hierarchy of Controls for Noise Exposure

To reduce hazardous noise exposure, the **Hierarchy of Controls** should be utilized, prioritizing the most effective methods first. Controls should be implemented in the following order:

1. Elimination (Most Effective)

Remove the noise source entirely.

- Discontinue the noisy task or process.
- Relocate noisy operations away from workers.

2. Substitution

Replace the noise source with a quieter alternative.

- Use quieter equipment, tools, or machinery.
- Substitute high noise processes with lower noise methods.

3. Engineering Controls

Modify equipment or the workstation to reduce noise at the source or along its path.

- Install sound dampening materials, acoustic barriers, or enclosures.
- Implement vibration isolation, mufflers, or silencers.

- Maintain equipment to prevent unnecessary noise (e.g., lubrication, repairs).

4. Administrative Controls

Change work practices to reduce workers' exposure time.

- Rotate employees to limit time in high noise areas.
- Schedule noisy tasks when fewer workers are present.
- Provide quiet rest areas.

5. Personal Protective Equipment (Least Effective)

Use hearing protection devices (HPDs) when higher level controls cannot fully reduce exposure.

- Provide appropriate earplugs or earmuffs with sufficient NRR/SNR rating.
- Ensure fit testing, training, and proper storage.
- Monitor compliance and effectiveness.

Hearing Protection Devices

When eliminating workplace noise or reducing exposure through engineering or administrative controls is not possible or reasonable, or when additional protection is needed, hearing protection may be used as a control measure.

Under *Ontario Regulation 381/15: Noise*, hearing protection devices (HPDs) are considered a **last resort**, as they do not remove the noise hazard. Instead, they protect individual workers—*and only when worn correctly*. HPDs are available in various styles and types, including earplugs and earmuffs.

Earplugs

Earplugs are inserted into the ear canal to block noise. Foam roll-down earplugs are the most commonly used on campus. These individually wrapped plugs are typically available in designated noisy areas such as mechanical rooms and workshops, stored in small dispensers mounted on walls or placed on shelves.

Earmuffs

Earmuffs cover the entire outer ear and form a sound reducing seal using cushioned ear cups. They are suitable for a wide range of noise levels and are often preferred in environments where:

- Earplugs are difficult to fit properly
- Workers remove and replace protection frequently
- Additional protection is needed in combination with earplugs (dual protection)

Earmuffs must be worn correctly—fully covering the ears, with the headband adjusted to maintain a secure seal. Accessories such as glasses, facial hair, or hardhat attachments can affect the seal and reduce effectiveness.

Personal audio devices (e.g., iPods, MP3 players) are **not** considered suitable forms of hearing protection, including noise cancellation modes on headphones. Noise cancellation functions in headphones only reduce the sound you hear electronically, but it does not physically block or reduce hazardous noise levels reaching your ears so it cannot provide certified hearing protection.

The NRR method and its limitations

Much of the sound attenuation data in use today is still from ANSI S3.19-1974, "Method for the Measurement of Real-Ear Protection of Hearing Protectors and Physical Attenuation of Earmuffs", including the NRRs (Noise Reduction Ratings), that manufacturers print on their packages of HPDs.

When selecting hearing protection devices (HPDs), it is often incorrectly assumed that the NRR on the package accurately predicts the dBA reduction that the device will provide, which is untrue.

Since the NRR is a laboratory test involving experienced users and may not reflect real-world results, HPDs should be "de-rated" to account for the significantly reduced protection provided under "real world" conditions.

NRR de-ratings can be calculated as follows, as per the guidance *A Guide to the Noise Regulation (O. Reg. 381/15) under the Occupational Health and Safety Act, Appendix C: Selection of hearing protection devices and de-rating schemes:*

For Ear Plugs:

$$Leq \text{ (dBA)} - (\text{NRR} * 0.5 - 3) = \text{Exposure Limit}$$

For Earmuffs:

$$Lex \text{ (dBA)} - (\text{NRR} * 0.5 - 3) = \text{Exposure limit}$$

Warning signage

Regulation 381 indicates that a clearly visible warning sign shall be posted at all approaches to an area where the sound level regularly exceeds 85 dB(A). Signage can be requested through Facilities Management or the Health & Safety Office.

RECORDS

The Health and Safety Office will forward a copy of noise surveys and/or personal dosimetry reports to:

- The supervisor(s) responsible for all areas tested
- All Joint Health and Safety Committee members
- The worker, in the case of personal dosimetry results

Records of current noise levels and noise control/hearing conservation measures will be kept by the Health and Safety Office, Human Resources.

TRAINING AND PERSONAL

All workers who are at risk of exposure to hazardous noise levels must complete the Hearing Conservation & Noise Induced Hearing Loss training module that is available through VIP. The training module contains topics such as the effects of noise on hearing, examples of noise controls, hazard recognition, and the use and care of hearing protection devices.

Supervisors are responsible for ensuring all necessary workers are enrolled in the training, and that it is completed before they are exposed to potentially hazardous noise levels.

Before a worker receives and wears hearing protection, a supervisor must provide them with instructions on how to properly use HPDs. The supervisor must also explain the device’s limitations and why the protective equipment is required.

Information about these devices is typically available from the manufacturer or on the supplier’s website.

LEGISLATION

Under the *Occupational Health and Safety Act* and *Ontario Regulation 381/15: Noise*, employers in Ontario are legally required to protect workers from hazardous sound levels by taking all measures reasonably necessary in the circumstances, including the use of engineering controls, safe work practices, and, where these are insufficient, the provision of appropriate hearing protection devices (HPDs).

Workers must not be exposed to noise levels exceeding an equivalent continuous exposure of 85 dBA over an eight-hour workday, calculated using the 3 dB exchange rate, which halves allowable exposure time with every 3 dB increase in sound level. Any workplace sound level measurements used to determine required controls must be performed without considering the use of HPDs.

Employers are further required to post visible warning signs in areas where noise regularly exceeds 85 dBA, ensure appropriate training on the selection, use, limitations, and care of hearing protection devices, and verify that workers use such devices when engineering or administrative controls cannot reduce exposure below legislated limits.

CHANGES TRACKING	
DETAILS OF CHANGES	DATE CHANGED

APPENDIX A: DBA EXCHANGE RATE AVERAGING METHOD

Duration per day (hours) Exposure time	Maximum permissible exposure durations for noise <u>without hearing protection</u> (continuous or intermittent noise)
16 HRS	82
8 HRS	85
4 HRS	88
2 HRS	91
1 HR	94
1/2 (30 minutes)	97
1/4 (15 minutes)	100
1/8 (7.5 minutes)	103
1/16 (3.75 minutes)	106
1/32 (1.88 minutes)	109
NOISE SOURCE EXAMPLES	dB(A)
Pneumatic chipper at 1 metre	115
Hand-held Circular saw at 1 metre	115
Textile room	103
Newspaper Press	95
Power Lawn mower at 1 metre	92
Diesel Truck 50km/h at 20 metres	85
Passenger Car 60km/h at 20 metres	65

APPENDIX B: HEARING PROTECTION SELECTION

Trent retained Cambium Inc. (Cambium) to complete a noise assessment of various workspaces on Symons Campus where worker exposure to elevated noise levels was a concern; data was collected in March, June, and November of 2025. Based on the results of the testing, it is possible that hearing protection may be a solution to protect noise-exposed workers in areas where further engineering and administrative controls cannot be introduced.

General Hearing Protection Measures

From the testing completed in 2025, the reasonably worst-case general noise level on site was measured at 93 dBA.

Solving the Noise Reduction Rating selection method for ear plugs results in the following:

$$93.3\text{dBA} - (\text{NRR} * 0.5 - 3) = 85 \text{ dBA}$$

$$\text{NRR (Ear Plugs)} = 23 \text{ dB}$$

Solving the Noise Reduction Rating selection method for earmuffs results in the following:

$$\text{Leq (dBA)} - (\text{NRR} * 0.7 - 3) = \text{Exposure Limit}$$

$$93.3 \text{ dBA} - (\text{NRR} * 0.7 - 3) = 85 \text{ dBA}$$

$$\text{NRR (Earmuffs)} = 16 \text{ dB}$$

These NRR ratings are easily achieved by most hearing protection available on the market.

Areas of High Noise Exposure

During testing some areas of particularly high noise exposure were identified. These areas typically being very near to generators, compressors, and vacuum pumps, with a sound level of 107 dBA. These areas would require enhanced hearing protection for 8-hour exposure to the effect of up to:

$$\text{NRR (Ear plugs)} = 49 \text{ dB}$$

$$\text{NRR (Earmuffs)} = 35 \text{ dB}$$

It is unlikely these values are achievable with hearing protection products on the market alone. In which case dual hearing protection may be considered in the event of 8-hour exposure.

For Dual Hearing Protection (Muffs and Plugs)

$$\text{Leq (dBA)} - ((\text{NRR} + 5) * 0.65 - 3) = \text{Exposure Limit}$$

$$106.7 \text{ dBA} - ((\text{NRR} + 5) * 0.65 - 3) = 85 \text{ dBA}$$

$$\text{NRR} = 33 \text{ dB}$$

Note that with combined values, either the plugs or muffs must have a rating of NRR 33 or better, and both plugs and muffs must be implemented. Note that an NRR rating of 33 may still be more difficult to source however some earplugs are commercially available that are rated that high.

APPENDIX C: OCCUPATIONAL NOISE EXPOSURE TESTING RESULTS 2025

Table 1 - Measurement Summary - Combined

File Name	Source ID	Equipment / Description	Measurement Duration	Distance (if applicable)	Sound Pressure Level Octave Band Leq (dB)								SPL Total* dBA	Other Comments
					63	125	250	500	1000	2000	4000	8000		
20250325001	CMP01	Tunnel Compressors	00:13	2	81	85	83	78	80	77	75	73	84	Enviro Science building, reverberant space
20250325002	CMP02	Tunnel Compressors, scan	01:26	-	80	87	84	77	78	75	73	71	84	Enviro Science building, background water pump
20250325003	CMP03	Tunnel, Ingersol Rand Compressor	00:21	1	70	81	87	83	75	72	73	69	84	Enviro Science building, reverberant space
20250325004	BLR01	Tunnel Boilers	02:50	1	86	82	82	82	81	81	77	70	87	Enviro Science building, reverberant space, between boilers 2&3 (ON)
20250325005	BLR02	Tunnel Boilers	00:14	1	84	83	78	77	78	77	72	65	83	Enviro Science building, reverberant space, boilers 2&3 (ON), boiler 1 (OFF)
20250325006	CMP04	Site Services E Compressor	00:30	2	67	79	86	81	71	68	70	78	83	Enviro Science building (Site Services East) comp (ON)
20250325007	MTR01	Site Services E Ambient/Motor hum	00:16	2	62	70	68	67	68	58	63	54	71	Enviro Science building (Site Services East), comp (OFF) Motor Hum
20250325008	CMB01	Chamber #2	01:01	-	69	71	84	81	78	80	75	68	86	Enviro Science building, Chamber #2 (of 3), measured inside
20250325009	LAB01	Lab F101, scan	01:57	-	58	59	60	62	62	58	55	48	66	Chem Science building, scan w/ motors/pumps running, AMB noise
20250325010	LAB02	Lab E101, scan	02:04	-	68	65	63	63	62	58	53	48	66	Chem Science building, scan w/ equipment running (motor, pump, magnet)
20250325011	LAB03	Lab D101, scan (teaching)	01:05	-	68	65	63	62	60	57	52	46	65	Chem Science building, scan from corner, student + radio AMB noise
20250325012	LAB04	Lab E102, scan	01:17	-	63	60	60	60	58	55	48	42	63	Chem Science building, scan w/ fumehoods + vacuum pumps, AMB noise
20250325013	NMR01	NMR rm. 117, scan	01:46	-	68	69	63	63	59	57	53	43	65	Science Complex, scan, background air flow + dehumidifier
20250325014	LNT01	Liquid Nitrogen Tank	00:26	1	74	75	68	66	60	58	58	54	68	Science Complex, scan, N2 tank fill, reverberant (*curtain)
20250325015	LNT02	Liquid Nitrogen Tank (pressure release)	00:32	1	75	77	69	75	72	78	83	84	88	Science Complex, pressure diffuse/release (*curtain)
20250325016	LNT03	Liquid Nitrogen Tank (tank fill)	01:23	1	76	76	69	74	72	77	83	86	88	Science Complex, N2 tank fill, tonal/pitch high (*curtain)
20250325017	MCH01	SCI 3A pumps/motors scan	01:01	-	60	62	59	61	58	57	59	52	65	Science Complex, mechanical room, idle/hiss AMB noise scan
20250325018	VAC01	Penthouse vacuum pumps	00:14	1	73	74	79	83	87	90	94	90	98	Chem Science building, vacuum pumps (1 of 3 ON), tonal
20250325019	VAC02	Penthouse vacuum pumps	00:39	5	72	72	74	76	87	89	92	89	96	Chem Science building, vacuum pumps (1 of 3 ON), 5m away @ panels
20250325020	PMP01	Penthouse filters +pumps, scan	00:21	-	72	75	74	76	79	85	88	84	92	Chem Science building, AH4 #4, scan filters w/ pumps (ON)
20250325021	VAC03	Penthouse vacuum pumps, scan	00:18	-	71	73	66	72	71	63	59	50	74	Chem Science building, vacuum pumps scan (OFF)
20250325022	VLT01	Voltage room scan	01:32	-	68	72	70	72	63	61	43	36	71	Enwayaang/Gzowski, scan, reverberant
20250325023	HVC01	Rm. 122 filter/HVAC, scan	01:05	-	80	72	65	60	57	55	59	52	66	Enwayaang/Gzowski, HVAC/filter room scan, tonal buzz, AMB noise air + motor
20250325024	BLR03	Rm. 122 Boiler scan	01:00	-	73	71	73	76	70	69	68	60	77	Enwayaang/Gzowski, Boiler section scan, scan of hot water heaters w/ boilers (OFF)
20250325025	BLR04	Rm. 122 Boiler scan	01:01	-	76	76	77	76	75	74	73	68	81	Enwayaang/Gzowski, boiler scan, 1 of 2 boilers ON
20250325026	PMP02	Penthouse water pump/AMB scan	01:37	-	60	64	57	54	54	52	56	41	61	Enwayaang/Gzowski, penthouse floor 7, scan, water pumps, minor AMB noise (air)
20250325027	VAC04	Mech Rm. (D) Compressors + vacuum pump, scan	01:04	-	65	61	64	67	68	66	62	54	72	DNA building block D mech rm, scan, 2 comp. (OFF) 1 vacuum (OFF) + other motors
20250325028	PMP03	Mech Rm. (C), pumps, scan	01:02	-	59	62	59	62	58	58	53	46	64	DNA building block C mech rm, scan w/ AMB pumps dom.
20250325029	BLR05	D253 Mech Rm./boiler, scan	01:12	-	74	75	69	74	67	61	63	56	74	DNA building D253, background pumps, boiler ON, scan
20250325030	BLR06	Mech Rm. 272, boilers/condensers, scan	00:47	-	73	75	72	69	69	68	66	60	75	DNA building Rm. 272, 3 boilers (OFF), condenser units=dom., scan
20250325031	CND01	Mech Rm. 272, condenser units	00:16	2	73	75	74	72	71	72	71	67	78	DNA building Rm. 272, 2m from 2 condenser units
20250325032	CMP05	Site Services W mech area compressor	00:17	1	77	79	81	79	76	72	69	68	81	Champlain, compressor (ON), 1 of 2 motors ON
20250325033	CMP06	Site Services W mech area compressor, scan	01:42	-	72	73	74	71	69	65	62	54	74	Champlain, compressor (ON), scan
20250325034	FMH01	Site Services W mech area, fumehood	00:13	-	74	71	78	76	73	67	64	58	78	Champlain, fumehood fan (ON)
20250325035	CMP07	South Tunnel, compressor	00:12	1	76	78	78	76	73	71	67	65	79	Lady Eaton, South Tunnel, 1 of 2 compressor (ON)
20250325036	CMP08	South Tunnel, compressor, pressure release	00:07	-	76	77	82	79	84	90	96	95	100	Lady Eaton, South Tunnel, 1of 2 compressor (ON), pressure release
20250325037	CMP09	South Tunnel, compressor, scan	00:20	-	74	76	76	73	70	67	64	62	76	Lady Eaton, South Tunnel, 1 of 2 compressor (ON), scan
20250325038	HVC02	South Tunnel, HVAC, scan	00:28	-	72	71	66	69	63	57	54	47	69	Lady Eaton, South Tunnel, scan of HVAC + AMB, compressor OFF
20250325039	FAN01	North Tunnel, background air movement	00:53	-	74	70	69	66	65	59	58	49	69	Lady Eaton, North Tunnel, air intake scan, compressor (OFF)

Table 1 - Measurement Summary - Combined

File Name	Source ID	Equipment / Description	Measurement Duration	Distance (if applicable)	Sound Pressure Level Octave Band Leq (dB)								SPL Total* dBA	Other Comments
					63	125	250	500	1000	2000	4000	8000		
20250325040	FAN02	North Tunnel, background air movement w/ compressor	00:46	-	75	72	73	70	67	61	60	56	72	Lady Eaton, North Tunnel, air intake scan, compressor (ON)
20250325041	FAN03	Student Centre, exhaust fan+water pump scan	00:32	-	66	71	64	59	58	55	62	52	66	Student Centre, Mech Rm. 117, exhaust fan+water pump scan, Boilers (OFF)
20250325042	MCH02	Athletics Centre Rm. 212, exhaust fan + AMB, scan	00:51	-	76	73	66	66	64	60	64	52	70	Athletics Centre, Rm. 212 exhaust/fan + AMB scan
20250325043	BLR07	Athletics Centre Rm. 210, boilers, scan	00:37	-	74	71	72	73	72	73	72	66	79	Athletics Centre, Rm. 210, boilers 1 of 2 ON, scan
20250325044	HVC03	Athletics Centre Rm. 210, HVAC + AMB	00:52	-	75	72	68	66	64	61	62	52	70	Athletics Centre, Rm. 210, HVAC + AMB, boilers and chillers (OFF)
20250325045	BLR08	Athletics Centre Rm. 210, boiler, scan	00:24	-	67	63	59	62	67	63	57	46	70	Athletics Centre, Rm. 210, 1 boiler (ON), scan
20250325046	PMR01	Athletics Centre, Pool mech Rm., scan	01:01	-	69	68	70	72	72	71	73	60	78	Athletics Centre, Pool mech Rm., water pumps + AMB fans, scan
20250612001	DC01	Dust collector	00:21	-	64	65	64	66	63	62	60	55	69	Scan with slight talking
20250612002	DC02	Dust collector	00:16	-	64	64	64	65	62	61	60	56	68	Scan with no talking
20250612003	TS01	Table saw	00:37	1	69	69	73	75	77	81	84	86	89	Cutting wood with dust collector on
20250612004	MS01	Mitre saw	00:06	1	63	65	76	78	79	86	86	82	91	Cutting wood with dust collector on
20250612005	MS01	Mitre saw	00:08	1	68	70	77	79	80	86	86	82	91	Cutting wood with dust collector on, second cut
20250612006	PL01	Planer (20")	00:32	2	80	78	82	82	80	79	77	73	86	Idle with dust collector on
20250612007	PL01	Planer (20")	00:17	2	80	77	85	81	80	80	81	80	88	First pass through with dust collector on
20250612008	PL01	Planer (20")	00:22	2	80	77	83	81	79	80	79	77	86	Second pass through with dust collector on
20250612009	BS01	Belt sander	00:16	2	72	75	70	78	75	76	77	77	84	Sanding with dust collector off
20250612010	DHD01	Dewalt hand drill	00:14	1	66	89	87	82	82	83	81	80	89	Hammer drilling through cinder block, dust collector off
20250612011	CHD01	Corded Hammer Drill	00:12	2	64	63	73	77	87	89	86	82	93	Hammer drilling through cinder block, dust collector off
20250612012	ACMP01	Athletic Center Mechanical Pump	00:21	-	54	60	72	78	77	78	73	59	83	Scan. Pump runs 2x per week for 10 min for maintenance
20250612013	MR01	Athletic Center Mechanical Room 210	00:50	-	74	67	65	65	66	63	63	52	71	Scan. Boiler side, 1 on only, chiller background, pumps humming in background.
20250612014	MR02	Athletic Center Mechanical Room 210	01:08	-	78	73	71	70	71	69	66	56	76	Scan. Chiller side, boiler in background, pumps humming in background
20250612015	CHMR03	Champlain Mechanical Room	01:29	-	71	66	71	77	75	79	78	85	87	Scan. Compressor and fume hood off, chiller running.
20250612016	CHMR03	Champlain compressor	00:20	1	73	67	68	77	81	88	90	88	94	Compressor Air purge
20250612017	CHMR03	Champlain compressor	00:21	1	79	81	82	82	78	79	78	80	86	Compressor Air purge then running. Background chillers.
20250612018	CHMR03	Champlain Break Room, rm 1341	00:21	-	65	61	61	59	57	56	54	57	64	Scan
20250612019	CHMR03	Champlain Lunch Room, rm 1341	00:15	-	61	64	64	71	64	69	58	49	73	Scan. Doors open with chiller and compressor running.
20250612020	CHMR03	AHU_2 Air Handler	00:16	1	77	70	73	71	81	72	67	60	82	Idle, at belt/motor
20250612021	CHIT01	Champlain IT Room CC2T	00:16	1	56	57	62	65	65	63	61	56	70	Main server
20250612022	CHL01	Chiller	00:46	-	60	61	62	63	67	69	71	66	76	Scan. Enwayaang chiller running, measurement taken farthest from chiller
20250612023	CHL01	Chiller	00:40	-	62	65	67	71	76	77	78	75	84	Scan. Enwayaang chiller running, measurement taken beside chiller
20250612024	GNR01	Caterpillar generator (3406 Engine)	00:45	-	86	95	96	96	99	96	90	80	102	Scan in penthouse room. Runs weekly for 3 mins. Runs for 3.5 hours semi annually.
20250612025	SCGEN01	Sea can generator	00:32	-	95	99	99	102	102	101	97	92	107	Scan. DNA - D Block loudest sea can generator. Door is sometimes left open. Sea can has acoustic panelling installed.
20250612026	VP01	Vacuum pump room	00:21	-	66	66	62	61	63	61	57	52	67	Scan of room, compressor not on, audible water filtration equip.
20250612027	VP01	Vacuum pump room, Block C.	00:32	1	68	64	67	72	75	86	74	63	88	Scan of room, compressor not on
20250612028	GNR02	Rooftop generator	00:37	-	83	90	100	101	101	101	95	85	106	Scan of room, Environment Science building generator area
20250612029	CHL02	Chiller Room	00:53	-	75	76	75	76	75	76	72	67	81	Scan. Environment Science building mechanical room. Chillers on, slight background noise, pumps running. Runs for approx. 2 hrs a day. Employees frequently work in this location.
20250612030	ITR01	IT Room D229	00:26	-	72	62	63	73	69	66	62	53	74	Scan. DNA building IT room.
20250612	D_44457	Dosimeter on Darryl	2:36:43	-	-	-	-	-	-	-	-	-	83	Variable - Truck, compost, drag ball diamond w 4-wheeler, weedwack, mowing, leaf blower, backhoe
20250612	D_186803	Dosimeter on Hayden	2:33:39	-	-	-	-	-	-	-	-	-	97	Variable - Hedge trimmer, chain saw, pull saw, gator to get to trails.
20250612	D_50646	Dosimeter on Bryce	2:33:12	-	-	-	-	-	-	-	-	-	89	Variable - Mower, backhoe, battery impact drill, weedwack, tree trimming, chainsaw, back-pack blower

Table 1 - Measurement Summary - Combined

File Name	Source ID	Equipment / Description	Measurement Duration	Distance (if applicable)	Sound Pressure Level Octave Band Leq (dB)								SPL Total* dBA	Other Comments
					63	125	250	500	1000	2000	4000	8000		
20251105001	CSB_F01	Lab - Average	01:01	-	58	64	62	64	63	59	53	47	67	Scan. Some background general mechanical hum and ICP machines.
20251105002	CSB_E01	Lab - Chiller	01:02	-	69	62	63	63	62	57	54	50	66	Scan. Some background general / variable lab noise
20251105003	CSB_E102	Lab - Fume hood	01:02	-	66	62	59	54	57	51	45	39	60	Scan. Some background general lab noise, some high-tone hum from glove box
20251105004	CSB_E102	Lab - Vac Pump	00:16	0.5	78	64	61	60	63	63	54	46	68	Vac pump dominant
20251105005	ESB_D101	Lab - Average	01:01	-	71	66	66	69	63	59	52	44	69	Scan. Some background general / variable lab noise. 10 fume hoods, 20 students.
20251105	D_044052	Dosimeter on Naomi, CSB_E01	3:58:16	-	-	-	-	-	-	-	-	-	76	Variable - Mix between office (~1 hr) and lab (~3 hr). - Mass spectrometers with pumps, general mechanical sounds, students, talking
20251105	D_050656	Dosimeter on Karla, CSB_F01	4:07:09	-	-	-	-	-	-	-	-	-	70	Variable - Lab and Cleaning Room - Rotary pumps, chillers, mass spectrometer in lab - Fume hoods, air handling in cleaning room
20251105	D_030794	Dosimeter on Kenny, CSB_E102	4:02:01	-	-	-	-	-	-	-	-	-	72	Variable - Lab - Pumps and Motors, occasional vacuum pump, intermittent fume hood
20251105	D_026372	Dosimeter on Jayme, ESB_D101	4:07:53	-	-	-	-	-	-	-	-	-	79	Variable - Mix between office and lab - 10 fume hoods, 20 students.

* - Some total sound pressure level values are highlighted for reference only. These specific values show greater than 85 dBA, but the highlighting does not necessarily indicate concern, or denote pass/fail.