Noise – Occupational Exposure Limits in Canada Fact Sheets

WHAT ARE THE OCCUPATIONAL EXPOSURE LIMITS FOR WORKPLACE NOISE?

Occupational exposure limits (OELs) for noise are typically given as the maximum duration of exposure permitted for various noise levels. They are often displayed in exposure-duration tables like Table 1A and Table 1B. The OELs depend on two key factors that are used to prepare exposure-duration tables: the criterion level and the exchange rate.

Table 1A
Noise Exposure Limits when Criterion Level = 85 dBA

3 dBA Exchange Rate	Maximum Permitted Daily Duration (hours)	5 dBA Exchange Rate
Allowable Level dBA		Allowable Level dBA
85	8	85
88	4	90
91	2	95
94	1	100
97	0.5	105
100	0.25	110

Table 1B
Noise Exposure Limits when Criterion Level = 90 dBA

3 dBA Exchange Rate	Maximum Permitted Daily Duration (hours)	5 dBA Exchange Rate
Allowable Level dBA		Allowable Level dBA
90	8	90
93	4	95
96	2	100
99	1	105

102	0.5	110
105	0.25	115

What is the criterion level?

The criterion level, often abbreviated as Lc, is the steady noise level permitted for a full eight-hour work shift. This is 85 dBA in most jurisdictions, but it is 90 dBA in Quebec and 87 dBA for organizations that follow the Canadian federal noise regulations.

What is the exchange rate?

As the sound level increases above the criterion level, Lc, the allowed exposure time must be decreased. The allowed maximum exposure time is calculated by using an exchange rate, also called a “dose-trading relation” or “trading ratio.” The exchange rate is the amount by which the permitted sound level may increase if the exposure time is halved.

There are two types of exchange rates currently in use: 3 dBA exchange rate or the “3 dB rule,” and 5 dBA exchange rate or the “5 dB rule.” These two exchange rates, with criterion levels of 85 dBA and 90 dBA, give two different sets of exposure guidelines, as Table 1A and 1B show.

The 3 dBA exchange rate is more stringent. For example, the maximum permitted duration for a 100 dBA noise exposure in the 3 dBA exchange rate is 15 minutes. With the 5 dBA exchange rate, it is one hour.

Most experts recognize the 3 dB rule as more logical. They argue that it is logical that if the sound level is doubled, then the allowable exposure time should be cut in half. It follows, then, that the allowable time should be halved for every 3 dBA increase in sound level. This is precisely the case if the 3 dBA exchange rate is used.

The table below shows the criterion levels (i.e., maximum permitted exposure levels for 8 hours) and the exchange rates used in different Canadian jurisdictions.

What are the noise exposure limits in Canadian jurisdictions?

Jurisdiction (federal, provincial, territorial)	**Continuous Noise*[1]**		**Impulse / Impact Noise[1]***	
	Maximum Permitted Exposure Level for 8 Hours: dB(A)	Exchange Rate dB(A)[2] +	Maximum Peak Pressure Level dB(peak)	Maximum Number of Impacts
Canada (Federal)	87	3	—	—
British Columbia	85	3	140	—
Alberta	85	3	—	—
Saskatchewan[4]	85	3	—	—
Manitoba	85	3	—	—
Ontario	85	3[4]	—	—
Quebec	90	5	140	100
New Brunswick	85	3	140	—

Nova Scotia[3]	85	3	140	–
Prince Edward Island	85	3	–	–
Newfoundland and Labrador[3]	85	3	140	–
Northwest Territories[4]	85**	***	140	100
Nunavut[4]	85**	***	140	–
Yukon Territories	85	3	140	90

1. When 3 dB exchange rate is used, generally there is no separate regulation for impulse/impact noise. The equivalent sound exposure level (Lex) takes impulse noise into account in the same way as it does that for continuous or intermittent noise. Noise regulations in several jurisdictions treat impulse noise separately from continuous noise. A common approach is to limit the number of impulses at a given peak pressure over a workday. The exact figures vary slightly, but generally the regulations in which the exchange rate is 5 dB permit 10,000 impulses at a peak pressure level of 120 dB; 1,000 impulses at 130 dB; 100 impulses at 140 dB, and none above 140 dB.
2. The regulations in these jurisdictions do not specify a value but reference the ACGIH TLVs.
3. The regulations in these jurisdictions indicate that over an exposure limit of 85 dBA Lex or an “at any time” sound level limit of 90 dBA, the employer is required to provide hearing protection, train workers and implement audiometric testing. dBA Lex means the level of a worker’s total exposure to noise in dBA is averaged over an entire workday and adjusted to an equivalent eight-hour exposure. These jurisdictions also do not allow unprotected exposures for sound levels that exceed 90 dBA. Even when the equivalent exposure is less than 85 dBA, if a worker is exposed at any time at sound levels equal or above 90 dBA the employer is required to take the protective measures.

* In both territories, the Mine Health and Safety Regulations reference the 3 dBA exchange rate and the maximum impulse level of 140 dB. Please contact Northwest Territories and/or Nunavut for further information.

Where do you find noise exposure limits in Canadian legislation?

The following are references to the federal, provincial, and territorial legislation where you will find the occupational noise exposure limits from the different jurisdictions in Canada. Since legislation is amended from time to time, the jurisdiction should be contacted for the most current information about the noise exposure limits and how they are enforced. This information is intended as a guide only and may not apply to specific occupational sectors (for example, mining). The regulations should also be consulted for information on requirements for hearing protective equipment and other control measures that may be prescribed for protecting the hearing of workers. Please contact your local office of the occupational health and safety agency for your jurisdiction if you have specific questions that apply to your workplace.

Canada (Federal)

Canada Labour Code, Part II, (R.S.C. 1985, c. L-2)

Canada Occupational Safety and Health Regulations, (SOR/86-304)

Section 7.4(1)(b)

British Columbia

Worker’s Compensation Act

Occupational Health and Safety Regulations (BC Reg 296/97 as amended)

Section 7.2 [B.C. Reg. 382/2004, s.1]

Alberta

Occupational Health and Safety Code, 2009

Section 218; Table 1 of Schedule 3

Saskatchewan

Occupational Health and Safety Act, 1993 [R.R.S. c.0-1.1, r.1]

Occupational Health and Safety Regulations, 1996

Part VIII, Section 113 (1)

Manitoba

Workplace Safety and Health Act [R.S.M. 1987, c. W210]

Workplace Safety and Health Regulation (Man. Reg. 217/2006) Part 12

Ontario

Occupational Health and Safety Act [R.S.O. 1990, c.1]

Noise (O. Reg. 381/15)

Quebec

Act Respecting Occupational Health and Safety [R.S.Q., c.2.1]

Regulation respecting Occupational Health and Safety (O.C.885-2001)

Division XV, Sections 130-141

New Brunswick

Occupational Health and Safety Act

General Regulation (N.B reg. 91-191 as amended)

Part V, Sections 29 to 33

Nova Scotia

Workplace Health and Safety Regulations

N.S. Reg. 52/2013

Part 2, Section 2.1 to 2.3

(references ACGIH TLVs, as updated annually)

Prince Edward Island

Occupational Health and Safety Act

Occupational Health and Safety Act General Regulations (E.C. 180/87)

Part 8, Section 8.3

Newfoundland and Labrador

Occupational Health and Safety Act

Occupational Health and Safety Regulations, 2012

Section 68

(references ACGIH TLV, as updated annually)

Northwest Territories

Safety Act

Occupational Health and Safety Regulations, R-039-2015

Part 8 Noise Control And Hearing Conservation

Nunavut

Safety Act

Occupational Health and Safety Regulations, R-003-2016

Part 8 Noise Control and Hearing Conservation

Yukon Territories

Occupational Health and Safety Act

Occupational Health Regulation (O.I.C. 1986/164)

Section 4