Hearing Protection: 10 FAQs About Noise Monitoring

Hearing Conservation: 10 Noise Monitoring FAQs

About 9,000 Canadian workers per year suffer some form of hearing loss or impairment as a result of being exposed to hazardous noise levels in the workplace. In addition to wrecking workers' hearing, excessive noise increases the risk of safety incidents by making it hard for workers to communicate and hear warning alarms. That's why OHS laws require you to take measures to monitor and control noise levels in the workplace. Here are 10 FAQs to help you comply with noise monitoring requirements.

Q1. When Is Noise Monitoring Required'

A: Generally speaking, monitoring is required when workers are exposed to noise at levels that 'may be' equal or above the so-called 'action level' specified in the OHS regulations. In most jurisdictions, the action level is 85 dBA, i.e., an 8-hour time-weighted average sound level (TWA) of 85 decibels measured on the A scale (slow response). Exception: In federally regulated workplaces, the time-weighted average action level is 87 dBA. In 6 jurisdictions (BC, NB, NT, NU, QC and YK), the action level includes not only the 85 dBA average but also a *peak* decibel sound level of 140 dB.

Q2. Does PPE Count in the Calculation'

A: No. You must calculate the exposure level assuming workers

are **not** using PPE. In other words, even though hearing protection reduces the level of sound workers experience, you can't factor these PPE reductions of sound levels into your calculation.

Q3. How Do You Calculate TWA Sound Levels in Decibels'

A: Generally, you calculate the 8-hour TWA sound level, in decibels, from the dose (D), in percent, using the formula:

$$TWA = 16.61 \log(10) (D/100) + 90$$

Thus, an 8-hour work shift with the noise level constant throughout is equal to the measured sound level. Table 1 lists specific 8-hour TWA decibel totals related to particular noise percentage doses. So, if you know the dose, you can use the Table to make the conversion to decibels.

Table 1. TWA Decibels Associated with Particular Doses

A-weighted sound level, L (decibel)	Reference duration, T (hour)*
80	32
81	27.9
82	24.3
83	21.1
84	18.4
85	16
86	13.9
87	12.1
88	10.6
89	9.2
90	8
91	7
92	6.1
93	5.3
94	4.6
95	4
96	3.5

97	3
98	2.6
99	2.3
100	2
101	1.7
102	1.5
103	1.3
104	1.1
105	1
106	.87
107	.76
108	.66
109	.57
110	.5
111	.44
112	.38
113	.33
114	.29
115	.25
116	.22
117	.19
118	.16
119	.14
120	.125
121	.11
122	.095
123	.082
124	.072
125	.063
126	.054
127	.047
128	.041
129	.036
130	.031

* T computed by formula

$$T = \frac{8}{2^{(L-90)/5}}$$

Q4. How Do You Count Noise Doses'

A: You can also use Table 1 to make the opposite conversion'TWA decibels to noise dose.

Q5. Must Decibels Actually Exceed the 'Action Level"

A: No. Employers must develop and implement a monitoring program when noise exposure may equal or exceed an 8-hour TWA of 85 decibels. Result: Monitoring may be required even if you're below the 'action level' if there's reason to believe that you're close or that actual sound levels might be higher than in test conditions.

Q6. Which Monitoring Method Must You Use'

A: While rules vary slightly, you can generally use either personal or area monitoring based on which method works best at your workplace. Exception: You must representative personal sampling in circumstances that aren't suited for area monitoring, e.g., where there's high worker mobility, significant variations in sound level or a significant component of impulse noise'unless you can show that area sampling produces equivalent results.

Q7: What Sound Levels Must You Include in Noise Measurements'

A: You must integrate all continuous, intermittent and impulsive sound levels into your noise measurements.

Q8. What Requirements Apply to Monitoring Instruments'

A: The instruments you use to measure workers' noise exposure must be calibrated to ensure accuracy.

Q9. Is Monitoring Once OK or Must Monitoring Be Repeated'

A: You must repeat monitoring whenever a change in production, process, equipment or controls increases noise exposures such that:

- Additional workers may be exposed at or above the action level; or
- The attenuation’or reduction’of sound provided by the hearing protectors workers are using may be rendered inadequate to meet the requirements for PPE in the standard.

Q10. What Notice Must You Give Workers’

A: You must notify each worker exposed at or above an 8-hour TWA of 85 decibels of the results of the monitoring. You must also give affected workers or their representatives a chance to observe any noise measurements conducted under the standard.