

# TECH NOTES



## Glossary of Noise Terms

**Average Sound Level (Lavg)** – The average sound level measured over the specific time period using the chosen exchange rate. Only sound level above the threshold is included.

Lavg = Leq (equivalent continuous level) when the exchange rate is 3 dB

Lavg = L<sub>OSHA</sub> when the exchange rate is 5 dB

**C-A** – The A-weighted average sound level subtracted from the C-weighted average sound level (LCavg - LAavg).

**Continuous Upper Limit (CUL)** – The number of times the set upper limit was exceeded continuously for the set time interval. Any continuous event lasting for the set interval counts as one.

**Criterion Level** – Sound level required to produce 100% dose if continually applied for the criterion time (usually 8 hours). The current OSHA and MSHA criterion level is 90 dB; the ACGIH criterion level is 85 dB.

**Daily Noise Exposure (LEX,8h)** – The same as **LEP,d** (see below), used to assess a worker's noise exposure during an 8-hour workday.

**Daily Personal Noise Exposure (LEP,d)** – A-weighted noise level during a nominal 8-hour workday. Used to assess a worker's noise exposure during an 8-hour workday.

**Dose (D)** – The exposure to occupational noise expressed as a percentage of the allowable daily noise exposure. Exposure above 100% represents exposures that are hazardous.

**Equivalent Continuous Level (Leq)** – The sound level having the same overall energy as the fluctuating sound level over a given period of time.

**Exchange Rate** – An increment of decibels (dB) that requires the halving of exposure time. For example, a 5-dB exchange rate requires that exposure time be halved for each 5-dB increase.

### Frequency Weighting –

A-weighting corresponds to the human ear response

C-weighting correlates with the human response to high noise levels

Z-weighting is unweighted “zero” frequency weighting

**Maximum Sound Level (Lmax)** – The highest value of the frequency and time-weighted sound levels measured over the specific time period.

**Minimum Sound Level (Lmin)** – The lowest value of the frequency and time-weighted sound levels measured over the specific time period.

**Noise Dose (D)** – See *Dose*.

**Noise Exposure Points (Exposure Pt)** – Point system based on Health and Safety Executive guidance and used mainly in the UK to access daily personal noise exposure.

**Noise Exposure Points per Hour (Exposure Pt/Hr)** – Exposure points per hour.

**Peak** – The highest instantaneous sound pressure level of a selected frequency-weighted sound pressure level during the stated time interval.

**Projected Dose (pDose)** – The projected exposure to occupational noise assuming that the current exposure continues for the remaining duration of the work shift.

**Projected Time Weighted Average (pTWA)** – The projected exposure to occupational noise assuming the current noise exposure continues for the remaining duration of the work shift.

**Response (Time Weighting)** – Sound pressure level (SPL) averaging time interval, 125 milliseconds for FAST response, 1 second for SLOW response.

**Sound Exposure (E)** – The sound pressure measured during a stated time interval.

**Sound Exposure Level (SEL)** – The sound level having the same overall energy as the fluctuating sound level during a 1-second time interval.

**Sound Pressure (SP)** – A pressure caused by a sound wave passing through the air or other gaseous or liquid medium. The sensation of hearing is the result of fluctuation in atmospheric pressure initiated by a passing sound wave. Sound pressure is measured in Pa or N/m<sup>2</sup>.

**Sound Pressure Level (SPL)** – The ratio of actual sound pressure (P) to the reference sound pressure (P<sub>0</sub>). SPL uses logarithmic scale to represent a wide range of human hearing and is measured in decibels (dB),  $SPL = 20\log(P/P_0)$  dB. The reference sound level is the typical threshold of human hearing, P<sub>0</sub> = 20 mPa (2X10<sup>-5</sup> Pa).

**Threshold Level** – The A-weighted sound level. Only values above this level are included in noise dose accumulation.

**Time-weighted Average (TWA)** – Daily exposure to occupational noise normalized to an 8-hour workday. TWA takes into account the average levels of noise and the time spent in each exposure area. Different agencies use different exchange rates and threshold levels to calculate TWA.

**Upper Limit (UL)** – The cumulative time that the noise level exceeded the set level.