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STATISTICAL ANALYSIS FOR NOISE EXPOSURE

Did you know that you can calculate the exposure distribution and the 95th percentile for personal noise exposures similar to statistical analysis used for chemical exposures?

According to AIHA, Bayesian analysis software used to address airborne contaminants can also be used for noise exposures. Similar to airborne exposures, noise exposures are also log-normally distributed when expressed as a percent of dose. Given that Lep,d values are normally distributed, as they are based on a logarithmic scale, they must be converted to percent dose before Bayesian analysis can be performed.

Combining your findings from the qualitative assessment together with the quantitative findings can lead to reliable overall decisions. IHDA software can be used for this purpose.

Although not described in the AIHA exposure assessment book, the same principles are likely to apply to hand-arm vibration exposure due to similarities with noise. Again it is very important to convert any TWA values into percent of dose.

Source: "A Strategy for Assessing and Managing Occupational Exposures" 4th Edition by AIHA, p.198.

#noise #exposure #statistics #IH #OH #AIHA #Safety

STATISTICAL ANALYSIS OF PERSONAL NOISE EXPOSURES

Sample No	$L_{EP,d}$	Percent of Dose
1	80 dBA	32%
2	83 dBA	63%
3	85 dBA	100%
4	87 dBA	200%
5	90 dBA	316%
6	93 dBA	631%
95th percentile	**94.2 dBA**	**825%**

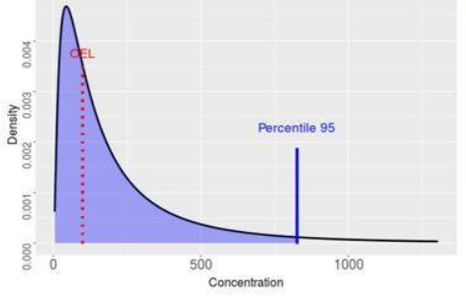

Table 14.2 – Noise SEG Exposure Control Categories (OSHA Rule)

TWA8 and Noise Dose	*SEG Exposure Control Category***	*Applicable Management/ Controls*
<56.8 dBA <1%	0 (<1% of OEL)	Hearing loss prevention awareness training optional
56.8–73.4dBA 11-10%	1 (<10% of OEL)	Hearing loss prevention awareness training optional
73.4–85 dBA 10-50%	2 (10–50% of OEL)	+ Hearing loss prevention awareness training, periodic exposure monitoring
85–90 dBA 50-100%	3 (50–100% of OEL)	+Hearing Conservation Program inclusion, exposure monitoring, medical surveillance, PPE requirements begin, consider hierarchy of controls
90–101.6dBA 100-500%	4 (>100% of OEL)	+Implement hierarchy of controls, implement engineering controls
>101.65dBA >500%	5 (Multiples of OEL)	+ Implement hierarchy of controls, validation of hearing protection sufficiency, dual HPD, priority engineering control