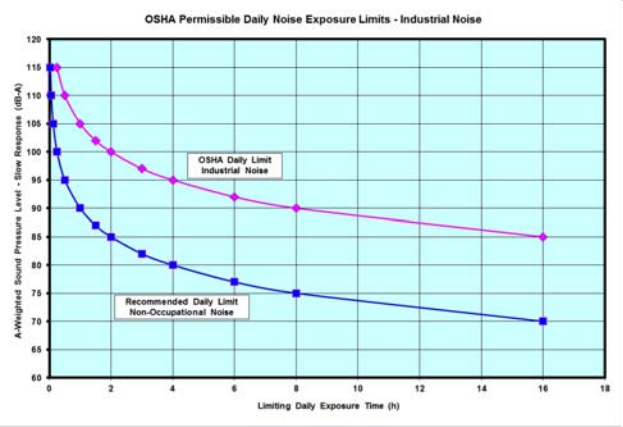

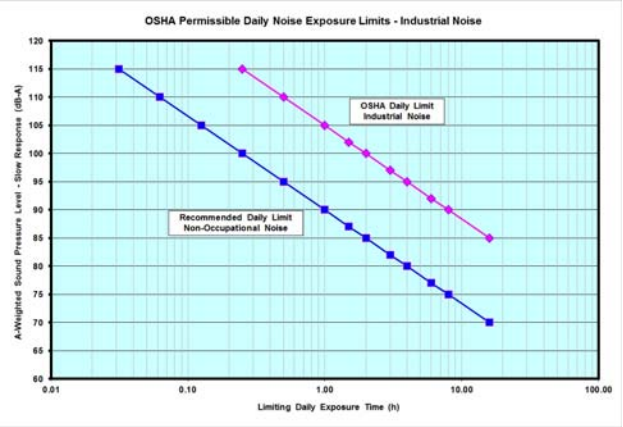

OSHA* Daily Exposure Time Limit – Industrial Noise (hrs)	***SPL* (*dB-A*)**
16	**85**
8	**90**
6	**92**
4	**95**
3	**97**
2	**100**
1.5	**102**
1	**105**
½	**110**
¼	**115**

Recommended Daily Exposure Time Limit – Non-Occupational Noise (hrs)**	***SPL* (*dB-A*)**
16	**70**
8	**75**
6	**77**
4	**80**
3	**82**
2	**85**
1.5	**87**
1	**90**
½	**95**
¼	**100**
1/8 hr ~ 12 min	**105**
1/16 hr ~ 6 min	**110**
1/32 hr ~ 3 min	**115**

* More info available on online at the OSHA website:
http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=standards&p_id=9735

** A. Cohen, J. Anticaglia and H.H. Jones, " 'Sociocusis'- Hearing Loss From Non-Occupational Noise Exposure", *Sound and Vibration* Vol. 4, *p*. 12-20, November 1970.

Note from the above tables that the daily exposure time limit(s) decrease by a factor of 2× for each $\Delta SPL = 5$ *dB-A* increase, which is also reflected in the above RHS semilog-*x* plot of *SPL vs.* $\log_{10}$(Daily Exposure Time), *i.e.* a straight-line $y(x) = mx + b$ relationship, where $y(x) = SPL$, $x = \log_{10}$(Daily Exposure Time), intercept $b = 105$ *dB* {90 *dB*} for the OSHA {Recommended} curve(s), respectively [since $\log_{10}(1.0) = 0$], and slope $m = -5$ *dB*/ $\log_{10}(2)$.

Since $SPL = 10 \log_{10}(I/I_o)$ (*dB*), the above value of the slope *m* tells us that two different values of acoustic intensity limits I_1, I_2 and their associated maximum Daily Exposure Times $\Delta t_1^{\exp}, \Delta t_2^{\exp}$ are related to each other by:

$$I_1\sqrt{\Delta t_1^{\exp}} = I_2\sqrt{\Delta t_2^{\exp}} = \text{constant}$$

i.e. Damage to our hearing is proportional to the ***square-root*** of the exposure time $\sqrt{\Delta t^{\exp}}$, as opposed to varying ***linearly*** with the exposure time $\Delta t^{\exp}$, since $E = I \cdot \Delta t \cdot A_{\perp}\,(Joules)$.