

Industrial Noise

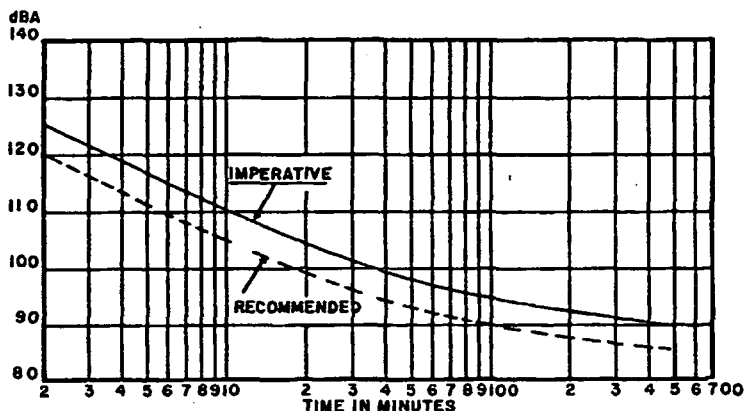


FIG 45-6 — Permissible (low risk) noise exposures for one exposure per day

components of noise-exposure in producing hearing loss?

Limitations of a practical hearing conservation program

The aim of hearing conservation is to prevent loss of hearing for all persons exposed to noise, but unfortunately, complete protection cannot always be realized. Sometimes practical programs can achieve only a limited goal. For example

- If prevention of hearing loss at all audible frequencies does not prove possible, particular efforts should then be made to protect hearing at the frequencies most important to communication by speech (500, 1000, and 2000 Hz)

- Prevention of hearing loss in every person who is exposed to noise may not be possible, as some few persons' ears may be highly susceptible to noise-induced hearing loss. As yet, there is no predictive test that will enable us to identify these persons. To complicate matters, no practical general rule of protection has been found to be equally effective for all persons exposed to noise, the protective measures that prevent loss of hearing in ears that are normally-susceptible may not be effective for highly susceptible ears

Noise-exposure and hearing loss

Noise-induced hearing loss depends upon noise levels and exposure time. Any attempt to assess the need for hearing conservation must take account of both

The effects of continuous exposure to steady noise may depend on the way the sound energy is distributed in the noise. Early noise-induced hearing losses are usually confined to the frequencies around 4000 Hz. As the exposure lengthens, losses spread to lower frequencies whose audibility is more directly involved in the understanding of speech. Studies of noise-induced hearing losses indicate that losses occur at frequencies above those that characterize the exposure sounds. Since the most important frequencies to be protected are in the speech range (500 to 2000 Hz inclusive), it follows that the 300-600, 600-1200, and 1200-2400 Hz bands deserve the major attention.

Our knowledge of the relations of hearing loss to *steady* noise-exposure permits us to propose these general guidelines for establishing standards for preventing significant noise-induced hearing loss in the majority of exposed persons

- When the exposure to broad band noise is habitual and the noise is continuous during the working day (8 hour day) the A-scale level should not exceed 90 dB. If the A-scale level exceeds 90 dB, hearing conservation measures should be initiated
- When the exposure to broad band noise is habitual and the noise is continuous for less than 5 hours per day, Fig 45-6 should be consulted for recommended allowable exposure levels and times
- When the exposure to broad band noise